Hoverfly Newsletter
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My thanks to all who have contributed articles to this issue. The range of subjects they cover is a testament to the continuing growth of interest in hoverflies. Especially striking are the figures, in the recording scheme update, of the proliferation of records from photographic sources. I recall that when I began active recording of hoverflies I was something of a rarity in taking a camera to field meetings - this was before digital cameras became readily available, and in those days I experienced a fair amount of reluctance to accept records that were based on photographs. How things have changed!

Copy for **Hoverfly Newsletter No. 61** (which is expected to be issued with the Autumn 2016 Dipterists Forum Bulletin) should be sent to me: David Iliff, **Green Willows, Station Road, Woodmancote, Cheltenham, Glos, GL52 9HN, (telephone 01242 674398), email:davidiliff@talk21.com**, to reach me by 20 June 2016. The hoverfly illustrated at the top right of this page is a male *Brachyopa bicolor* about to alight on a tree trunk.

Hoverfly Recording Scheme Update, Winter 2015-16

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We had hoped to publish a revised provisional atlas in 2015 but, as readers will realise, events have conspired to delay its completion. The main issue we faced was the need to challenge quite a significant part of the dataset. Recent recording has brought to light the probability that many hoverflies have a more tightly defined flight time than we had hitherto thought and consequently there are a number of records that fall outside the likely flight times. Some of these records may be OK and simply involve larvae, but we suspect that many involve misidentifications. We are working through the data but it is a slow job. This means that the atlas is delayed and consequently we have decided to include 2015 records too.

Our decision to include 2015 records also follows a quite exceptional period of recording, with unprecedented numbers of records from photographic sources. In 2014 some 8,600 records came from this route; in 2015 the numbers can be expected to exceed 20,000.

Readers will recall that we expanded the composition of the team running the scheme to five. This has proven to be very necessary, as the numbers of people interested in hoverflies has grown exponentially. This growth is illustrated by Figure 1 which shows the numbers of photographic records received for each year since 2002. The 2014 records now approach 10,000 because there have been many further posts in 2015.

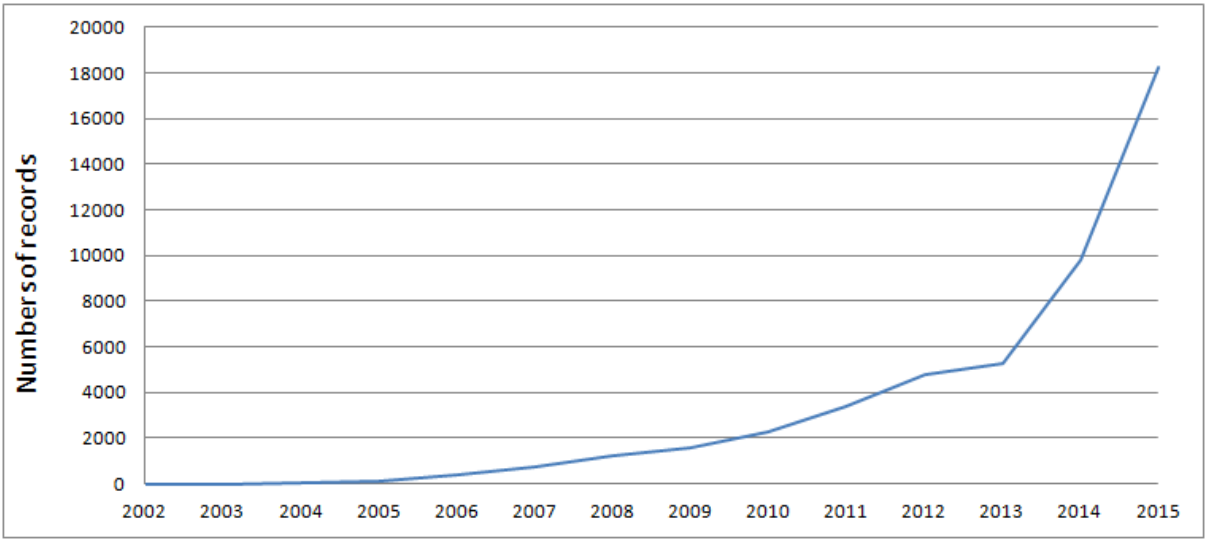

Figure 1. Growth in photographic data from 2002 to 2015.

The volume of data from photographic sources is such that it starts to dominate the overall dataset. This is not necessarily a bad thing because it now means that we have a great deal more information on many of the commoner species and can start to undertake more detailed analysis of their regional phenology each year. In due course this may help to explain why late records of less well-recorded species occur, but in the meantime it raises quite a number of interesting questions about the existing dataset, which is one reason why the production of a new atlas has been delayed.

One highly illustrative example is that of *Eristalis tenax*: a species that we know overwinters as a female. HRS phenology charts published to date combine the outputs of many years and from all latitudes. Such charts obscure what is really happening, as can be seen in Figure 2. This figure splits the UK into four regions, as in Figure 3.

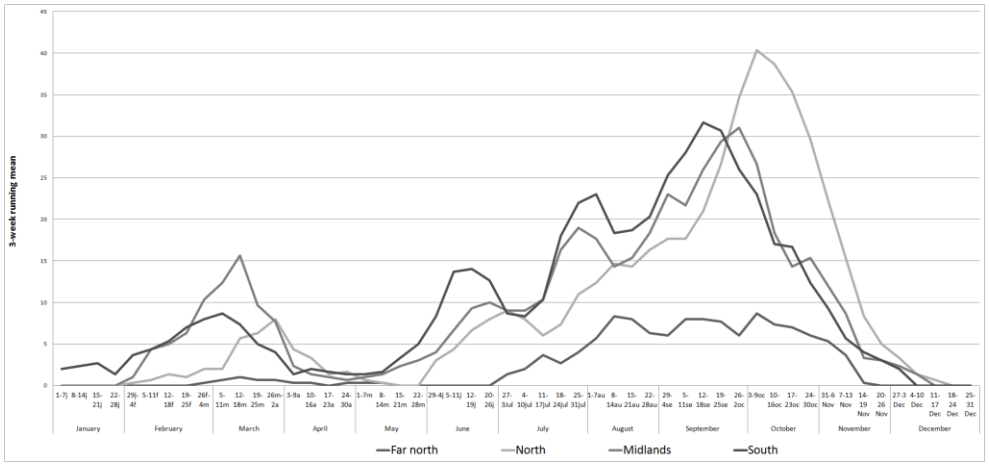

Figure 2. Phenology of *Eristalis tenax* in 2015 broken into four geographic zones.

