

Soldierflies and Bee-flies (and allies) are amazing

Bedfordshire Natural History Society
5 November 2016

Martin C. Harvey

Twitter:

@kitenet

@SoldierfliesRS

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The Soldierflies and Allies Recording Scheme collates biological records for 11 related Diptera families.
Top row (left to right): Soldierflies (Stratiomyidae); Horseflies (Tabanidae); Robberflies (Asilidae)
Middle row: Snipeflies (Rhagionidae); Stiletto-flies (Therevidae); Bee-flies (Bombyliidae); Water-snipeflies (Athericidae)
Bottom row: Hunchback-flies (Acroceridae); Awl-flies (Xylophagidae); Windowflies (Scenopinidae); Wood-soldierflies (Xylomyidae)



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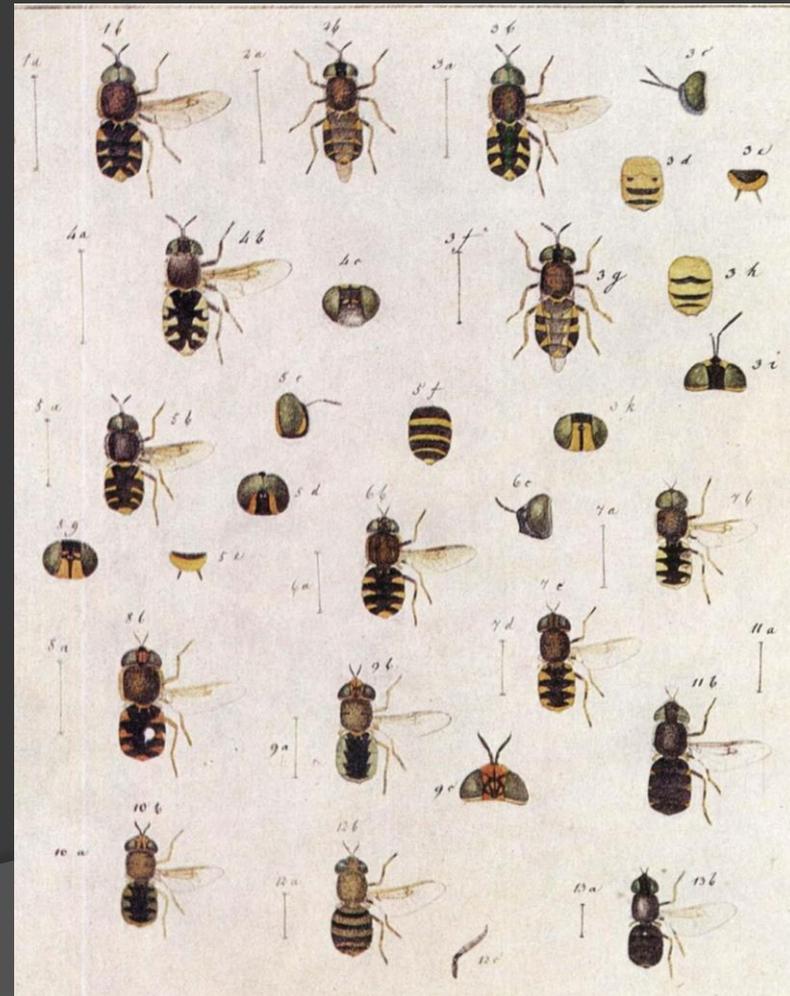
© Steven Falk

The group: 158 species (+/-)

- Soldierflies, Stratiomyidae: 48 species
- Horseflies, Tabanidae: 30
- Robberflies, Asilidae: 28
- Snipeflies, Rhagionidae: 15
- Stiletto-flies, Therevidae: 14
- Bee-flies, Bombyliidae: 10

