Hoverfly Newsletter

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Copy for **Hoverfly Newsletter No. 72** (which is expected to be issued with the Autumn 2022 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 20th June 2022. Given the size limitations it may be worthwhile to send your articles in good time to ensure that they are circulated with the bulletin, in which newsletters are restricted to a maximum of eight pages.

The hoverfly illustrated at the top right of this page is a female *Sericomyia lappona*

HOVERFLY RECORDING SCHEME UPDATE: Spring 2022

Stuart Ball, Roger Morris, Joan Childs, Ellie Rotheray and Geoff Wilkinson

2021 was a strange year! A cold wet spell in April and May meant that there were far fewer records for this important time of year than in previous years. The effects of this cold snap can be seen very clearly in the volumes of data extracted from the UK Hoverflies Facebook group and also in the levels of activity by the group (Figure 1).

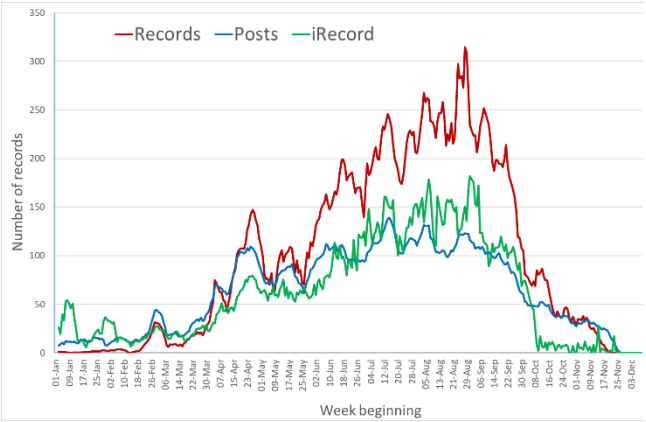

Figure 1. Seven day running average of records extracted from the UK Hoverflies Facebook page in 2021 (Red), the numbers of posts on the page (blue) and the numbers of records verified on iRecord (green). A dramatic dip can be seen between the last week in April and the first week of June.

We may never properly know what impact this inclement weather had on hoverfly populations and the prospects for 2022. Relating experience in subsequent years to a specific event is almost impossible because each new year brings its own weather variables that may have a bearing on the year in question.

Unlike recent years, July and August did not suffer from extreme heatwaves and drought, so with any luck populations will have had a chance to recover a little bit from the ravages of past heatwaves.

At the time of writing, only part of 2021 data had been uploaded to the scheme database but, even so, the numbers of records look to be promising with just under 50,000 records imported up until early November 2021 (Figure 2). What is also very noticeable from the graph is that in 2020 the numbers of records received exceeded 100,000 for the first time!

It is fascinating to see how much coverage has already been achieved in 2021 (Figure 3) but the map also illustrates some of the problems we have in trying to ensure coverage of less populated areas. As always, mid-Wales, the southern uplands of Scotland and the Highlands are very deficient. So, if you are planning your holidays there are some obvious areas that would benefit from a bit of recording!

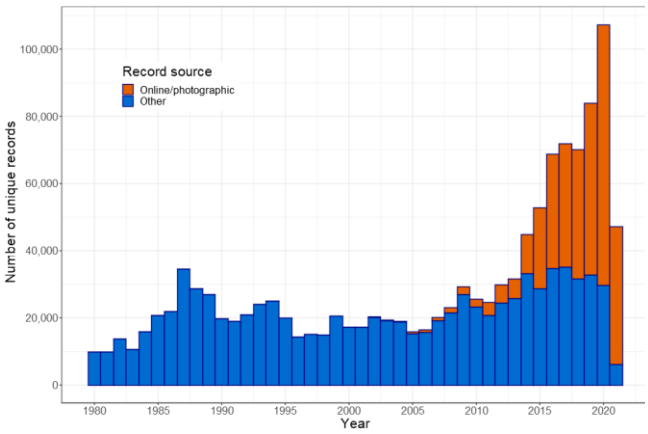

Figure 2. Numbers of unique records on the HRS dataset at the start of November 2021. The orange bars represent records based primarily on photography.