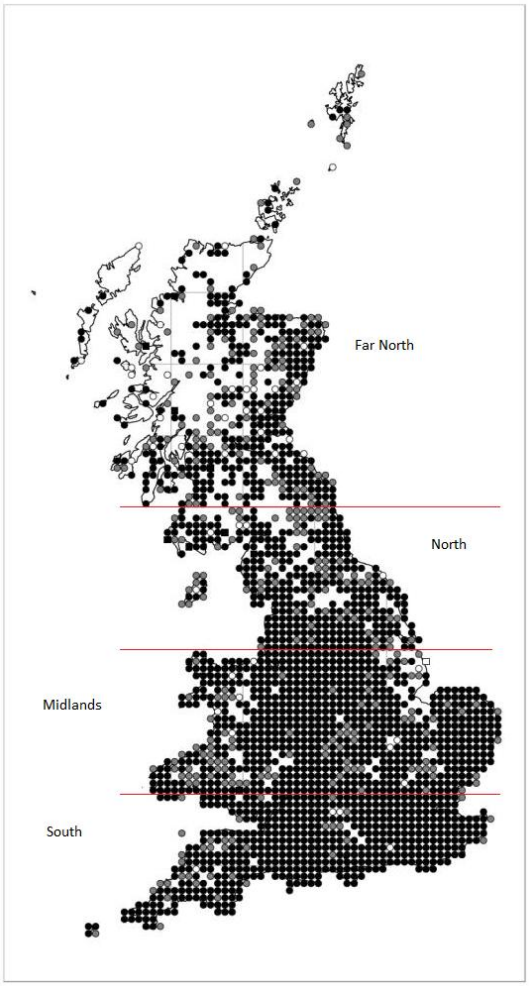

Figure 3. Distribution of *Eristalis tenax* (to 2014) with notation for regions used in Figure 2.

The data for 2015 include contributions from several people who record from their favoured 'patch' on an almost daily basis (as weather permits), which means that a reasonably accurate picture of occurrence has been built up. The records are all backed up by photographs and have been checked, so there is no reason to suppose that they are not an accurate reflection of *Eristalis tenax* phenology in 2015. These results show how winter activity differs across the regions and how the population builds during the summer. Unlike the histograms in past atlases (which indicate a progressive rise in numbers towards a peak in late summer) it seems that there is a very pronounced dip in numbers from the middle of April through to the middle of May.

Another huge advance has arisen because new recruits are far more inclined to get out in the early Spring and late Autumn. This effort is starting to change perceptions about the levels of hoverfly activity. Autumn 2015 has been exceptionally warm, and perhaps cannot be taken as the model for all years. Even so, regular recorders have shown how a remarkable number of species have persisted well into December (Figure 4). On 7 December records included *Sericomyia silentis*, *Scaeva selenitica*, *Sphaerophoria scripta*, *Syrphus ribesii*, *Episyrphus balteatus* (several), *Meliscaeva auricollis* (several), *Eristalis pertina*x and *Eristalis tenax*. One recorder reported five species coming to ivy sprayed with a sugar solution, so maybe others will try this on sunny days.

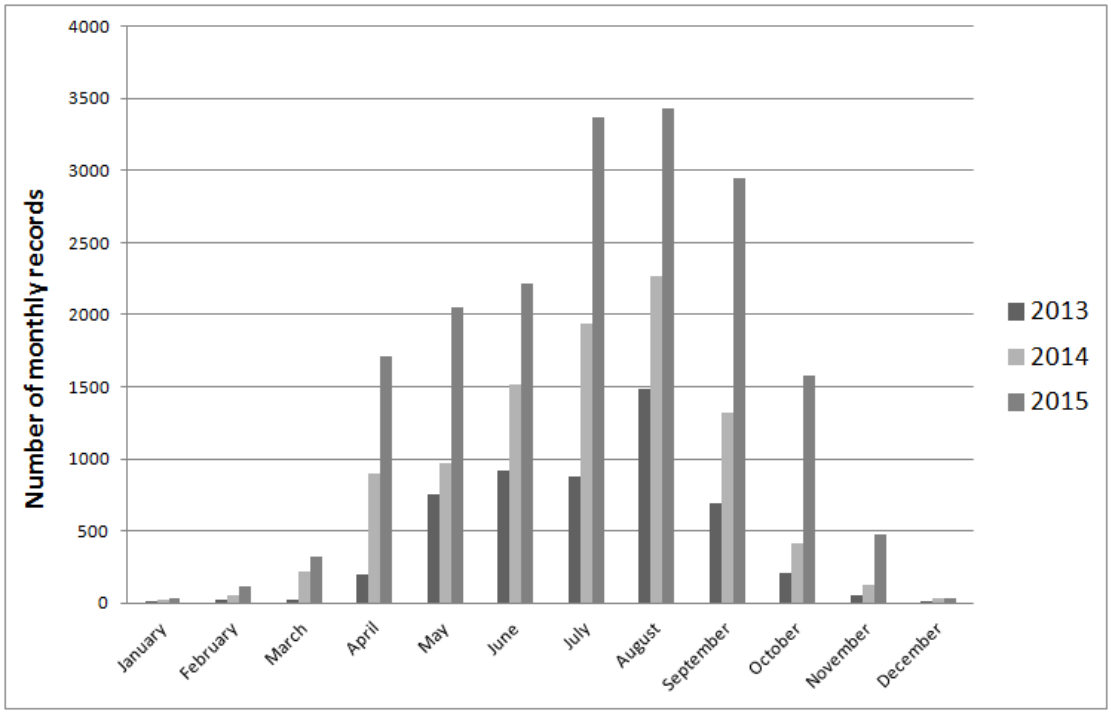

Figure 4. Numbers of photographic records for each month for 2013 to 2015.