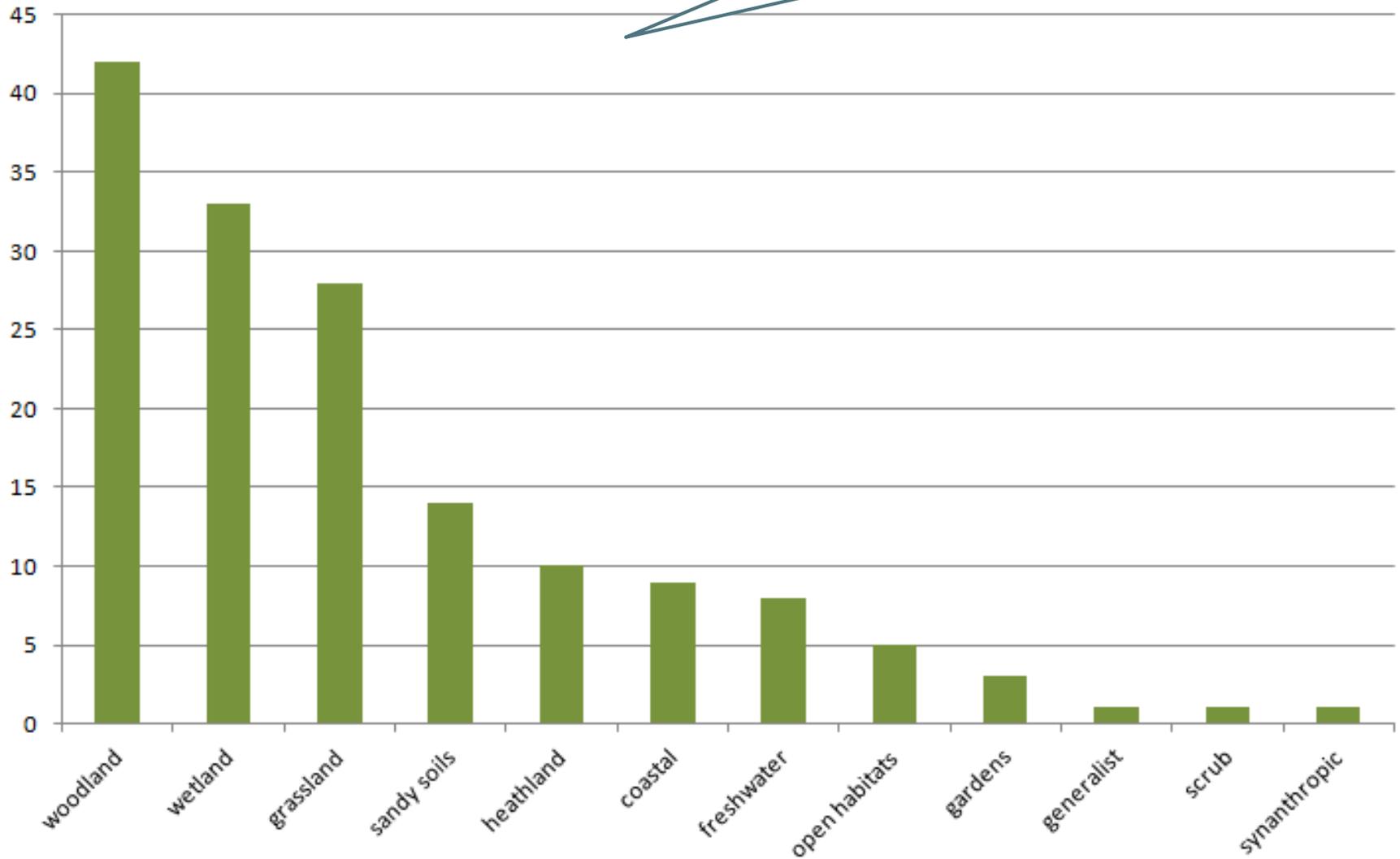
- Hunchback-flies, Acroceridae: 3
- Water-snipeflies, Athericidae: 3
- Awl-flies, Xylophagidae: 3
- Windowflies, Scenopinidae: 2
- Wood-soldierflies, Xylomyidae: 2

Excluding extinct and unconfirmed species, there are 158 species of soldierflies and allies on the current British list.



Habitats

There are a few species that are widespread and can be found in a range of habitats, but most are more specialist – you need to visit lots of sites and habitats to see a large proportion of the group.



Bee-flies (Bombyliidae)

- Larvae are parasitoids of various other insects, including bees
- Some very recognisable species, others more tricky

Dark-edged Bee-fly, *Bombylius major*

The Dark-edged Bee-fly is probably the most well-known species in the soldierflies group, and is a familiar visitor to gardens in spring.