Figure 3. Coverage by records received to November 2021 for the year 2021.

The change in the level of hoverfly recording over the past ten years has been dramatic and has been accompanied by a very encouraging deepening of the capacity to engage with new recorders. We have a fantastic team who provide identification advice and extract records: thanks are especially due to Mick Chatman, Linda Fenwick, Adam Kelsey, David Rayner, Sue Kitt, Katie Stanney and Chris Sellen.

Recent developments

During the summer Roger raised the question of whether it might be possible to develop an online tool to capture 'negative records' i.e. those times when one goes out and find no hoverflies. Part of the rationale for this initiative was that we need to try to get a better handle on what happens during heatwaves, and recording negative returns may help to show what is going on under such circumstances. In addition, it should be possible to look in greater depth at the hourly fluctuations in hoverfly activity using a larger pool of recorders.

Andy Murdock and his colleague Ioannis Sofos responded to the challenge and offered to develop such a tool. Their company, Maploom, specialises in landscape assessment and has a lot of experience creating interactive applications for a wide variety of clients. Andy is also a very keen hoverfly recorder so is ideally placed to understand what will appeal to users of their product. At the time of writing the package is still under development, but it is being designed not only as a data capture tool but also as a way of providing immediate feedback to users. It will also help to simplify data management from the facebook group but is not intended as a replacement for other systems that recorders use (e.g., iRecord). We are hugely indebted to Andy and Ioannis. Do check out the Facebook page for updates and links.

A sad story of decline

The issue of catastrophic insect decline has become increasingly apparent in the high impact literature, with a steady stream of new papers emerging. For hoverflies, Stuart maintains a watch over trends and produces relevant graphs on an intermittent basis. The latest ones, generated in November 2021 paint quite a depressing story with more than 50% of our fauna in significant decline (Figure 4).

As yet, we have no explanation either for the rate of decline or the apparent quickening of the pace of decline. Until recently, most informed observers have placed the blame largely upon habitat loss and pesticides, but we are seeing substantial losses from the southern forest belt, which is largely buffered from both habitat loss and pesticides. So, can these really be the main factors? When you bear in mind that in recent years HRS updates have continually

reported events in which hoverfly recording was seriously disrupted by either heatwaves or cold snaps, some serious thought needs to be given to the possibility that an increasingly extreme climate is having an impact.

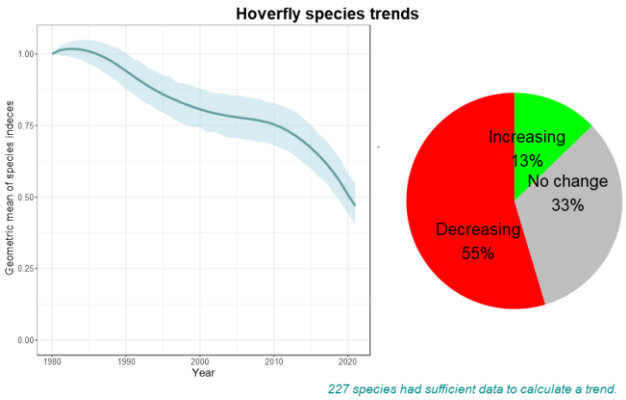

Figure 4. Trends for Britain's hoverflies: left – the overall trend with 95% confidence limits and, right, overall changes – green (increasing) 13%; grey (no change (33%) and red (decreasing) 55% (all numbers rounded up – hence 101%!).

Making sense of what is happening is hugely dependent upon good data, and there are very limited levels of monitoring other than compilation of opportunistic data by schemes such as the HRS. So the challenge we face is how to generate data that will take us closer to understanding what is happening. All records count, and, if you feel so inclined, do please make sure you record as often as possible from your local 'patch' or from your garden. Hopefully, the new data management system Andy and Ioannis are developing will make it more rewarding for people to conduct regular garden walks or walks around their 'patch'.