It is difficult to be sure that the number of hoverflies seen in autumn 2015 is unusual. The year saw a huge change in the numbers of active recorders and this may be a factor behind both the numbers and range of species reported. We will get a much clearer picture in 2016. Meanwhile, the records received from conventional sources should help to provide important context.

Although there has been a small stream of data from regular contributors, the bulk of this year's records are likely to arrive in coming months, so there will doubtless be lots of interesting finds. Highlights we have seen so far include: *Brachypalpus laphriformis* (several), *Callicera aurata* (several), *C. rufa*, *C. spinolae*, *Doros profuges* (2), *Eupeodes lapponicus* (2), *Ferdinandea ruficornis* (1), *Meligramma euchromum*, *M. guttatum* (several), *Microdon analis*, *Pelecocera tricincta*, *Sphegina sibirica* (many), *Triglyphus primus* (1), *Xanthandrus comtus* (several), *Xanthogramma stackelbergi* and *Xylota xanthocnema*.

By the time this update hits your doorstep spring should be well on its way. Do please get out and see what is about - there will probably be much more than one expects. All records count. Meanwhile, there are still hoverflies to be found - as larvae. We are keen to encourage greater interest in hoverfly larvae and for this reason Ellie has established a Facebook page dedicated to hoverfly larvae (https://www.facebook.com/groups/1580298322233838/).

Hoverwatch

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Hoverwatch is a project set up by the Wildlife Trust for Bedfordshire, Cambridgeshire and Northamptonshire under its Ecology Groups initiative. The Ecology Groups were set up about 10 years ago by the then Conservation Director, Brian Eversham, who stated that "Good conservation depends on good science". He was concerned that the fulltime staff of the Trust did not have enough time to carry out a lot of monitoring on top of their other responsibilities but believed that there was a pool of committed volunteers who could be recruited to do this.

Hoverwatch's purpose is to use hoverflies as a proxy (alongside flower spike monitoring) for monitoring ride and woodland management at Old Sulehay Forest SSSI and nature reserve. The project involves making four visits each year and counting the number of hoverflies of each species in a set number of compartments along the main ride in a systematic way. If a hoverfly is seen at a flower, the species of flower is also noted. The main ride runs approximately East to West and the ride margins are divided into sections each 20m long, 5m wide and separated from each other by 10m non-intervention breaks. The compartments are managed according to various cutting regimes, covering 1, 2, 4 and 8 year cycles.

Hoverflies were chosen as the subject for monitoring for three main reasons:

- they largely feed on nectar
- their larvae are very varied in their habitat requirements, thus may tell us something about the woodland as a whole
- they are relatively easy to identify (unlike hymenoptera) and training was readily available through Roger Morris and Stuart Ball's courses.

The project has been running for 7 years and nearly 5000 hoverfly individuals have been recorded, covering 91 species. To check that the Hoverwatch data is reasonably representative of the forest as a whole a number of informal surveys have been carried out around the times of the Hoverwatch visits and only 5 further species have been found.

A formal report of the project will be prepared for publication in due course so only a few highlights are mentioned here. The numbers of individuals and species have varied considerably each year. This is partly due to weather conditions (for example 2012 had a particularly cool and damp spring) but also due to large scale immigration of *Episyrphus balteatus* in some years (e.g. 2015). In fact *E. balteatus* represents about 70% of all individuals recorded. For the purposes of monitoring the woodland management, it may be better to ignore this species in the analyses. As not all individual hoverflies could be identified to species level, the analysis of numbers of each species seen is biased by ease of field identification; thus some analysis must be based on higher taxonomic levels.

When considering larval feeding ecology, many species within a tribe have similar requirements and the odd ones out can be considered in their appropriate category. Thus the data has been broken down to distinguish those hoverflies whose larvae are predatory on aphids, those associated with bee or wasp nests and saprophagous or phytophagous species. The relative abundance of individuals and species in each category has remained fairly consistent throughout the project, although the predacious proportion dipped in the cold spring of 2012 and the hymenoptera-associated hoverflies (*Volucella*) dipped in 2015. This was possibly because the dry spring had led to a delay in bramble flowering when we made the visit at the *Volucella* peak time.

An analysis of flower visits was made. A flower visit was counted if a hoverfly was seen visiting a flower head on any survey visit. No attempt was made to count the actual number of hoverflies visiting a flower as this would have been too time-consuming and it would have been difficult to know whether one hoverfly visited several flower spikes or several different individuals visited any one spike. This method may not be suitable for ranking different flower species in importance as nectar sources for hoverflies but it does indicate which species are being used. In the spring visits, 17 species of hoverfly were recorded as visiting 12 species of flowers; the top three flowers were dog's mercury, bramble and dogwood. In summer 23 species of hoverfly were recorded visiting 30 species of flower; bramble, St. John's Wort and enchanter's nightshade were the top three.

Further surveys will continue in subsequent years. Data from the flowering spike counts, undertaken by a different group, will be incorporated into the analysis and attempts will be made to relate the data to management activities.

