Hoverfly Newsletter
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This issue of the newsletter is unusual as it is the first occasion to my knowledge when I have received no papers from readers for inclusion. The contents comprise a notice about the forthcoming Syrphid Symposium in Russia, the half-yearly recording scheme update and a series of exchanges between the editors of the newsletter and the forum bulletin and one of the recording scheme organisers about whether our hoverflies are under threat from competition or predation by the Harlequin Ladybird. I suspect the dearth of submissions is a result of the exceptionally poor recording year - indeed I could not come up with an article myself based on my 2012 experiences.

Copies of Hoverfly Newsletters issues 1 to 40 can be found on the Hoverfly Recording Scheme website. If anyone would like to receive copies of issues 41 onwards as pdf. documents, please email me and I can send them.

Articles and illustrations (including colour images) for the next newsletter are always welcome. Copy for **Hoverfly Newsletter No. 55** (which is expected to be issued with the Autumn 2013 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 2013. The hoverfly illustrated at the top right of this page is a male *Criorhina floccosa*.

Invitation to the 7th International Symposium on Syrphidae

(Below is the invitation received from the organizers of the 2013 Hoverfly Symposium)

Dear colleagues,

We would like to invite you to the 7th International Symposium on the Syrphidae, which will take place in the period 20th-23rd June 2013 in Novosibirsk (Siberia, Russia). Note that we have changed the date after some discussion with the syrphidological community. The Symposium will be held in the resort hotel "Sosnovka" located in a pine forest, 35 km. from the city of Novosibirsk.

According to our calculation and current prices, the Symposium fee should be **100€**, and this includes the programme and book of abstracts, coffee breaks and the welcome reception. The cost of accommodation and meals is not included in the registration fee.

The cost of accommodation (quoted in October 2012), checking in on 20th June, is:

Room category	**Number of people in room**	**Cost (per person per day)**
Single standard	1	€ 52.37 (without food) € 62.35 (with 3 meals a day)
Double standard	2	€ 39.90 (without food) € 53.62 (with 3 meals a day)
Double economy	2	€ 22.45 (without food) € 36.16 (with 3 meals a day)

After the lecture programme we are planning a trip to the Altai Mountains (Teletskoe Lake). The lake is located in a mountain valley at an altitude of 430 m and is the pearl of the Altai Mountains. The trip fee should be **90€**, including the cost of the bus, food and accommodation at a tourist camp.

The itinerary of the Symposium and trip to Altai are as follows:

Travel	**time schedule in June**
Wednesday or Thursday: arrival & travel to hotel	19-20
Thursday afternoon: registration	20
Thursday - Sunday : symposium	20-23
Sunday night: travel to Teletskoe Lake	23
Monday - Tuesday: collecting at Teletskoe Lake	24-25
For those not going to the High Altai	
Tuesday night: return back to Novosibirsk	25
Wednesday: flight to Moscow and home	26

The Organizing Committee

To all participants of the Symposium:

We need to know the exact date and time of your arrival in Novosibirsk, and the date and time of your departure from Novosibirsk.

In the attachment there are the full details of how to transfer funds to pay the registration fee and accommodation. The ZAO Raffeisenbank tells us that for some it may be easier to transfer via the intermediary with which they have an agreement (they are not the same bank).

Dear colleagues, if you decided to visit us, please pay and send abstracts of your talks as quickly as you can.

The abstracts should include the following information:

The title

Full name of the author(s)

Place of work

Postal address and e-mail.

(Contact details of organizing committee: phone: 7383-2170-633, e-mail: bark@eco.nsc.ru or mu4@eco.nsc.ru)

Francis Gilbert has passed on the following important warning:

> Anatolii Barkalov would like to advise anyone who would like to go to the Altai on the post-conference collecting trip that they must be vaccinated against tick-borne encephalitis. It is difficult to move around in the forests and marshes without ticks attaching themselves to the clothes, and regular stops to get rid of them are necessary. Even so, one risks being bitten, and the ticks can carry encephalitis.
>
> When I went to the Far East in the mid-1990s the vaccination required three injections, with a month in between each one. Thus vaccination needs to be organised well in advance. There are several types of encephalitis, and your doctor will be able to look up the one in Siberia against which you need vaccination.
>
> Please pass on this message to anyone you know who might not be on the mailing list and is thinking of going to the Symposium.

Hoverfly Recording Scheme Update: winter 2012-2013

Roger Morris
7 Vine Street, Stamford, Lincolnshire, PE9 1QE
Stuart Ball
255 Eastfield Road, Peterborough, PE1 4BH

What a strange year this has been, with some of the most extreme conditions in living memory. The drought in the early spring followed by torrential rain pretty well wiped out any hope that we would gain anything meaningful from the Big Hover Watch, and the data we have received is really too patchy to make anything of. It is a huge shame but perhaps we have learned something useful from the exercise.

Projects such as BHW are really a long-term exercise that have to grow before they start to generate meaningful data. Had we been going for ten years prior to 2012 we might have put it into context. As it is, we need to see whether we can do something better in 2013? Are volunteers willing to try again – if so can you let Roger know please?