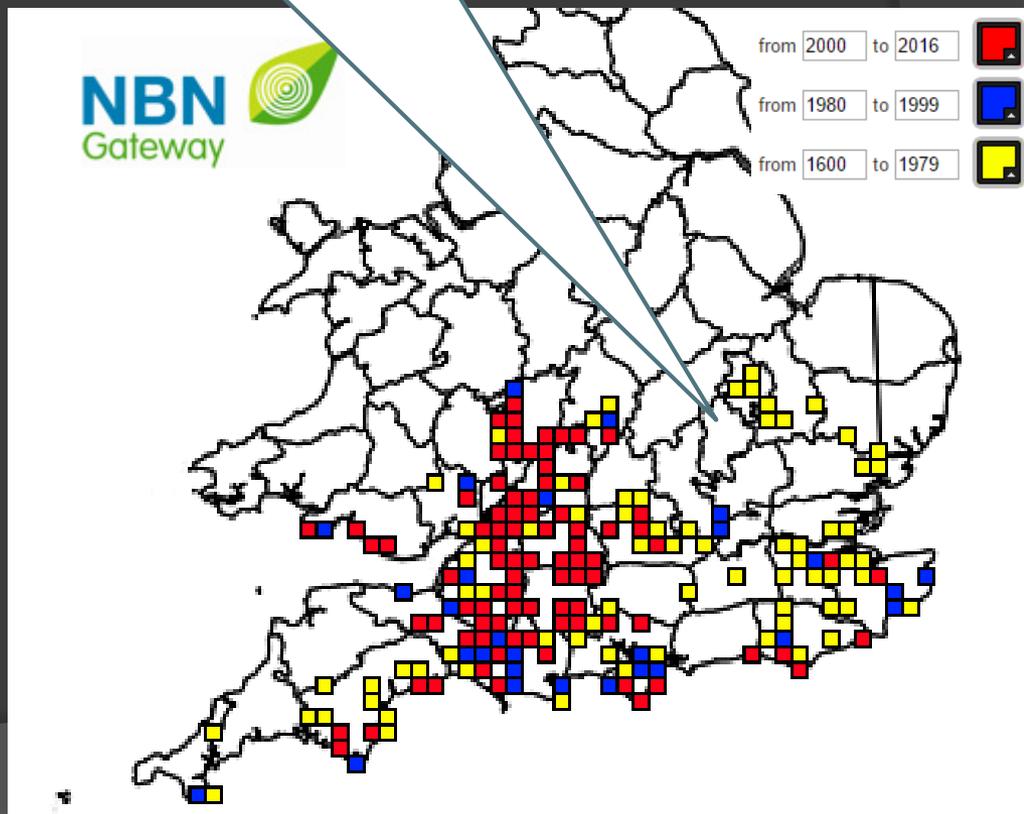
Dotted Bee-fly, *Bombylius discolor*

It's rarer relative, the Dotted Bee-fly, looks similar when flying, but at rest the wing markings are clearly different. It was known from Cambs and Huntingdonshire up to the 1960s, and is currently increasing its range in the south and west, so keep a look out for it in Beds.



© Martin Harvey

© Martin Harvey



Downland Villa, *Villa cingulata*

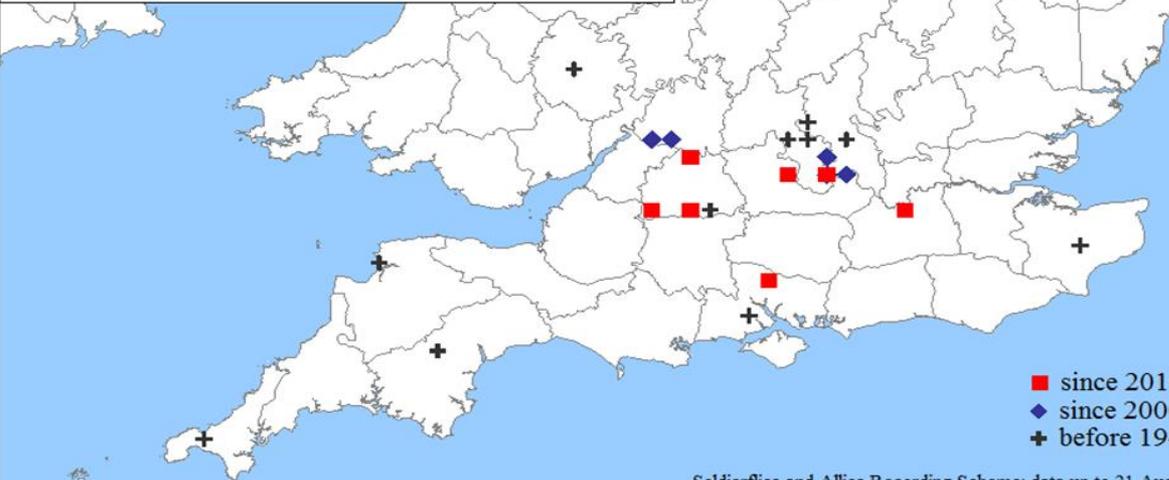
The Downland Villa was rare but widespread in southern Britain up until the 1940s, and then went unrecorded for half a century until it was found again in the Cotswolds in 2000. Since then it has been seen more frequently, and is now known from a few neutral grasslands as well as its typical chalk downland habitat. Another one to look out for.



© Martin Harvey

Records max of 8 in week 29

Jan Feb Mar Apr May Jun Jly Aug Sep Oct Nov Dec



Soldierflies and Allies Recording Scheme: data up to 21 Aug 2013

Soldierflies (Stratiomyidae)

- Many are brightly coloured
- Broad abdomen
- Small discal cell
- Mostly associated with wetlands
- Some found in gardens

Four-barred Major, *Oxycera rara*

A widespread but localised species of well-vegetated wetland flushes. Its bright colours are typical of many (but not all) soldierflies, the smart military-style markings leading to the English name for the family.



© Nigel Jones

Dark-winged Black, *Pachygaster atra*

Other soldierflies are less obvious. The Dark-winged Black and its relatives are small, rather dumpy, and dark-coloured. Dark-winged Black is a widespread species often found in gardens.



Broad Centurion, *Chloromyia formosa*

© Ombrosoparacloucycle via Flickr CC



© dnya17 via Flickr CC



Even more widespread and common is the Broad Centurion, which can be found in many habitats and will breed among decaying organic matter in many places including garden compost heaps. The males are bronzy-green with eyes that meet at the top of the head, the females are blue-green with a gap between the eyes. Note also the characteristic hairy eyes of this species.

Soldierflies and allies in Bedfordshire

The national scheme database has yet to incorporate all the records that are available for Beds, so the figures here are on the low side.