My thanks go to Henry Stanier who was the Ecology Groups Officer at the Wildlife Trust, Roger Morris and Stuart Ball for their training courses and the Ecology Group team who have helped in the survey, particularly Dipterists Forum members Peter McMullen, Kevin Rowley and Graham Warnes.

Orthonevra in Lancashire and Cheshire

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In July 2003 Martin Drake found *Orthonevra intermedia*, a species previously unrecorded in Britain or Ireland (*Dipterists Digest*, Vol 13 No. 2, 2006, pp 87-91) in the Delamere Forest (SJ57). In their recent JNCC status review of the Syrphidae, Roger Morris and Stuart Ball stated that "There have been no further records in the intervening ten years but it is possible that nobody has looked for this species in suitable habitat". That situation has now changed, as on the 20 August 2015 I swept a female of the species only a few hundred metres from the two locations where Martin found the species. For the past three seasons I have indeed been collecting Diptera over a number of wet peatland sites in Cheshire and South Lancashire, including five previous visits to various parts of Delamere.

Martin Drake's paper gives a good summary of the habitat. The forest covers 9.7 square kilometres and the undulating terrain of glacial sands and gravels is punctuated by dozens of peat bodies, varying greatly in extent. Drainage and conifer planting has severely affected the basin mires in the hollows, but the Forestry Commission and Cheshire Wildlife have an ongoing project "Delamere's Lost Mosses" to clear trees and raise water levels to restore this habitat. Martin's survey was carried out in the early appraisal stages of this project. He visited 31 separate peat bodies, but not Blakemere Moss (SJ546712) where my new find of *Orthonevra intermedia* was made. The Blakemere basin was clear-felled in 1998 and reflooded to form a kilometre-long lake. The find was made in an area of wet heathland at the west end of the lake with abundant *Calluna vulgaris*, *Molinia caerulea* and *Eriophorum* and *Sphagnum* species (see photograph). It appears that this area still requires active management to control invasion by birch. In these respects, this area is fairly similar to Norley Moss which is one of the two previous sites for *O. intermedia*, the other being a small bog, which Martin noted as one of the most intact.

The adult female *Orthonevra intermedia* is clearly distinguished from *O. geniculata* by the width of the face and the length of the antennae, and also by the later season of appearance. Both species are to be found in bogs or fens, and little seems to be known of the larvae other than that they are said to occur in organically rich mud. *O. geniculata* was a nationally notable species until the 2014 JNCC review, when the number of hectads with a record since 1980 had reached 118. Nevertheless in **Britain's Hoverflies** Ball and Morris state that records of this species are on a downward trend since 1980.

I have found *O. geniculata* myself on two of the Lancashire Wildlife Trusts mossland reserves in Greater Manchester (SJ69): Astley Moss (SJ6997) – two records in May 2013 and one in May 2014; and one further record at Cadishead Moss (SJ6995) on 28 April 2014. These are lowland raised bogs which have been drained and hand-cut for peat in the past. Recent restoration has raised water levels and removed extensive birch scrub. The species was also recorded in an unpublished survey at Astley Moss by World Museum Liverpool (WML) in 2010. Their four records are from malaise traps between April and June; the traps were in three separate locations on restored bog, wet woodland, and an area of formerly cultivated peatland. All 7 records from Astley Moss have occurred within a 400×500m rectangle centred in the so-called "carrot field".

There are very few other modern records in Lancashire and Cheshire (vice-counties 58, 59 and 60) on the NBN Gateway or the Cheshire LRC database: two in VC59 at Formby near the coast (SD2806) and at White Coppice (SD6219) where the Pennine moors begin east of Chorley, and one in VC58 at Hatchmere (SJ5572) on 11 June 2003. Hatchmere is in fact contiguous with Norley Moss where *O. intermedia* was first found. It is also the site for the only record of *O. geniculata* in **The Diptera of Lancashire and Cheshire** by Kidd and Brindle (1959): this was by Herbert Womersley in the month of May ─ the year is not given but it would have been in the period 1905-1915.

Orthonevra brevicornis is similarly scarce nationally, so it seems particularly noteworthy that Martin Drake also found it at Norley Moss on 2 July 2003. It was recorded by Kidd and Brindle only in the Furness area of South Lakeland (which in 1959 was part of Lancashire and VC60, being later transferred to Cumbria and VC69). There are however modern records from Claughton in VC60 and from Rostherne (SJ7484) and Manchester Airport (SJ88) in VC58, as well as just over the southern and western borders of VC58.

To complete the story, Kidd and Brindle's sole record of *Orthonevra nobilis*, the only other British member of the genus, was from VC69, apart from a mention of the species in Lancashire in Verrall's **British Flies** of 1901. There is a fair sprinkling of modern records in the area, in line with its position nationally as the most frequent *Orthonevra*. Rather remarkably it again crops up in the Delamere area at SJ5572 in 1991, completing the set for this kilometre square.

The recurrence of these species at the same sites at intervals of 10 or even 100 years and their known association with bogs and fens does suggest that these are persistent populations, even though there has been considerable disturbance of the habitat. It might indicate some feature of behaviour that makes them difficult to find – Hatchmere in particular has been frequented by such eminent Dipterists as Harry Britten, Leonard Kidd and Alan Stubbs – though this is difficult to reconcile with the abundance of records at Astley Moss.

Thanks are due to the Forestry Commission and to Cheshire and Lancashire Wildlife Trusts for granting access to their sites, to the latter for supplying the WML survey report for Astley Moss, and to Martin Drake for a copy of the report on his Delamere survey.

Fleeing larvae

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Over the last few years I have spend a lot of time staring at an oak tree very near the farmhouse which has copious sap runs near its base. In the summer viscous streams of alcoholic white ooze flow out from under the bark over exposed patches of the underlying wood. But look as I may, I've failed to see any larvae wriggling in this sap, although the sheer number of flies about and the books tell me that the "slime flux" should be stuffed with them.