Big Hover Watch

For those who contributed last year and want to have a go for a second year the details are as follows. New participants are welcome. too

The event will take place over two periods:

- Friday 10th May to Monday 20th May
- Thursday 20th June to Sunday 30th June

During these periods, participants are invited to visit a favoured site, one they want to visit regularly. During this visit they would spend a maximum of two hours between 10.00 and 13.00 recording hoverflies. The choice of weather and time is important – we know that in general hoverflies are most active in the morning – in May timing between 10.30 and 12.30 is probably about right but is weather-dependent. In late June they will fly earlier so a 10am start may be more appropriate. However, this is also potentially dependent on the latitude – flies may fly a bit later in more northerly locations so 11.00 to 13.00 may be more suitable.

This project is open to recorders of all abilities. We need to get a feel for the ability of the recorders in order to analyse the data. Our analysis of existing Recording Scheme data suggests that there are several major steps in recording confidence and this will inevitably have a bearing on how many species and the numbers of specimens recorded.

Where recorders have limited experience and want to collect specimens and send them to the HRS for identification we will be happy to take material specifically for this project – material should be forwarded to Roger Morris, 7 Vine Street, Stamford, Lincolnshire PE9 1QE. If participants are unhappy about collecting specimens for determination they are encouraged to get voucher photographs and to send them to Roger for an identification.

Watch out for additional details on the Hoverfly Recording Scheme Website www.hoverfly.co.uk and on Roger's Blog http://stamfordsyrpher.blogspot.co.uk/.

The other disappointment of the year was the lack of a **WILD*Guide***. Over the year we watched it develop and saw great promise, but it took far longer than we ever expected. The copy was finalised in early December and we raised a huge sigh of relief! Shortly after reviewing what we thought was the final form that went to the printers, Stuart spotted a major glitch. A panic-stricken e-mail to Rob Still, the designer, ensued. It was the better part of a day before Rob responded and said that he had spotted the problem and rectified it before the book went off to the Far East.

So, as this report was being compiled the book was being printed. By the time this newsletter arrives on your doormat it should be fast closing in on Felixstowe onboard a container. We are therefore pretty confident that it will be available by the end of March. Roger has a list of 120 people who took advantage of the pre-publication offer we gave. Bearing in mind that the RRP has risen from £17.95 to £24.95 that deal now looks pretty good.

We look forward to seeing the final product but with a little trepidation. Hopefully there are no absolute howlers! We think it looks fantastic and that it will definitely help with some more challenging aspects of Stubbs & Falk. However, those recorders who are committed to the family as a whole will still need Stubbs & Falk which, incidentally, has just been reprinted. Remember, DF members can get a £10 discount by purchasing direct from BENHS.

Records are gradually arriving and we have been greatly heartened to see records from several new faces who have attended our training courses. We think this initiative is starting to bear fruit and that the Recording Scheme will continue to generate important information despite the loss of several stalwarts in the last year. Losses included our predecessor Philip Entwistle, who retired as Recording Scheme Organiser in 1987. Philip moved to the north of Scotland where he continued to record hoverflies for a further 20 years. Eileen Thorpe, who died in February, was a passionate recorder of hoverflies in the Sorby area and a frequent participant at Dipterists Forum training events at Preston Montford. Sadly, age and infirmity meant that she ceased to record around 2000.

Both Philip and Eileen were major contributors to the scheme, contributing 2471 and 13,660 records respectively. To put their contributions into context, of the 2028 recorders on the database at the moment, only 75 have contributed 2000 or more records, and just 12 have contributed 10,000 or more! The loss of two of this cohort is a timely reminder that we need to stimulate new growth. However, the data tend to suggest that we are growing new recruits faster than any time since the period 1981 to 1985 as shown in the graph below:

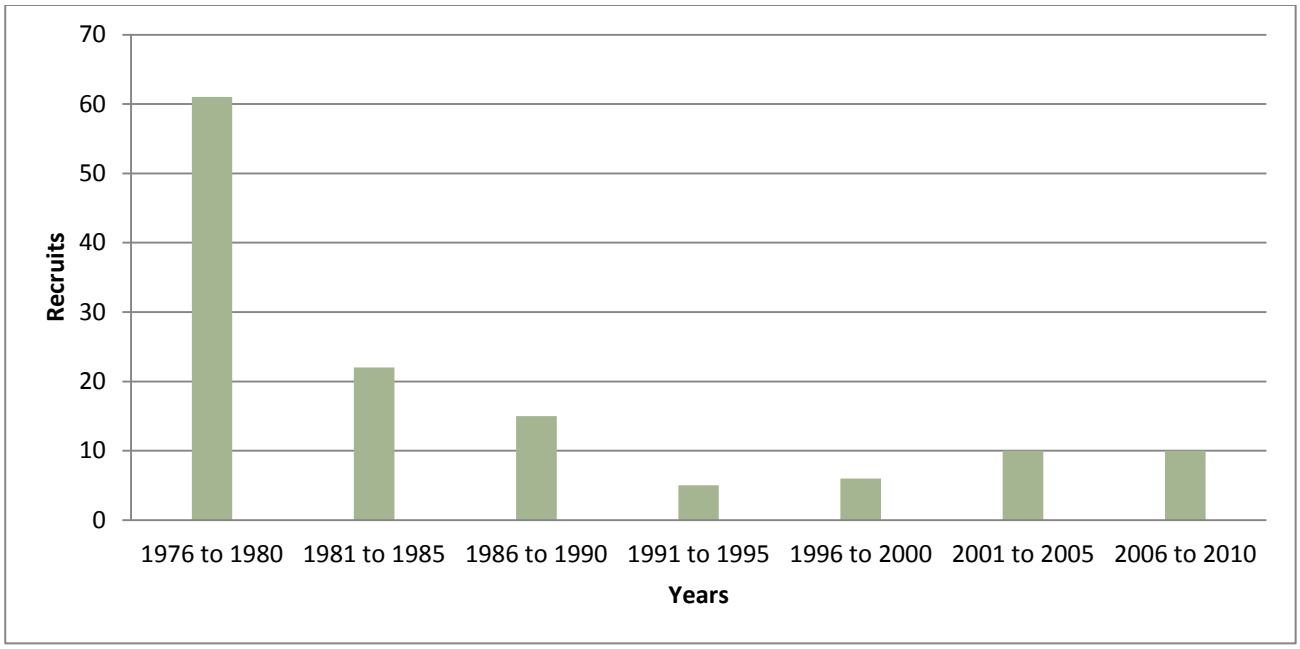

Figure 1. Numbers of recruits contributing 1,000 or more records to the scheme (total 129).

The remarkable aspect of these data is that contrary to what might be expected, recruitment of hoverfly recorders took place **before** the publication of Stubbs & Falk! The decline in recruitment clearly coincided with the scheme falling into inactivity and then concentration on data entry for the first atlas. It is encouraging to see a rise in really active contributors and hopefully this trend will continue with a combination of training events and the new **WILD*Guide***. This seems likely, as it can take several years for a recorder to contribute 1,000 or more records and the impact of our initiatives has therefore still to be felt.

This year Roger has been very active, extracting data from websites such as ISpot and Flickr. This has resulted in over 4,600 new records, of which just over 3,000 are from 2012. On the whole the data relate to common species but with a scattering of more interesting data. All records are useful and we are always pleased to find records from areas that are relatively poorly recorded.

***Volucella* – the march north continues!**

This December we received a photograph of *Volucella zonaria* from Lancaster forwarded by a friend of the photographer. This record (a female) represents a major jump in the distribution of this species and means that it has pretty well outpaced *Volucella inanis* on the west coast. However, we should not be too surprised by this record because the area around Lancaster/Grange-over-Sands is a hot spot for hoverflies (and other insects) that have a much more southerly distribution.

***Volucella zonaria (female*) (photo: David Iliff)**

Are British hoverflies suffering competition from the Harlequin Ladybird (part 1)

Darwyn Sumner
122, Link Road, Anstey, Charnwood, Leicestershire, LE7 7BX
David Iliff
Green Willows, Station Road, Woodmancote, Cheltenham, Gloucestershire, GL52 9HN

In November 2012, Darwyn Sumner contacted me (David Iliff) and the Forum's committee after having seen a presentation by Helen Roy of BRC on the rapid decline in native ladybird species resulting from competition for food and larval predation by the invasive alien Harlequin Ladybird (*Harmonia axyridis*). Darwyn expressed a concern that aphidophagous hoverflies might be similarly affected and wondered whether any research had been done on this question, suggesting that the matter could be raised in the Hoverfly Newsletter.

I have an interest in ladybirds and hoverflies (I am the Gloucestershire recorder for both these insect families and no others) and was well aware of the potential threat that the advent of the Harlequin posed not only to aphidophagous native ladybirds and other aphidophagous insects through competition but also, though predation, to non-aphidophagous insects that have soft-bodied larvae, and while I had not carried out any statistical analysis my recording had suggested that some aphidopagous ladybird species appeared to be withstanding the competition while some non-aphidophagous species had apparently become scarce. Helen Roy's 2012 paper explains these phenomena. I had also noted an apparent decline in hoverfly numbers in recent years, but his did not appear to be confined to the aphidophagous subfamily (Syrphinae).

Stuart Ball responded rapidly to Darwyn's question and his resultant research paper follows below.

Reference: Roy, Helen. E *at* al (2012) Invasive alien predator causes rapid declines of native European ladybirds . *Diversity and Distributions, 1–9, ª 2012 Blackwell Publishing Ltd*

Are British hoverflies suffering competition from the Harlequin Ladybird? (part 2)

Stuart Ball
255 Eastfield Road, Peterborough, PE1 4BH

Hoverfly Recording Scheme trends

Data was extracted from the HRS database consisting of unique combinations of 10km square, species and time period:

HP50,Cheilosia_illustrata,2009

HP50,Eristalis_arbustorum,1994

HP50,Eristalis_arbustorum,2009

HP50,Eristalis_intricarius,1994

HP50,Eristalis_intricarius,2009

Publicly downloadable hoverfly records from the NBN Gateway were also extracted and similar 10km,species, time period combinations extracted.