- ◎ 50 species recorded, 362 records
 - 25 soldierflies
 - 1 bee-fly (*Bombylius major*, most recorded species)
- ◎ Good wetland sites:
 - Arlesey Glebe Meadow
 - Fancott Meadows
 - Duck End nature reserve near Ampthill

Pine Black, *Zabrachia tenella*

- Recorded at Sandy Warren RSPB Reserve by Jon Cole in 1996
- Apparently rare nationally, but hard to find as an adult fly
- Larvae found under the bark of pines



© Dick Belgers (via Wikimedia)

One of the rarer species known from a single Jon Cole record in Beds. It would be good to know if this species is still present.

Banded General, *Stratiomys potamida*

This spectacular soldierfly is known from various places in Beds, and can turn up in dry sites away from its presumed wetland breeding habitat. It is widespread and probably spreading further in Britain (but has yet to be seen by the recording scheme organiser!).



© Nigel Jones



© Nigel Jones



Home

Welcome to Pantheon, the tool to help you analyse your invertebrate species samples.

Pantheon is an analytical tool developed by Natural England and the Centre for Ecology & Hydrology to assist invertebrate nature conservation in England. Users import lists of invertebrates into Pantheon, which then analyses the species, attaching associated habitats and resources, conservation status and other codings against them.

This information can then be used to assign quality to sites, assist in management decisions and augment other ecological study.

Pantheon is currently under construction. This current version is a prototype, with further analysis options and support information planned to be incorporated over 2016 and 2017.

Changing subject, this slide introduces the “Pantheon” website, which is currently under development by Natural England. When launched next spring it will provide a tool for finding out what the habitat requirements are for invertebrate species in all the major orders.



Latest samples

Site name	Date	No. of species	Main habitats	Details
Location unspecified	1900 to 2016	49		...
Location unspecified	1900 to 2016	9		...
Stiperstones	01/11/2016	374		...
B4	08/09/2016	1		...
B1	08/09/2016	1		...

This shows the type of information held in Pantheon, using the very rare Barred Green Colonel (*Odontomyia hydroleon*) as an example.



Broad biotope:
wetland

Habitat:
running water /
peatland

Resources:
wetland
vegetation, base-
rich unshaded
seepages

Guilds:
nectivore (adult),
saprophagous (larva)

Rarity score:
16

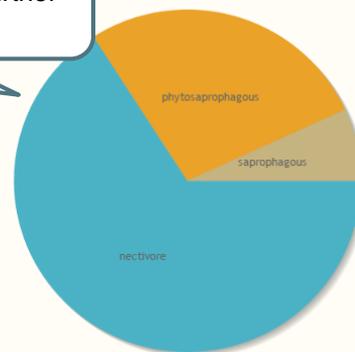
Fidelity score
(seepages): A

Seivedale Fen July 2013 Looking down the slope over the middle seepages

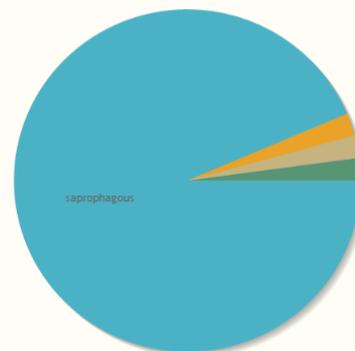
Pantheon displays information in various reports and charts, based on species lists that users can upload to the website. Watch out for further details next year.

Specific biotope

brackish pools & ditches <i>i</i>	4
saltmarsh <i>i</i>	4
tall sward & scrub <i>i</i>	9
decaying wood <i>i</i>	3
shaded woodland floor <i>i</i>	8
wet woodland <i>i</i>	2
marshland <i>i</i>	5
peatland <i>i</i>	18
running water <i>i</i>	14
wet woodland <i>i</i>	2



Ecological guilds larval pie chart



PANTHEON



Centre for
Ecology & Hydrology

NATURAL ENVIRONMENT RESEARCH COUNCIL



NATURAL
ENGLAND

The recording scheme

- Recording scheme started in 1976
- Scheme organisers to date: Tony Irwin, Martin Drake, Simon Hayhow, Martin Harvey
- Provisional atlas in 1991, based on 21,000 records
- Now approaching 100,000 records



The soldierfly bible

BRITISH SOLDIERFLIES AND THEIR ALLIES



ALAN STUBBS

MARTIN DRAKE

Veldtabel wapen- en bastvliegen van Nederland (Diptera: Stratiomyidae & Xylomyidae)

Menno Reemer



“[British soldierflies and their allies](#)” is a comprehensive guide to the group, with identification keys, full species accounts, many illustrations and much more. Alongside this, there are lots of online resources, including this downloadable photo-guide to Dutch soldierflies (the [recording scheme website](#) provides a translation of the text).



Latest news

- [Important Invertebrate Areas](#)
- [Records updated on NBN Gateway](#)
- [Malcolm Smart's paper on Machimus robberflies](#)
- [Guide to identifying the downlooker flies in genus Rhagio](#)
- [Spiky snipefly](#)
- [New "Projects" page - join in to help record soldierflies and allies](#)
- [Recording scheme data feeds in to prize-winning research](#)
- [Add your bee-fly record to the map in 2016](#)
- [Identification workshop at Oxford University Museum of Natural History for soldierflies and allies](#)
- [Bee-fly makes beautiful Buglife bug of the month](#)

[More](#)

Soldierflies and Allies Recording Scheme - welcome

Soldierflies, bee-flies, robberflies, and more - fascinating flies!