It was therefore with some amazement and delight that one day last summer, 5 June, I saw white larvae streaming out from a sap run over bare dark wood in a highly conspicuous fashion. The reason soon became apparent – an ichneumon! She was actively exploring the run, periodically inserting her abdomen into it, searching for grubs into which to lay her eggs. The behavioural response of larvae about her, fleeing her attentions, was to me most remarkable.

I captured a couple of the larvae and using Graham Rotheray's excellent **Colour guide to hoverfly larvae** was able to identify them as *Ferdinandea cuprea*. I often encounter adults of this brassy hoverfly around the tree, and have watched the females oviposit on several occasions. They place their eggs in crannies in the bark several centimetres away from any exposed sap. The first instar larvae must either travel over the bark to the sap, a feat akin to us crossing a mountain range or, more likely, use small cracks to pass through the bark to hidden sap runs beneath.

I captured the unfortunate ichneumon too. Mark Shaw in Edinburgh kindly said he would have a look at it, and has identified it as *Bioblapsis polita* (Vollenhoven) (Ichneumonidae: Diplazontinae). This, he tells me, is a very rarely collected parasitoid which, as far as is known, is an absolute host specialist, restricted to *F. cuprea*. The specimen, and another I caught later, are being deposited with the National Museums of Scotland collection.

At the same time as I was observing the ichneumon terrorising the hoverfly larvae, I noticed another, slightly larger, ichneumon species lurking below the sap run where the tree meets the soil. This species Mark

identified as *Rhembobius perscrutator* (Thunberg) (Ichneumonidae: Ichneumoninae), an uncommon species that oviposits into puparia of various sap-run and rot-hole syrphids.

Armed with my new knowledge that the sap runs are indeed inhabited by larvae, I collected some of the sap and looked at it underneath the microscope. Sure enough, there were plenty of fly and beetle larvae to be seen. Normally, they must have little reason to move and being the same colour as their environment, do not attract the attention of the human observer above!

Reference:

van Eck, André & Zwakhals, C. J (2015) *Bioblapsis polita* (Hymenoptera:Ichneumonidae) gekweekt uit *Ferdinandea*-puparia (Diptera:Syrphidae). Entomologische berichten 75 (6): 247-251

(Editor's note: just before this newsletter went to press Martin Speight sent me a recent image of a *Ferdinandea cuprea* puparium; it seemed appropriate to print it alongside this article).

Ferdinandea cuprea ovipositing

Ichneumon *Bioblapsis polita* ovipositing in sap run

(photos: Rob Wolton

Ferdinandea cuprea larva fleeing from Ichneumon
(photo: Rob Wolton)

Ferdinandea cuprea puparium
(photo: Martin Speight)

Callicera rufa in Shropshire - update

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Callicera rufa was recorded for the fifth consecutive year at two of its Shropshire haunts in 2015: Keith Fowler ascended Little Hill, near The Wrekin, on 6 June and found a single male on one of the usual hilltop pine trees and I recorded *C. rufa* at the top of Haughmond Hill, near Shrewsbury on 26 May, when a single male was noted on the hilltop pines that have been used by lekking males every year since 2011. Over three weeks later, on 18 June, I found a very worn male on the same tree as previously, but this time there were also two females close by, hovering around and entering the rotten, hollow trunk of a fallen pine. Both females showed some interest in this medium, but eventually flew off, not having oviposited in the trunk. These were the first females seen at Haughmond Hill. I was thrilled to discover *C. rufa* at a new site, Nesscliffe Hill north west of Shrewsbury, where on 27 May, a cool, overcast day, I managed to reach a hilltop location of particular promise, noted on a previous visit in February. The clouds cleared for about fifteen minutes whilst I was on site, and very soon two males were seen sitting on the open sunlit trunks of pines. I saw males on three different trees, suggesting there may have been more than two males present. Unfortunately the sun did not reappear and nor did the *Callicera*, so I was unable to ascertain if there were more than two present. There are now four sites within a fifteen mile radius of Shrewsbury where *C. rufa* has been noted, indicating that there is a well established meta-population locally.

A fresh male *Callicera rufa* at Haughmond Hill on 26 May 2015 (left); hilltop pines (right) at Nesscliffe Hill with trees used by *Callicera rufa* as “lekking stations” arrowed (photos: Nigel Jones)

Finding hoverflies on coniferised lowland heath

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My local site for hoverflies in East Yorkshire has for the last 8 years been Allerthorpe Common (SE755480), a small Forestry Commission plantation south of York within which is a Yorkshire Wildlife Trust reserve preserving a tiny parcel of the original lowland heath, which once covered a far wider area locally.

Most of the site is plantation blocks of Corsican and Scots Pine which have been thinned out and have an understorey of brambles. A few sections have been cleared and are seeing a regrowth of heather. There are scattered oaks across the site, areas of birch scrub, and the two main tracks across the site are maintained with wide flowery edges. Finding hoverflies on a site like this can be hard work, as for much of the year there is no obvious food source for adult hoverflies, and even in the usually productive months of May and June there is not much flowering at all.

Summer 2015 saw the 100th species found at Allerthorpe, which is a considerable list for what is essentially a small coniferous woodland site in the North of England. It is easy to waste a lot of time finding very little on a site like this though and I have found the key times to visit are:

- Late March-early May for *Salix*
- July-August for *Torilis japonica*/*Potentilla erecta*
- September for *Calluna vulgaris*

Outside those periods there are hoverflies around, but it can be immensely frustrating to walk round in May/June and find very little at all, when other sites are producing all sorts of unusual species. Those three periods and the associated plants provide most of my sightings.