The final dataset consisted of the unique cases from the union of these two lumps of data – 274,247 rows.

Species

Where species have been split recently, they were aggregated. For example, if you analyse Cheilosia albitarsis and C. ranunculi separately, C. albitarsis appears to decline whilst C. ranunculi shows a rapid increase. This is an artefact of the relatively recent species split which can be avoided by amalgamating the records of the two species under "Cheilosia_albitarsis_agg".

Periods

The amount of data received each year by the HRS has varied considerably since it was initiated in 1976. In general, there was much less data received in the earlier years, it peaked in the late 1980s and there was a dip following the publication of the first atlas in 2000. Consequently, variable length periods have been chosen so that the number of records received in each period is roughly equal.

Frescalo

Mark Hill's Frescalo method (Hill, 2012) was used to correct for recording effort. The basic idea is that recording effort can be estimated by looking at the proportion of the commonest species that have been recorded in the "neighbourhood" of any given location. The more recording that has gone on, the higher the proportion of the locally commonest species should have been discovered. Frequencies are rescaled to standardise this proportion of common species. Frescalo calculates a "TFactor" for each species and time period.

Local neighbourhoods are defined as a set of 10km squares which are both physically close to the target square and also similar in their environmental characteristics (defined as similarity in land cover, climate, soil and topography).

Example

Figure 1 shows the calculated TFactor for *Chrysotoxum cautum* plotted against the mid-year of the time periods. The error bars show the standard deviation of the TFactor calculated by Frescalo.

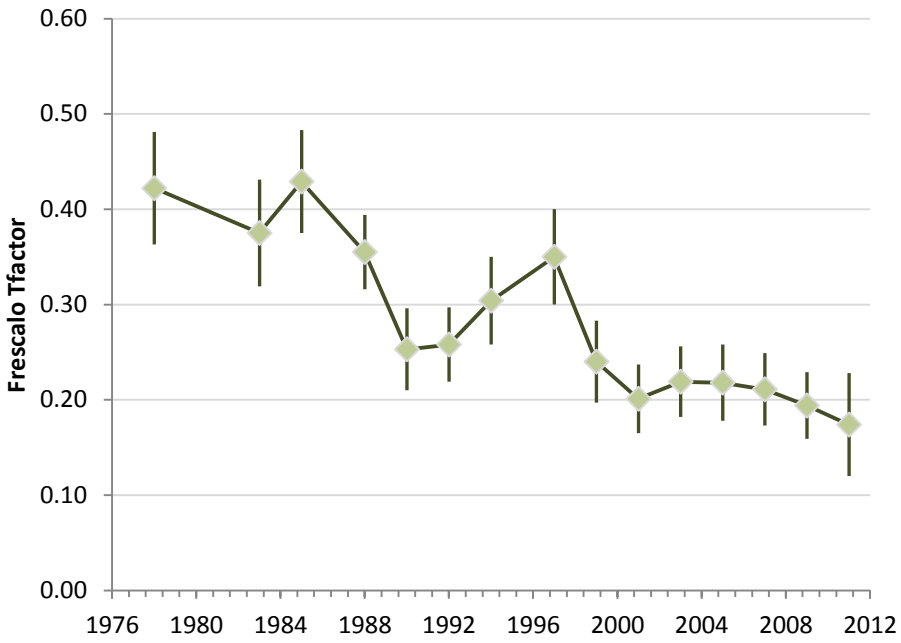

Figure 1: Frescalo analysis of Chrysotoxum cautum

Schemes such as the Breeding Bird Survey or the Butterfly Monitoring Scheme, present this sort of data as a relative index. A smoothed curve is fitted through the points and the interpolated values for each year are then divided by the value at an arbitrary "start year" to give a proportion (which is obviously 100% at the chosen start year). So we can fit a smoothing spline (df=5) through these points and divide through by the value for 1990. Figure 2 shows this applied to the same data. The y-axis is now a proportion (%) relative to the value estimated for 1990.

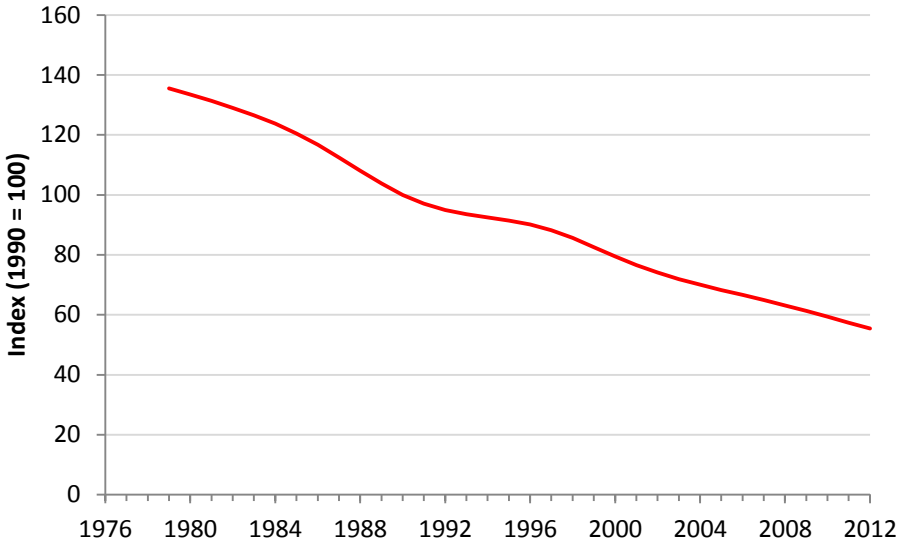

Figure 2: Same results converted to an index value by fitting a smoothing spline and dividing through by the 1990 value (x 100%).