The Soldierflies and Allies Recording Scheme collates biological records for 11 related Diptera families, using the information to promote enjoyment, study and conservation of the species and their habitats.

This recording scheme falls under the umbrella of [Dipterists Forum](#). The scheme is coordinated by Martin Harvey with help from others in Dipterists Forum.



(Photo on right is of Clubbed General soldierfly, *Stratiomys chamaeleon*, taken by Judy Webb.)

The Soldierflies and Allies Recording Scheme covers 11 families of flies (Diptera):

- Soldierflies, Stratiomyidae
- Horseflies, Tabanidae
- Robberflies, Asilidae
- Snipeflies, Rhagionidae
- Stiletto-flies, Therevidae
- Bee-flies, Bombyliidae
- Hunchback-flies, Acroceridae
- Water-snipeflies, Athericidae
- Awl-flies, Xylophagidae
- Windowflies, Scenopinidae
- Wood-soldierflies, Xylomyidae

The main guide to these species is *British soldierflies and their allies* by Alan Stubbs and Martin Drake, the new edition of which is **now available!**

Identifying bee-flies in genus *Bombylius*

version 2, July 2014

Compiled by Martin C. Harvey

In Britain there are four species of bee-fly in genus *Bombylius*, including perhaps the recording scheme's most familiar fly: the Dark-edged Bee-fly *Bombylius major*.

All four *Bombylius* have a long proboscis ('tongue') extending forward from the head, which they use to feed on nectar from flowering plants, often doing so while hovering over the flowers. They lay their eggs into the nests of solitary bees, where the bee-fly larvae prey on the bee larvae.

The Dark-edged Bee-fly is by far the most frequently seen species, and is a familiar feature of early spring in gardens as well as countryside. In the south Dotted Bee-fly can also be numerous in suitable places. The other two species are smaller and rarer: the Western Bee-fly in a mix of habitats in western England and Wales, the Heath Bee-fly a specialist of heaths and largely confined to Dorset.

Dark-edged Bee-fly, *Bombylius major*



Solid dark band along front edge of wings

Dark spots at junctions of wing veins

Main identification feature: check the spots on the wings (but wait until it stops flying to see this!).
Body colour: looks evenly tawny-brown in flight.
Size: body length (not including the extended proboscis): 6–12.5mm.
Flight time: March–June, most frequent April–May.
Distribution: widespread in Wales and the southern half of England, less common but spreading further north into Scotland.
Habitats: varied, including gardens, grasslands, woodland rides and clearings, coasts.
Hosts: various species of *Andrena* mining bees.

Main identification feature: check the spots on the wings (but wait until it stops flying to see this!).
Body colour: mix of chestnut and black; female (inset photo) has line of white spots on abdomen.
Size: body length (not including the extended proboscis): 8–12mm.
Flight time: March–June, most frequent in April.
Distribution: largely confined to southern England and the south Wales coast, but spreading north to Warwickshire and perhaps increasing.
Habitats: varied, including gardens, grasslands, woodland rides and clearings, coasts.
Hosts: species of *Andrena* mining bees, especially *Andrena flavipes* and *Andrena cineraria*.

The scheme website provides a downloadable guide to [bee-flies in genus *Bombylius*](#).

Western Bee-fly, *Bombylius canescens*



Photo © Steven Falk

Heath Bee-fly, *Bombylius minor*



No dark hairs behind eyes

Femora of legs pale

Main identification features: wings are unmarked; all hairs pale on the side of the head behind the eyes (NO black bristles here); femora of legs pale.
Size: body length (not including the extended proboscis): 7–8.5mm.
Flight time: July–August.
Distribution: recent records from Dorset and Isle of Man only; formerly known from the New Forest, Isle of Wight, and west Wales coast.
Habitats: heathland.
Hosts: species of *Colletes* mining bees.



Photo © Martin Harvey

Underside: dark femora with pale tips

Main identification features: wings are unmarked; long black bristles among the pale hairs on the side of the head behind the eyes; femora of legs (the pale tips (can look all pale in photos from above).
Size: body length (not including the extended proboscis): 6.5–7.5mm.
Flight time: May–August, most frequent June–July.
Distribution: mainly confined to south-west England and south Wales.
Habitats: open flowery habitats such as hillside and gorges, river banks and coastal landslips.
Hosts: species of *Lasiglossum* and *Halictus* mining bees.



[Western Bee-fly:] Dark bristles among pale hairs behind eyes

For more information on bee-flies, and how to send in records, see:
www.brc.ac.uk/soldierflies-and-allies/
For help with identification add your photos to iSpot:
www.isspotnature.org/species-dictionaries/uksl/Bombyliidae



The scheme runs training courses, the next of which is at the headquarters of the British Entomological and Natural History Society near Reading on 19 November. See: www.benhs.org.uk/event/workshop-identifying-recording-soldierflies-allies/

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« All Events

Workshop: Identifying and recording Soldierflies and their allies

November 19 @ 10:30 am - 4:00 pm | Free

Booking a place is required to attend – this ensures equipment and resources will be available.