Unusual records in 2021

Although 2021 will not go down as a 'vintage' year, there have been a number of highlights, including the first British Record of *Chalcosyrphus piger* at West Stow Country Park (Suffolk) by Alan Thornhill (paper in press in Dipterists Digest at the time of writing). This species is associated with decaying conifer sap and might well turn up elsewhere in East Anglian conifer plantations. Keep your eyes peeled for a somewhat squatter version of *Brachypalpoides lentus* in which all tergites apart from T1 are red and the hind femora are somewhat shorter and fatter.

Other highlights include a new location for *Callicera spinolae* found by Vic Brown at ivy in Gamlingay; several records for *Callicera aurata* and a further record of *Doros profuges* from Martin Down by Sharon Towning. Possibly the most exciting one, however, was that of *Chrysotoxum vernale* from Hartland Moor by Damian Money. Records of *C. vernale* are exceptional and this one, together with the others reported here goes to show the value of a small army of photographic recorders.

iRecord & iNaturalist

Data from iRecord up until February 2021 have been uploaded to the HRS dataset. All records for the summer 2021 have been verified and will have been uploaded to the HRS dataset by the time this newsletter lands on people's doormats. In addition, BRC has resumed downloads from iNaturalist to iRecord. This process meant that some 15,500 records were streamed into iRecord over late September and the end of October. They have all been verified and will also be uploaded to the HRS.

Initial perusal of the records from iNaturalist suggest that they are largely occasional records rather than attempts to compile detailed local lists. As such, they are far more dominated by a few very widespread and abundant species: *Episyrphus balteatus* figures strongly, as do bigger Eristalines and *Volucella* species. Overall, species diversity is far lower. Coupled with this lower species diversity, the numbers of misidentifications are considerably lower than data in iRecord (~2% as opposed to ~6.5%) but there are far more cases where at least two species figure in the post. It is very unclear, therefore, whether the peer-review process of iNaturalist is terribly effective.

When verification of iRecord first started, it was found that around 10% of submissions with photographs were either over-ambitiously identified or misidentified. This rate has declined markedly in the following years. The main reason for this decline seems to be that a high proportion of submissions now come from people who post on the UK Hoverflies Facebook page before submitting to iRecord. The vast majority of problems now arise from recorders who don't use the Facebook group (in a few cases the misidentification rate approaches 30-40%).

Analysis of common misidentifications within iRecord was produced some while ago [Morris, R.K.A., 2019. Understanding common misidentifications of British hoverflies (Diptera, Syrphidae). *British Journal of Entomology & Natural History*, **32**: 351-363]. An update is probably needed, as these sorts of analyses may help to explain oddities in the HRS dataset from previous decades.

Hoverfly conference 2022

It had been intended to run the 11th International Conference on the Syrphidae in 2021 but Covid put paid to those plans. The conference will now take place at Barcelonette (Alpes de Haute Provence,

France) from Monday 6th to Saturday *11*th September 2022. Stuart and Roger have been asked to present (try stopping them) and they hope to provide a great stimulus to delegates. These conferences are a fantastic gathering of people interested in hoverflies and may well appeal to readers of this newsletter. Don't be overawed; everyone is very friendly. It would be great to see a substantial British contingent. (Editor's note: fuller details of the symposium appear in the bulletin).

An encounter with *Sericomyia superbiens*

Martin Matthews

On 4 August 2021 I enjoyed a warm, sunny day visiting Ysgyryd Fawr (aka The Skirrid) a small but shapely mountain (summit: 486m) located about 2 miles north-east of Y Fenni/Abergavenny in Gwent. In spite of its modest dimensions, the mountain is a conspicuous landscape feature which forms a narrow, mile long ridge rising clear of its surroundings along a north-south axis. Woodland extends from the southern tip of the ridge around the lower slopes of its western side, but from the east it appears quite bald and most of the ridge is exposed to the elements with a low-growing, dry upland vegetation of grass, ferns, bilberry etc. A path from the south follows the top of the ridge up to the highest point which is close to the northern end of the mountain.