Once we have the values in this format, they are on the same vertical scale and can be combined for groups of species by taking the geometric mean of the index values (remember these are now proportions, so geometric mean, rather than the more familiar arithmetic average is appropriate).

Figure 3 shows the geometric mean of the indexes for 243 species of hoverfly for which a trend could be calculated. 95% confidence intervals have been estimated by "bootstrapping" (taking repeated random samples from the data to investigate the variation in the results). In general, the first and last year or two in the sequence are not well estimated, and this is reflected in the widening of the confidence intervals towardsthe start and end of the line.

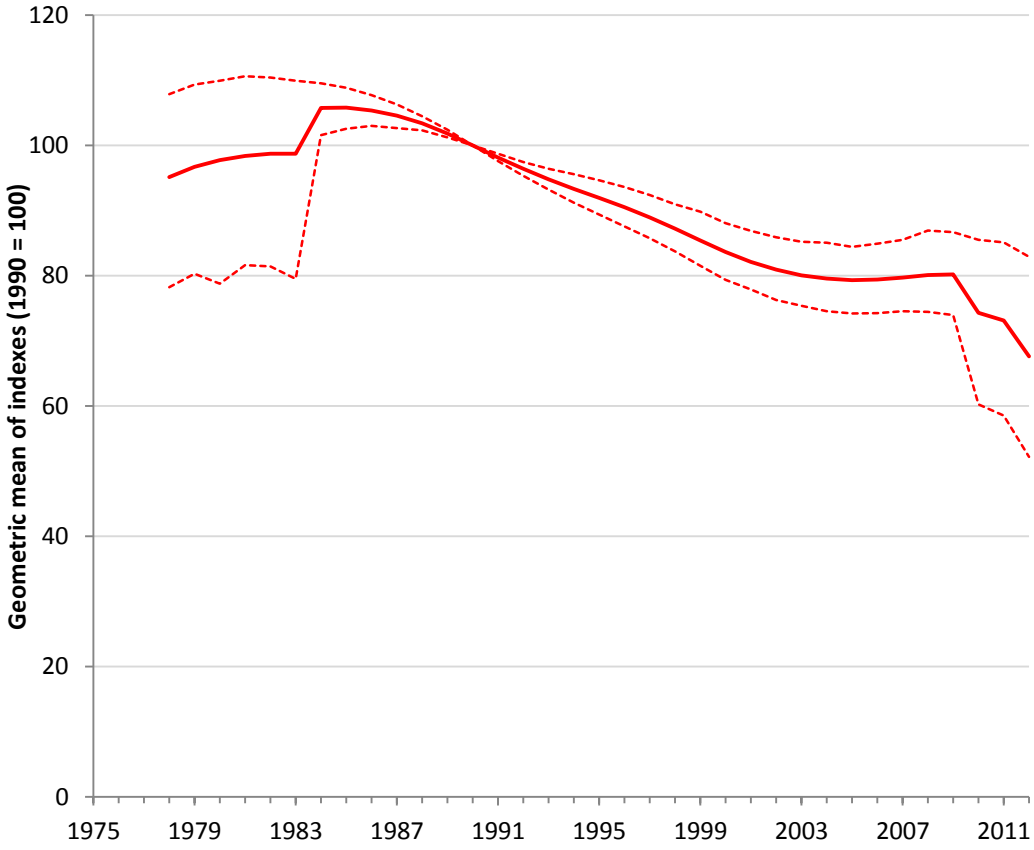

Figure 3: Geometric mean of the indexes for 243 hoverfly species for which an index could be calculated (with 95% confidence interval).

Figure 3 suggests that there has been an overall decline in the frequency with which hoverflies have been recorded since the 1990s and that this trend has accelerated recently. The last few pomits shuld be treated with caution – as the widening of the confidence intervals shows.

Aphidophages

I used the Syrph theNet database (Speight et al., 2010) to classify the species by the feeding habits of their larvae. The StN "Species traits" includes a classification of larvae into three feeding types:

Micro-organisms

Living animals

Living plants

There is a further classification by the commensalism of the larvae.

Traits are scored 1-3 with 3 being the most strongly associated.

I extracted species that were classified with larval feeding type: living animals (3), but not classified as commensals (this excludes *Volucella* in wasp nests, and-associates etc. – these did not seem relevant to Harlequin ladybird). I also extracted another set of species that were classified with the other two larval feeding types as "non aphidophagous".