Martin Harvey (Princes Risborough) – Soldierflies and their allies (including Bee-flies, Robberflies, Stiletto-flies and Horseflies) form an attractive group of flies, with fascinating life histories. Many of the species are large and distinctive, but as with most insect groups there are others that are more challenging to identify. This workshop will introduce the group and take you through the steps required to gain experience of identifying the species, based on the keys in "British Soldierflies and their allies" (Alan Stubbs and Martin Drake), the second edition of which was published 2015. Much remains to be learnt about soldierflies and their allies, and the workshop will also cover how can get involved with the recording scheme for the group.

Details

Date:
November 19

Time:
10:30 am - 4:00 pm

Cost:
Free

Organiser

Marc Taylor

Phone:
0794 123 6140

Email:
m@rcstaylor.co.uk



The recording scheme takes part in the very active "[British Soldierflies and Allies](#)" group on Facebook.

British Soldierflies and Allies

Public group

Joined Share Notifications

Discussion Members Events Videos Photos Files Search this group

Vivian Russell 20 mins
 Matt Smith has kindly ID'd Nematelus. Is it possible to get to species? From NY128560 N Cumbrian coast.



Like Comment Share

1

Tim Ransom I would say Nematelus uliginosus female
 Unlike Reply 1 - 9 mins

Martin Harvey replied - 1 Reply

Martin Harvey Would be grateful if you could add the record to iRecord please Vivian Russell
 Like Reply - 1 min

Ian Gillen 19 hrs
 2/11/16 SO973922 Sargus bipunctatus



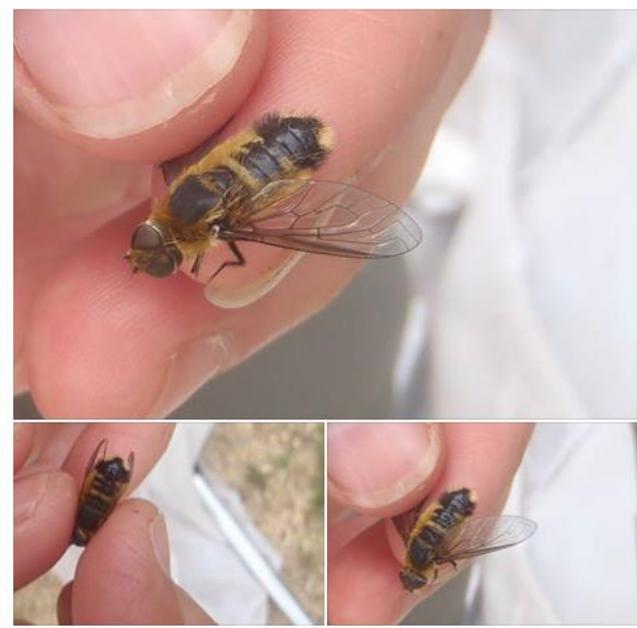
Like Comment Share

You and 2 others

Bex Cartwright

29 October at 20:51

hope you can help. I just came across these photos from a site in Essex over the summer. Is this Villa modesta? Such a beautiful fly. Thanks.



Like Comment Share

Joan Childs, Jaswinder Boparai and 4 others

Martin Harvey 30 October at 20:30

This looks like an interesting paper on habitat requirements for some of the rarer horseflies (in Belgium, includes UK species). Not open-access though.



The occurrence and ecological requirements of the horse-flies (Tabanidae) of brackish marshes in Belgium

The deteriorated state and shrunken area of...

[LINK.SPRINGER.COM](#)

Like Comment Share

Andrew Jukes and 3 others

Write a comment...  

The preferred route for [sending in records](#) is to add them to iRecord (but the scheme is also happy to accept spreadsheets and other formats). On iRecord we have set up several project pages, including this one that shows all the records from the most recent fortnight. One species, Twin-spot Centurion (*Sargus bipunctatus*) is still on the wing in November.

Soldierflies and allies - records from last two weeks: Activity summary

Summary Species League Tables **Trending**

Here are a few of the photos recently uploaded for this activity.