It was while descending the path I became aware that I was being 'buzzed' by a flying insect of some kind. Initially it seemed to be just behind me at about head height and, of course, I immediately suspected the usual pain-inflicting culprit, *Haematapota pluvialis*, so I prepared to deter it in any way I could. The creature then flew across in front of me and I had a baffling glimpse of something unexpectedly orange and alarmingly bulkier than I was expecting. The noise stopped suddenly and I realised that the fly had settled somewhere out of sight on my back. Instinctively, I swept an arm to dislodge it but, fortunately perhaps, it was not to be easily discouraged and it immediately settled again; this time it was in clear sight on my left arm. My mind, fuddled no doubt by the heat, was still thinking about horseflies and I failed completely to realise that I was looking at a hoverfly. Because I did not immediately recognise the species I needed either to photograph or capture the specimen. My camera was inside my back pack so I doubted whether I could retrieve it without risking departure of the fly, but I was able to reach into one of the side pockets with my free hand and pull out a specimen tube. The fly seemed content to rest on my arm and I had no difficulty capturing it for closer examination.

As I continued to walk, I puzzled over what sort of fly it might be. It soon occurred to me that it could be some sort of hoverfly, possibly a *Criorhina*, but I couldn't pin it down to any particular species. It wasn't until I got home and had a trawl through Stubbs and Falk that I realised it was a female of *Sericomyia superbiens*, a species which I have only seen occasionally in my home county of Gloucestershire and which I would not have expected to encounter at an open, hilltop site. As this hoverfly would usually be found in woodland clearings it may have strayed from suitable habitat on the lower slopes nearby, although I am not clear why it would have done so unless it was on a longer dispersal flight. Why it found my mobile form on the ridge so attractive is also a puzzle; was it the camouflage provided by my pale brown shirt, or the sweat I was producing in the heat of the day, or was I just a convenient perch in an otherwise poorly furnished environment?

Sericomyia superbiens (Photo: Martin Matthews)

Hunting for hoverfly larvae in winter leaf litter

Stephen Suttill

Last winter (2020/21) was my first venture into actively searching for hoverfly larvae at various sites within Greater Manchester. Prior to that I had found larvae opportunistically whilst looking for adults, and I had joined the UK Hoverflies Larval Group on Facebook in order to discover their identity. Posts by the group's helpful administrators, Geoff Wilkinson and Nicola Garnham, and other enthusiasts, regularly

provided an indication of when and where different species of larvae could be found.

Towards the end of October I started by examining the underside of sycamore leaves that were still on the tree and I soon found quite a few *Syrphus* larvae. By the beginning of December there were no leaves left on the sycamores, so I started to explore the leaf litter below. Most aphid predatory hoverflies remain dormant throughout the winter with most pupating the following spring or summer. I know that many folk will collect bags of leaves and take them home for careful examination on a white tray and under a strong light, but I have restricted myself to searching on site (I don't think the former approach would be welcomed in our household!). The process was very simple: pick a spot and turn over leaves making sure to unfurl any folds or curls.

I soon discovered that the best places to find larvae were in the deeper accumulations of leaf litter. In the slightly drier upper layers I would find many *Syrphus* (mostly, by now, in dormancy until adult emergence in the spring). In the deeper layers where the leaves were moister and more compacted I would find *Melanostoma* larvae. These are predators of cohabiting fly larvae, such as Lauxaniidae, Fanniidae and Lonchopteridae that feed on micro-organisms that thrive on moist, decaying leaves. On Boxing Day I found my first larvae of *Epistrophe grossulariae* in sycamore litter at what was my most productive site.