The number of species in these two sets of "animal feeding larvae" and "non-animal feeding larvae" was actually very similar (122 and 121 respectively).

It is possible to calculate geometric means for species in these two sets separately. Figure 4 compares the two groups.

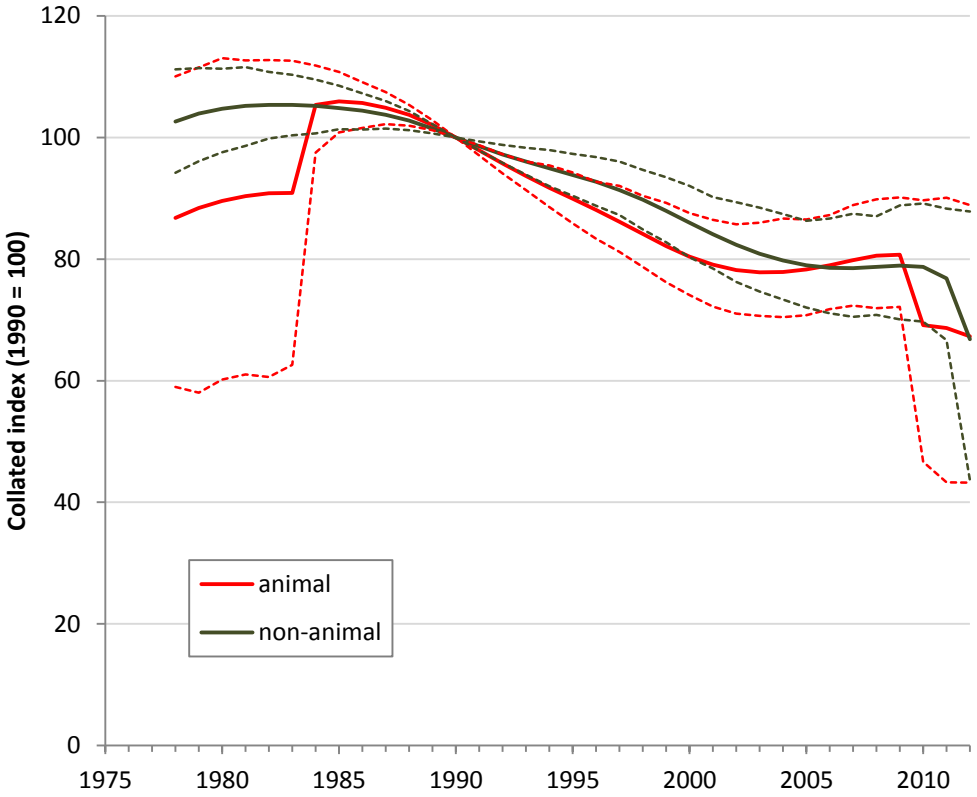

Figure 4: Comparison of geometrical means of indexes for species whose larvae feed on animals compared with those that don't.

The two lines are not very different and their 95% confidence intervals overlap. So there is no evidence that aphidophagous species have fared any worse than species with other larval feeding habits. If they had, we would expect the two lines to diverge.

Harlequin ladybird

It is possible to get a trend for the Harlequin ladybird by the same method. Publicly available data for Coccinellidae was downloaded from the NBN Gateway and subject to Frescalo analysis in the same way. Figure 5 shows the results and illustrates the meteoric rise of this species!