Sargus bipunctatus
Twin-spot Centurion



Sargus bipunctatus
Twin-spot Centurion



Sargus bipunctatus
Twin-spot Centurion



Sargus bipunctatus
Twin-spot Centurion



Sargus bipunctatus
Twin-spot Centurion



Sargus bipunctatus
Twin-spot Centurion



Sargus bipunctatus
Twin-spot Centurion

Trending species

Twin-spot Centurion

Trending recorders

Alan Semper Mike Higgott paul bowyer

Totals for this activity

1 species

4 records

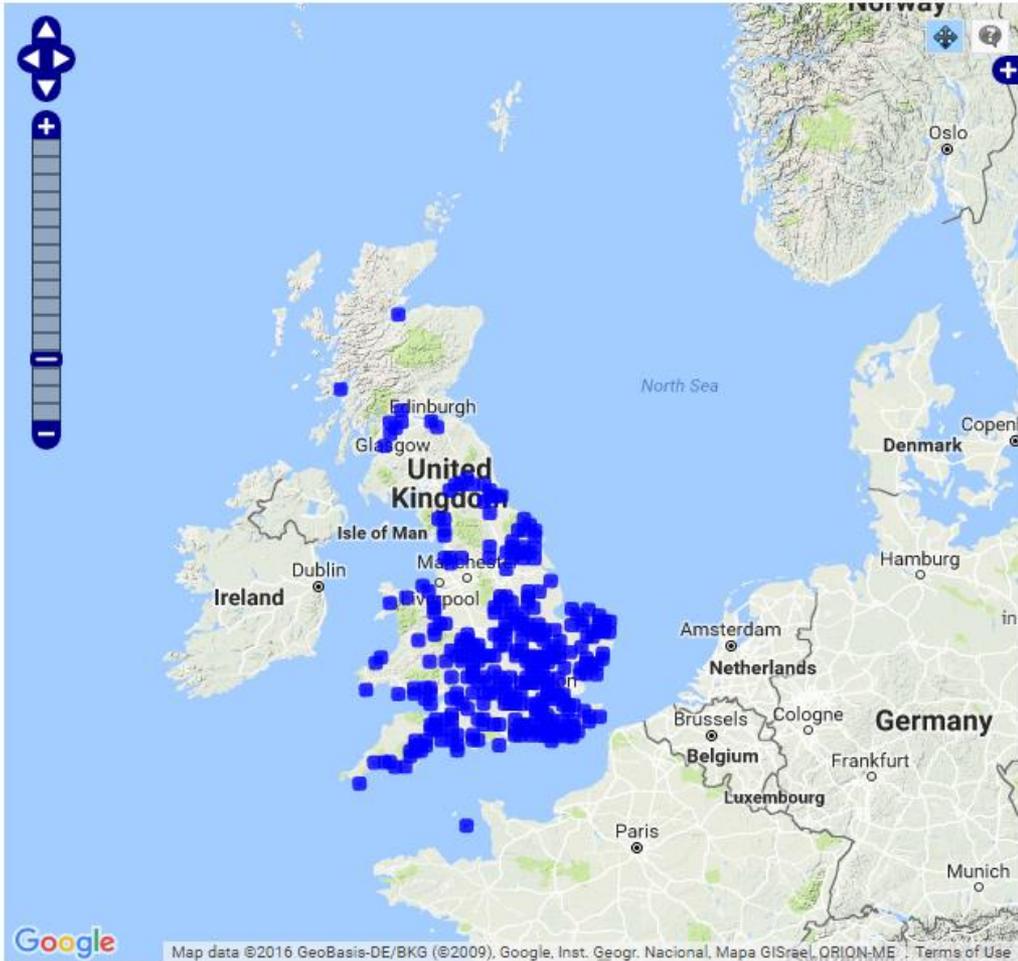
7 photos

Another iRecord project was set up to encourage people to record bee-flies in spring 2016. A small amount of publicity via Facebook and Twitter spread the word and records came from many new recorders, often with photos to confirm the species.

Home » Bee-flies in 2016: Activity summary

Bee-flies in 2016: Activity summary

Summary Species League Tables Trending



Totals for this activity

2 species

702 records

392 photos



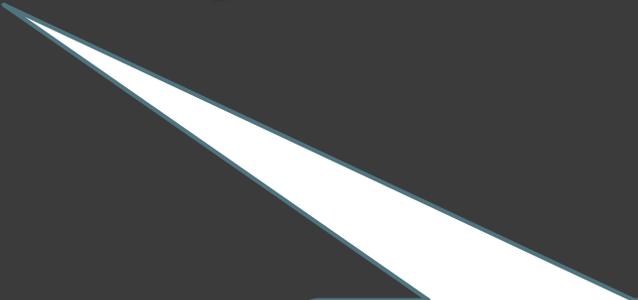
Dark-edged Bee-fly

This was very successful and produced many more records than the average in previous years.

- 4,943 records
- On average:
 - 48 records per year since 1900
 - 171 records per year since 2000
- In 2016: 746 records and counting!



What's the point?



So there is lots of recording activity, but why do it? One answer is that watching and recording wildlife is absorbing and fun, and doesn't really need any further justification. But when records are sent in they can be put to very good use.



Recording scheme data is made accessible via the National Biodiversity Network's Gateway website: <https://data.nbn.org.uk/>

Conservation status

Recording scheme data was used to inform a recent review of the conservation status of these species (Red List, Nationally Scarce etc.). Such reviews are a fundamental part of conservation in the UK – if we don't know whether species are common or rare, increasing or declining, we can't take effective decisions for conservation. And the only way to document rarity is to gather together as many records as possible.