It was at this point that I discovered my first serious mistake. I was finding so many *Syrphus* larvae at one site that it was questioned whether I might be double-counting (or even treble-counting) the same larvae! I had thought this through beforehand and had taken all the leaves with larvae to one particular spot. I returned to that spot and sifted through the leaves to find that all the *E. grossulariae* were still there, but all the *Syrphus* had gone! *E. grossulariae* is known to enter a very deep dormancy which can sometimes last for several years whereas *Syrphus* remains more responsive to changes in temperature and moisture, and move around accordingly.

I widened my daily searches to other local areas with sycamore litter (I very rarely found hoverfly larvae on leaves of other trees) and, along with the usual suspects, found *Dasysyrphus albostriatus* and *Leucozona glaucia*. I also checked out the roots of older beech trees and found the long-tailed larvae of *Myathropa florea* in water-filled cavities with accumulations of leaf litter. Whilst searching through frozen and snow-covered leaves was uncomfortable it was still possible to find hoverfly larvae; though some were encrusted with frost!

Typical *Epistrophe grossulariae*, *Leucozona glaucia* and *Dasysyrphus albostriatus* can be readily identified in the field and from good photographs from the dorsal aspect. *Syrphus* and *Melanostoma* cannot be reliably identified to species and I took a few to rear to adulthood. Unfortunately all my *Syrphus* failed at the pupal stage. I do still have an *Epistrophe grossulariae* larva in diapause which might not develop further for another year or more.

I can heartily recommend searching leaf litter as a winter activity for hoverfly aficionados but, beware, it can be addictive and you'll find yourself looking for larvae even when the adults are in action.

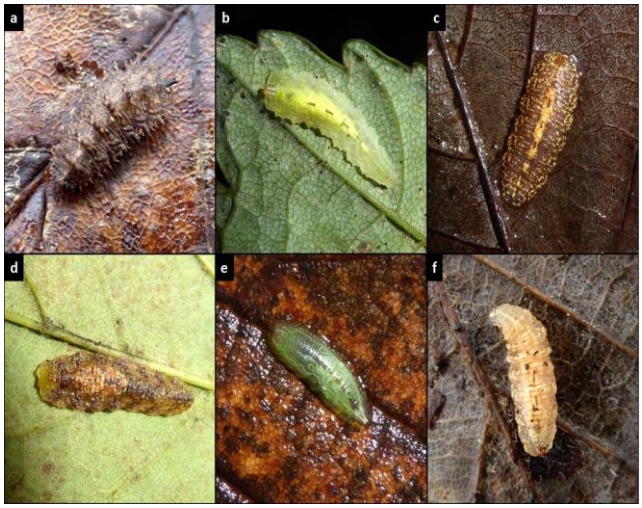

Figure 1. a) *Dasysyrphus albostriatus*; b, c) *Epistrophe grossulariae*; d) *Leucozona glaucia*; e) *Melanostoma sp*.; f) *Syrphus sp*.

Note: *Epistrophe grossulariae* are green coloured when actively feeding which is great camouflage on living sycamore leaves. When they have finished feeding their colour changes to autumnal hues better suited for hiding in leaf litter.

Hunting for hoverfly larvae before they hit the leaf litter

Geoff Wilkinson

There is a sweet spot between finding larvae on sycamore leaves and in the leaf litter. As the leaves fall

and autumn winds shake the trees, many larvae find themselves prematurely on the ground. Those that have finished feeding will remain there to enter dormancy for the winter but those that still hunger for aphids will climb up any nearby structure (if by fortune they haven't fallen on such a place). Fallen aphids appear to do likewise so any fence line, wall or gravestones beneath a line of sycamore or where sycamore leaves drift can be a happy hunting ground for Syrphines.