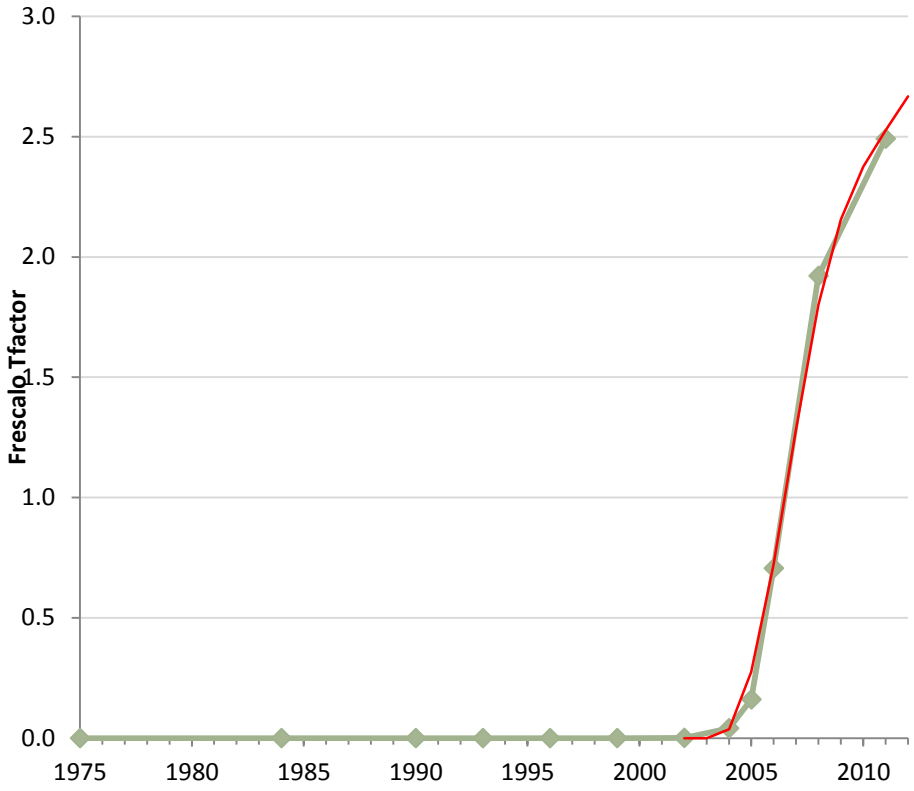

Figure 5: Frescalo analysis showing increase in frequency of Harlequin Ladybird (relative to all Coccinellid records from NBN Gateway). The red line shows a fitted smoothing spline.

If the rise in the frequency of Harlequin Ladybirds had had a significant impact on the frequency of aphidophagous hoverflies, I would expect to see a bigger fall in the frequency of these species, compared to non-aphidopahges, which showed some correlation with the rise in frequency of the ladybird,

We can investigate this by looking at the difference between the mean index for the animal feeding larvae group of hoverflies and the non-animal feeding larvae group.

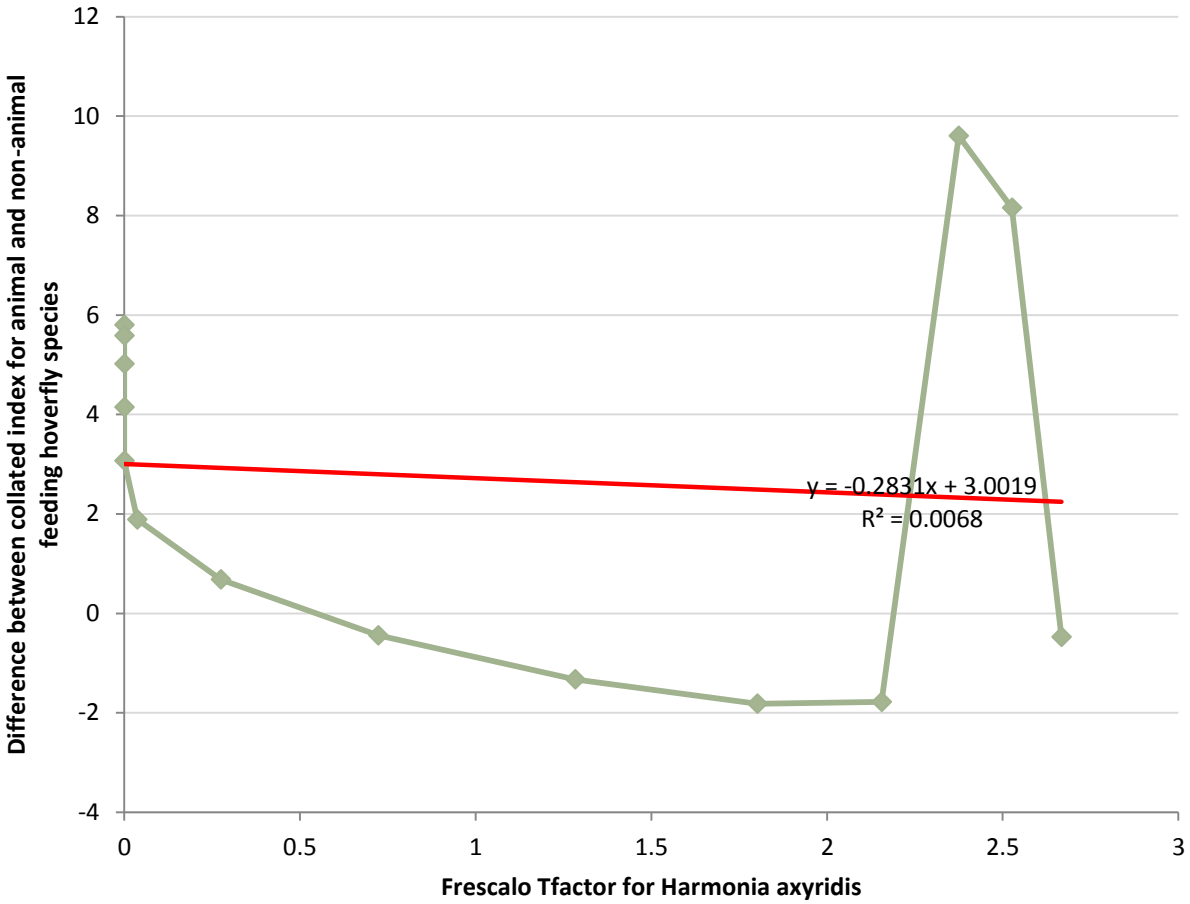

Figure 6 shows the frequency of Harlequin Ladybird (Frescal TFactor) plotted against the difference in geometrical mean indexes of the group of (122) hoverflies with animal-feeding larvae and the group (121 species) with non-animal feeding larvae. The y-axis is constructed so that, if the animal-feeding group showed a greater decline, this would appear as a positive y-axis value. Therefore, the hypothesis that Harlequin Ladybird has put additional pressure on aphidophagous hoverflies would suggest a positive relationship on this graph. In fact, there is no relationship (the trend line is actually slightly downwards, but its slope is not significantly different from zero) .