Sallows flourish in one or two damp areas and fringe the paths across the site. It is always worth spending time checking these out in early spring; late March and early April see *Syrphus torvus*, *Melangyna lasiophthalma* and *Cheilosia albipila* among the first hoverflies to appear, with a considerable supporting cast often including the odd scarcer species like *Cheilosia nebulosa* or *Megasyrphus erraticus*. *Syrphus torvus* usually outnumbers other species many times over. Management on site ensures that there are always some very young sallows, no more than 4 or 5 feet tall, which flower ahead of the older bushes and are worth staking out for species like *Criorhina ranunculi*, which is easy to find as a result (unlike a couple of weeks later, when it seems to stay high up in the taller sallows). *Salix caprea* flowers first, but once that finishes, the low *Salix repens* is superb for *Sphaerophoria* spp. and others.

After that early rush the site is very quiet indeed and barely worth visiting at all until high summer when upright hedge parsley (*Torilis japonica*) and tormentil (*Potentilla erecta*) flower. Tormentil thrives at the edge of tracks and is especially attractive to *Sphaerophoria* species, *Paragus haemorrhous* and various *Platycheirus*. It is worth taking a sample of the *Sphaerophoria*, as several species can be found together. The most abundant species here is *S. fatarum*, but *interrupta*, *batava*, *philanthus* and *scripta* can all be flying in the same area at any one time. Upright hedge parsley is the main tall flowering plant at track edges through July and August and it is incredibly attractive to *Cheilosia* species in particular: 19 species of *Cheilosia* have been found on site and 14 species taken from the plant at this time of year. As the genus includes what are essentially small, black flies, most unidentifiable with certainty from a field view, it is worth taking a sample

a couple of times through the summer. The most abundant species are usually *C. pagana* and *C.scutellata*, but there is a nice suite of supporting species regularly found, including the nationally scarce *C. mutabilis* and *C. velutina*, and locally scarce species like *C. vulpina and C. longula.*

As the *Torilis* dies away, heather (*Calluna vulgaris*) starts to flower, and this is generally the most productive plant for hoverflies through to the end of the season, especially larger species like members of the Eristalini and *Sericomyia silentis*, as well as members of the Syrphini including *Scaeva pyrastri* and *S. selenitica* (the latter probably resident, as found through the year), *Didea fasciata* and *Syrphus* spp. The sheer number of hoverflies on heather in August and early September is the most impressive thing and a couple of sweeps of the net can see it buzzing with *Eristalis*, *Syrphus* and *Episyrphus balteatus* especially.

Those four plants and those times of year provide the vast majority of the species I find on this plantation/heathland site. Of course each habitat within the site has its own attractions and there is a row of roadside Bird cherry (*Prunus padus*) across one side of the site, which is incredibly attractive to many hoverflies for just a couple of weeks each year. Then there are the damp areas of rushes (*Juncus* spp) which produce *Trichopsomyia flavitarsis* and *Xanthandrus comtus*, and the ruderal edges of a small set-aside field within the common which produce *Triglyphus primus* each year. A short period in early June produces a lot of *Dasysyrphus* spp on *Ranunculus repens* across the site.

All sites produce their own species on particular plants, but at a relatively dry heathland/monotonous plantation site like this a little time spent thinking about when to target visits in order to find the best variety of species can pay huge rewards and avoid wasted visits at the wrong time, when efforts would be better spent at other sites locally.

Sphaerophoria fatarum on *Salix repens*

Cheilosia scutellata on *Torilis japonica*

Torilis japonica flowers alongside the main tracks

(photos: Ian Andrews)

Sphaerophoria species determination: some traps

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Although the genus *Sphaerophoria* is fairly easy to recognise in the field, the same is far from true for its individual species, only *S. rueppellii* and *S. loewi* being identifiable in both sexes. In these two species the yellow thoracic side stripes reach only as far as the transverse suture, and they are separable from one another by the colour of their antennae. The other British species all have complete side stripes but it is currently accepted that the females cannot be determined, and that in the case of males only *S. scripta* is readily identifiable (due to the length of its abdomen, which extends well beyond the wings), examination of the genitalia being necessary for identification of all the others. However, during May 2015 we learned that in some circumstances it is possible to be misled into errors even with the "easy" species.

On 16 May 2015 we were searching for insects during a field meeting at the former Windrush Airfield (SP182120). The weather was sunny and fairly warm, but a strong wind was blowing across the site as a result of which very few insects were seen at flowers. However we came across a banked field margin the lee of which was rich in insects. Among them were several *Sphaerophoria*, including male *scripta* and a pair in cop (tail-to-tail) where the male appeared at first glance to be one of the short-bodied species (hence something other than *scripta*). We photographed the pair and Martin caught them, and a few days later when he had pinned them he provisionally identified the pair as *S. rueppellii* as the thoracic stripe stopped before the wing base. When David saw the pair he was immediately doubtful although the thoracic stripe character clearly looked good for *rueppellii*; the male was in fact built like *scripta* with the characteristic long abdomen and did not have the typical clavate shape of *rueppellii* - its abdomen had appeared to be short when observed in the field, but this turned out to have been an optical illusion caused by the fact that its last two tergites were curled underneath its body while in cop. Close observation of the genitalia of the male proved that it was indeed *scripta*. Below are photographs of the pinned male and female of the pair, illustrating the absence of the rear section of the thoracic stripe in the male. That section of the thoracic stripe is discernible in the female, though it is much fainter than the front portion. It is not uncommon for the rear part of this stripe to be fainter than the front part in *Sphaerophoria*, as evident for example in the photograph by Ian Andrews of *S. fatarum* that accompanies the previous article.

Sphaerophoria scripta male (left) "masquerading" as *S. rueppellii* and female (right) with which it was mating (photos: Martin Matthews)

Sphaerophoria scripta having fun?