Local to me is a wooden post and rail fence about 345m in length that runs beneath a line of trees mostly composed of sycamore on the shores of the Montrose Basin in Angus. From 2nd November to present I recorded 3 – 85 *Syrphus* sp. and 1 – 8 *E. grossulariae* on twelve dates. Undoubtedly I recorded the same individuals on subsequent days but there was certainly considerable turnover among *E. grossulariae* (e.g. larvae of different sizes, difference in colour patterns and hues, position along fence, etc.). Over the last month – in addition to the almost usual *Syrphus* and *E. grossulariae* - I have also found *Dasysyrphus albostriatus* and *D. tricinctus* on grave stones and walls under sycamore. Fences and walls under solitary trees in urban settings can often yield some larvae. The trees can even be some distance away and fences with accumulations of windblown leaf litter at their bases are also worth checking. The species count may not seem especially impressive but the technique can be used whilst searching for adults and on those days when the weather is poor it is more productive than looking for adults!

Figure 2. a, b) *Syrphus* sp. on various structures c) *Epistrophe grossulariae* on fence post under sycamore

Hoverfly Lagoons 2021 – semi-aquatic hoverfly species

Ellen Rotheray

This year I asked our Hoverfly Lagoons volunteers to help me find an effective alternative lagoon container to our single-use plastic milk bottles. We use milk bottles because they are free and available to most people, they are safe and easy to use, and they are a standard size which is important for experimental replication. However, there is evidence that as the single-use plastic degrades it could leach chemicals into the environment, and over time the plastic will shatter. I asked volunteers to compare alternatives (see hoverflylagoons.co.uk/the-lagoon-container/) with single-use milk bottles in their gardens (see images in Figure 1).

Figure 1. Hoverfly Lagoon containers, including the original single-use plastic (far left), glass jar (centre) and durable plastic (far right). Other trialled containers included cartons, ceramic pots and steel saucepans.

We had 195 volunteers sign up to the project this year, however only 14% submitted data, which totalled 179 submissions over the seven months. Those that submitted data set up Lagoons using six different types of container; the most trialled containers were ceramic pots followed by glass jars.

All trialled lagoon containers were successful in attracting gravid female hoverflies, and providing enough resources for larvae to develop to the pupal stage. Glass jars had the greatest average number of larvae and subsequent pupae reported across all container types, followed by metal saucepans and then plastic milk bottles (see Figure 2) though it's worth noting that plastic milk bottle had almost the

same maximum larval number (260 larvae) compared to glass jar (261 larvae).

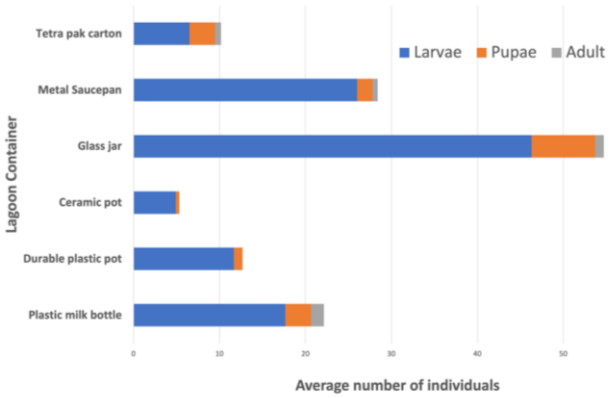

Figure 2. Stacked bar plot illustrating average number of larvae (blue bar), pupae (orange bar), and adult (grey bar) recorded from each type of container; carton, saucepan, glass jar, ceramic pot, durable plastic pot, and single-use plastic milk carton.

These containers were filled with grass only, grass + leaf litter, or leaf litter only, and a smaller number of lagoons were filled with nettles or sawdust. While grass + leaf litter, and grass only had comparable maximum numbers of larvae (260 and 261 respectively), the greatest number of larvae on average were recorded from grass + leaf litter and sawdust lagoons, followed by grass-only lagoons.

As in previous years, there was a recorded peak in larval abundance in lagoons in June and July, with a peak in pupal records in August (see Figure 3). Adult hoverfly species this year were identified as the Batman Hoverfly, *Myathropa florea*, and *Syritta pipiens* only. We expect that larvae in lagoons recorded in October will likely overwinter, begin feeding again in spring and pupate in March/April next year.