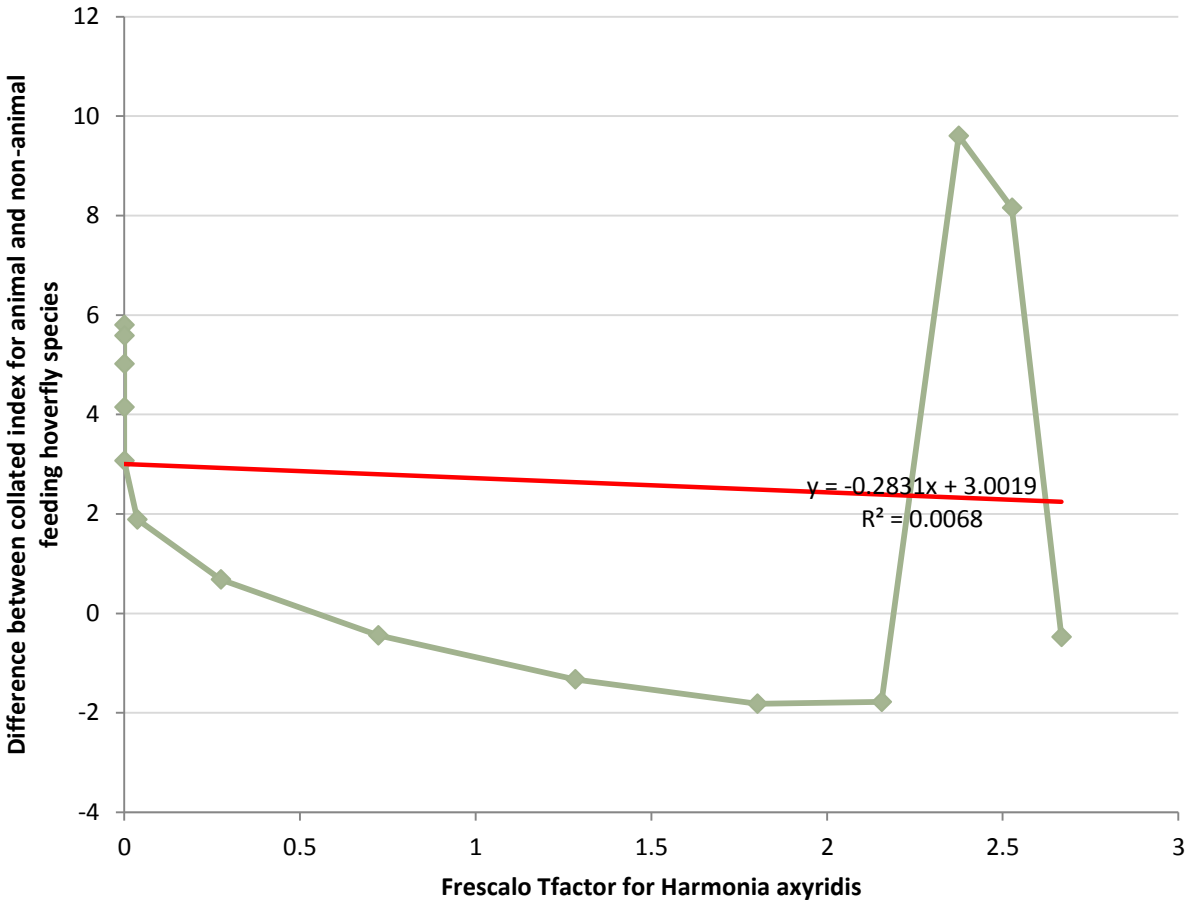

Figure 6: Frequency (Frescalo TFactor) of Harlequin Ladybird plotted against the difference in geometrical mean indexes of the group of (122) hoverflies with animal-feeding larvae and the group (121 species) with non-animal feeding larvae.

Conclusions

There does seem to be an overall downward trend in the frequency with which hoverflies are recorded. This is in line with (the rather few) other long term observations suggesting a general decline in insects in the countryside (e.g. Rothamsted moth traps – show long term decline in both diversity and number of individuals caught).

There is no evidence that species with animal feeding larvae have fared any worse (or better) that species with non-animal feeding larvae.

There is no sign of a relationship between the increasing frequency of Harlequin Ladybird and the difference in index values between hoverflies with animal and non-animal feeding larvae.

References

Hill, M.O. 2012. Local frequency as a key to interpreting species occurrence data when recording effort is not known. Methods in Ecology and Evolution 3, 195-205.

Speight, M.C.D., Monteil, C., Castella, E. & Sarthou, J.-P.(2010. StN 2010. In: Speight, M.C.D., Castella, E., Sarthou, J.-P. & Monteil, C. (eds). Syrph the Net on CD, Issue 7. The database of European Syrphidae. ISSN 1649-1917. Syrph the Net Publications, Dublin.