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In my garden on 19 September I was doing a round of monitoring when I came across a blur of a yellowish thing flying in vertical, flattened ovals. I was mesmerised trying to work out what insect might do this and had just about realised that it must be a male *Sphaerophoria scipta* before it slowed down and flew in a more leisurely manner. Perhaps I would have done better to see if there was a resting female close by. If this was a normal courtship display, it seems odd that I have not met with it before, so perhaps the fly was just having fun in the sun.

The action was low down, only about 6-8 inches above a patch of daisy flowers and the duration of the display was about 6 to 8 seconds. If other people have met with this performance, or alternative courtship display, I shall be pleased to hear. Conceivably, in a genus with so many species, display differences between them could be used as a means of identification.

Living under the radar?

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All too many insects remain little more than labels – the scientific names we have given them. What they do in their lives is an almost total mystery. At this point in time hoverflies would not usually be thought of in that way, but as being more at the other end of the spectrum, as "well known". A few of them, *Episyrphus balteatus* being the extreme example, might even be regarded as very well known. There is so much literature about *E. balteatus* you could fill a short book with it. There is, however, a big BUT: the general, background level of information about hoverfly species is distinctively uneven, with the developmental biology of a substantial number of species remaining largely in the realms of mystery and conjecture. A great number of those have something in common – it looks as though their larvae are in the soil.

One of the interesting things about syrphids is the wide diversity in larval biology exhibited by different species in the family. In the case of soil-inhabiting larvae all three trophic groups are represented, phytophages by *Cheilosia* and *Merodon* for instance, saprophages/microphages by *Eumerus*, and predators by a miscellany of syrphine genera plus a few *Volucella* and *Microdon*. What is far from obvious at first glance is how the larvae belonging to these trophic groups differ from one another in their accessibility to study.

Syrphid species with phytophagous larvae are, de facto, associated with plants. Characteristically they are associated with plants that have bulbs, tubers, expanded stem bases or fleshy rhizomes, in which the larvae feed. At any given locality this can narrow down the search for larvae to those plants which have such structures. Another way to identify the plant host of a syrphid with phytophagous larvae is to observe oviposition by females – accumulated data show that the plant on which a female lays eggs is very likely to be the plant in whose tissues the larva feeds. There is also a tendency for the adult fly to feed at the flowers of the plant used as host by its larvae, and for both sexes to occur in its close proximity, phenomena which give further clues as to the host plant's identity. In these various ways the plant host can act as a marker for the location of larvae, and the greatest remaining obstacle to finding them is the probability that they are present in the host plant for only part of the year, potentially spending an appreciable proportion of the year away from it, free in the soil as a puparium. Inspecting the correct part of the right plant at the wrong time of the year can lead to dismissing that plant as not being the larval host!

Trying to find the host plants of microphagous/saprophagous larvae of *Eumerus* species is significantly more difficult than identifying host plants of syrphids with phytophagous larvae. For one thing the adult *Eumerus*

seem neither to visit the flowers of their larval host plant nor to lurk in its vicinity. Further, they can be in flight when the larval host plant is only in evidence above the ground surface as a withered remnant, hardly discernible by the human observer and, when noticed, not easy to identify. In those circumstances does the ovipositing female recognise the above-ground parts of the plant at all, or is she seeking to detect its sub-surface tissues in decay? Whatever sensory cues trigger oviposition in female *Eumerus*, for the human observer the adult fly provides almost no hints to the identity of its larval plant host. The most useful tools in searching for the larvae of a *Eumerus* species are a good plant list for a locality at which it is known to occur and a good knowledge of which plants on the list provide a potential underground food supply. Beyond that a good spade, a coarse sieve, plenty of time, strong motivation and a fair share of good luck are also helpful.

It is well-established that the larvae of some syrphids whose larvae are predatory and soil-inhabiting live actually within the nests of aculeate Hymenoptera. But what of the others? Known larvae of *Pipizella* species suggest that the genus specialises in preying on root-collar aphids, thus inhabiting the interface between the aerial parts of the plant and its roots. Root-collar aphids are habitually tended by ants. The patchy information existing about *Chrysotoxum* larvae indicates they are in the grass-root zone of the soil, where they are predators of root aphids. With few exceptions (one being the lettuce-root aphid, *Pemphigus bursarius*) root aphids are recognised as so dependent upon the protection provided by the ants that "farm" them, that they are not found away from those ants. Finally, something has to be said of the iconic and enigmatic genus *Doros*, the puparia of which (both European species) have been found at the base of deciduous trees, but which can occur at locations where woody vegetation no more substantial than low scrub is present. The inference is that *Doros* larvae are soil-inhabiting, with some sort of root aphid associated with trees and shrubs, though this is yet to be proved.

For anyone wishing to find larvae of syrphids with predatory larvae living in the nests of ants or other Hymenoptera, the nests of the hosts act as markers. Searching for *Microdon* larvae and puparia in early spring can be more rewarding than looking for the adult flies, since the morphology of the respiratory processes of the puparia, in particular, provides the most certain basis for identifying the species. *Xanthogramma* larvae have been found with root aphids in the nests of ants (*Lasius*), but this has happened surprisingly infrequently. Is that because ants' nests have only very rarely been searched for syrphid larvae? Or is it because *Xanthogramma* larvae are only very rarely actually within ants' nests? If they characteristically predate root aphids tended by ants that would not necessarily entail being within ants' nests, since ants also farm root aphids in the vicinity of their nests. The same can be said of *Chrysotoxum* larvae, which have occasionally been found in ants' nests, but have otherwise almost never been seen. It is remarkable that the larvae of such widely distributed and easily identified syrphids as *Chrysotoxum bicinctum* and *C. cautum* have apparently never been found in the field.