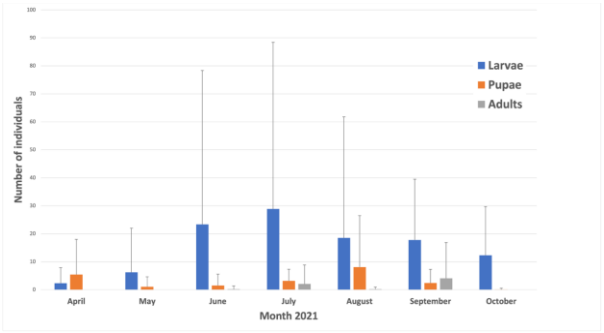

Figure 3. Bar plot illustrating average numbers of larvae, pupae and adults recorded over seven months, April until October 2021, with positive standard deviation error bars (to illustrate the range of the data).

Our results suggest glass jars are as effective as plastic milk bottles, but I look forward to digging a little deeper into these data, to determine what line of enquiry is next for the project.

A new species found in Hoverfly lagoons!

Now published in *Dipterist Digest*, we describe the pupal stage of *Rhingia rostrata* which was recorded from a densely-filled, cut-grass lagoon in June 2020 (see: hoverflylagoons.co.uk/rhingia-rostrata/). Adult oviposition preference and larval requirements for this species continues to be uncertain, and the pupal stage had never been described, so this was a very exciting find. What's more, adult *Rhingia* are known for their long mouthparts which enable them to feed from flowers with deep corollas such as red campion and ground ivy, whereas most hoverflies generally feed on open, more accessible flowers such as cherry, buttercups or umbellifers. This means hoverflies utilising lagoon habitat in gardens may also be contributing to the pollination of a larger range of wild flowering plants. Continued research into lagoon design to attract a greater number of hoverfly species is required, across a range of habitats including gardens; anyone keen to get involved in such an experiment please get in touch!

Rotheray E & Rotheray GE (2021) The puparium and development site of *Rhingia rostrata* (Linnaeus) and comparison with *R. campestris* Meigen (Diptera, Syrphidae) Dipterist Digest, 28:127-134, Dipterists Forum

Chysotoxum arcuatum in Gloucestershire

David Iliff

On 11 September 2021 the Gloucestershire Invertebrate Group (GIG) held a field meeting at The Park, Tidenham Chase ST5599, during which Tony Taylor, the county Hymenoptera recorder spotted what appeared at first to be a social wasp. When he approached it he realised it was a hoverfly, and caught it in a tube which he handed to me. It was a *Chrysotoxum* – one of the "difficult five" – and noticing its rotund appearance I was immediately confident that it was *Chrysotoxum arcuatum*, which was confirmed once I had examined its antennae. It was a female and I was able to place it on a leaf and photograph it.

Page 100 of **Britain's Hoverflies** features maps showing the distribution in Great Britain of *C. arcuatum* and *C. cautum* and graphically illustrates the geographical separation of the two species. Some doubt was expressed about the validity of this Tidenham record. However the species was first recorded in the county in 1993, also at a GIG meeting, when Keith Alexander and I found two examples (a male and a female) at nearby Poor's Allotment. Since that date there have been seven more county records, all from the Forest of Dean area.

Chrysotoxum cautum occurs throughout the county (including in my garden near Cheltenham in each of the last six summers). The map below shows that *Chysotoxum arcuatum* is confined within the county to the Forest of Dean area, which must represent the extreme south-eastern boundary of its range.

(Note: I record hoverflies throughout "Greater Gloucestershire", which I define as the whole of the present counties of Gloucestershire and South Gloucestershire plus the whole of VC33 (East Gloucestershire) and VC34 (West Gloucestershire)).

Chrysotoxum arcuatum female (Photo: David Iliff)

Chrysotoxum cautum female (Photo: David Iliff)

The county boundary and river data are OS OpenData https://osdatahub.os.uk/downloads/open) and the VC boundaries are from Biological Records Centre (https://github.com/BiologicalRecordsCentre/vice-counties).