The different species of root aphid are not only closely associated with particular ants but also with particular plants, and one might think that a knowledge of which plants harbour root aphids could aid in deciding where to dig, close to an ants' nest, in searching for aphid-feeding, soil-inhabiting, syrphid larvae. But information on which plants harbour root aphids is difficult to come by, not least due to the prohibitive cost of the relevant literature. The commercial significance of aphid infestations to production of various crops makes the compendium of data on aphids and their plant hosts (Blackman & Eastop, 1994, 2006) one of the most outrageously expensive sets of volumes one might ever contemplate buying. There are few of us interested in syrphid larvae who would have a spare £1000 just to find out which plants in their vicinity harbour root aphids! If one did have the information it could perhaps be quite helpful in some instances, where the aphids are associated with easily recognisable plants. But it is apparent that various root aphids are associated with "grasses". The thought that it might be necessary to identify grasses, in order to work out where in a patch of ground root aphids might be, is not comforting.

Perhaps aphid specialists, in pursuit of root aphids, frequently encounter syrphid larvae among their aphids? Apart from those trying to find new ways to poison aphids in commercial crops, aphid specialists seem almost as rare as the proverbial hen's teeth. And if one has ever found syrphid larvae among commercially unimportant root aphids this does not seem to have been communicated to syrphid specialists. The closest to such an event recorded would appear to be a misquoted reference to an aphidophagous syrphid larva found with root aphids on lettuce. Reading that reference reveals that in fact the larva was not with the root aphids but among the leaves of a lettuce plant harbouring root aphids, and simply judged capable of predating those

aphids if it encountered them. Perhaps formicologists have found syrphid larvae among root aphids when studying their ants? If they have there is little evidence syrphidologists have been made aware of such occurrences. When syrphidologists have found a syrphid larva with root aphids they have not consistently named the root aphid, or said whether the root aphids were attended by ants, or necessarily named the ant involved either. It doesn't seem that aphid specialists, ant specialists and syrphid specialists are sufficiently in contact with each other to ensure that, when syrphid larvae are found with root aphids attended by ants, these occurrences are adequately recorded.

So, if you wanted to find the larva of *Chrysotoxum cautum*, how would you go about it? I guess that, did I have the answer to that question, I'd have done it already! For a syrphidologist seeking a challenge, finding soil-inhabiting syrphid larvae, especially those feeding on root aphids, would seem to be a wide open field, in more ways than one! At least the requirement to rear larvae in order to establish what species you have found is no longer quite the burden it once was. With the adults of so many syrphid species now characterised genetically, larvae can be identified by matching their genetics to the adult fly (Andrić et al, 2014; Gomez-Polo et al, 2014). Maybe that will encourage more larval hunting. No harm in hoping!

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Observations on *Caliprobola speciosa* (Rossi, 1790) in Transylvanian oak wood pastures

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Stubbs & Falk (*British Hoverflies*) state that *Caliprobola speciosa* is associated with ancient beech trees and, more rarely, oak, and that the larvae occur in rotting heartwood and can occur deep down into decaying roots. It is only known for sure in Britain from Windsor Forest and the New Forest. In contrast Speight (*Species Accounts of European Syrphidae (Diptera)*, available through Syrph-the-Net) states its associations with *Castanea*, *Fagus* and *Quercus*, and expresses no comments about any known preferences. He says that males fly around, hover between and settle close to the roots of the trees, settling on bare ground, on the sawdust of cut stumps, or on vegetation in the vicinity. Larvae have been reared from both *Fagus* and *Quercus*.

A study tour to the ancient oak wood pastures of Transylvania (Romania) in spring 2015 provided an opportunity to observe this elusive species. Many of the villages in the Sigisoara region of southern Transylvania have notably large expanses of long-established common wood pastures on the hillsides between the cultivated fields which surround the settlements and the managed forest on the higher ground above. Five of the best known examples were visited over a few days and *Caliprobola speciosa* was seen at

three, suggesting that it may be relatively widespread in the area. Large open-grown veteran oaks are the dominant presence of these wood pastures.

A few *Caliprobola speciosa* were seen at the second site visited on day 1 (18 May) at Viscri, flying rapidly around the sunny bases of veteran oaks, and occasionally landing on the trunk base or ground close by, in full sunshine. *Brachypalpus laphriformis* was also seen here. The next day, at Vanatori, there were more *Caliprobola speciosa*, another *Brachypalpus laphriformis* and a *Ferdinandea cuprea*. On the third day at Mercheasa we were treated to a particularly spectacular display of *Caliprobola speciosa*, with the hoverflies present around many of the veteran oaks in ones, twos or threes, and almost invariably alighting around us in the warm sunshine while we were examining the oak trees. One hoverfly was observed alighting on exposed wood in a damaged area at the base of an oak, on the inside of a root buttress, and its abdominal movements suggested that it was probing into the white-rotten sapwood with its ovipositor, perhaps egg-laying. The sapwood was dry and friable at the surface but sound wood – perhaps moister - could be felt below. No bracket fungi were fruiting on this tree and the exterior white-rot seen had presumably been rotted by a sapwood fungus rather than a heartwood fungus.

A wide range of bracket fungi were observed across these wood pastures including species which form white-rotten heartwood on old oaks, eg *Phellinus robustus*, *Ganoderma resinaceum* and an *Aurantioporus* sp, but no observations were made on sapwood fungi. The more typical butt-rot fungus in Britain, *Inonotus dryadeus*, was not noted – this species decays the basal dead heartwood of living veteran oaks, forming a hollow dome in the base of trees, visible between the living buttress roots. This may be a key fungus for *Caliprobola speciosa* in oak sites. *Phellinus robustus* tends to be active higher up the trunk while *Ganoderma resinaceum* breaks down the dead heartwood throughout the living tree trunk.

Caliprobola speciosa male (photo: David Iliff)