- 15% under threat
 - Critically Endangered / Endangered / Vulnerable (24 species)
- 41% rare
 - Near Threatened / Nationally Rare / Nationally Scarce (65 species)
- 41% Least Concern

Barred Green Colonel, *Odontomyia hydroleon*
(Critically Endangered) © Ian Andrews

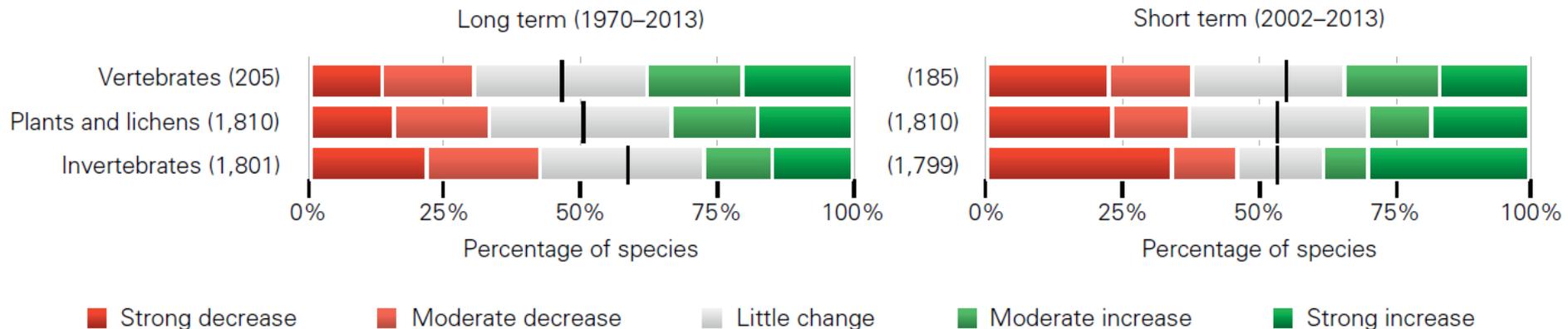


The recent “[State of Nature](#)” report highlighted worrying declines in many species. Soldierflies and allies data formed a small part of this analysis, alongside many other recording schemes and other data sources.



- **Between 1970 and 2013, 56% of species declined, with 40% showing strong or moderate declines. 44% of species increased, with 29% showing strong or moderate increases. Between 2002 and 2013, 53% of species declined and 47% increased. These measures were based on quantitative trends for almost 4,000 terrestrial and freshwater species in the UK.**
- **Of the nearly 8,000 species assessed using modern Red List criteria, 15% are extinct or threatened with extinction from Great Britain.**

Trends in the abundance and occupancy of freshwater and terrestrial species by broad taxonomic group



Buglife is currently undertaking a project to identify “[Important Invertebrate Areas](#)” across the UK. Soldierflies and allies data has fed in to this process, again alongside many other recording schemes.



Important Invertebrate Areas and the Putting Bugs on the Map project

Important Invertebrate Areas are nationally and internationally significant places for the conservation of invertebrates and the habitats upon which they rely. They will be a vital tool for the conservation of our most threatened species and the maintenance of sustainable populations of declining species.



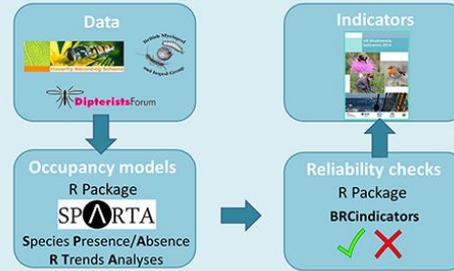
Charlie Outhwaite, Gary Powney, Tom August and Nick Isaac

Contact details: charlotte.outhwaite.14@ucl.ac.uk @charlielou www.charlieouthwaite.weebly.com

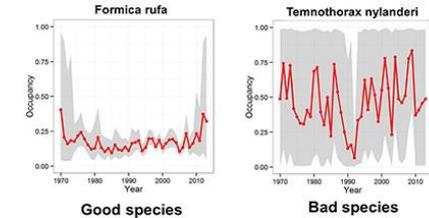


Data from the recording scheme has also been used in a number of recent research papers, and is also made available to Local Environmental Records Centres (via iRecord and the NBN) for use within local planning and conservation contexts. Your records can be put to work in many different ways once they are collected together into a recording scheme context.

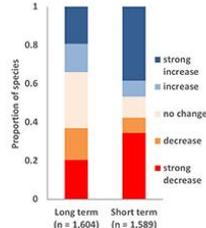
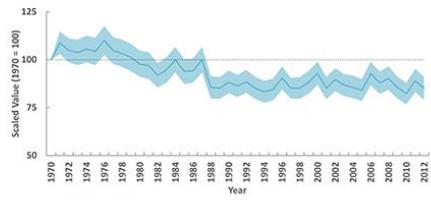
Biological records data were collected and occupancy models ran for **7,493 species** from **20 taxonomic groups** in order to determine the status of a wider suite of UK species. This amounted to a total of **4,883,441 records**.



Many of the species being modelled are rare or have fewer records, results gained from these are not always reliable. Reliability checks ensure only robust results are taken forward. Out of the 7,493 species modelled, nearly 80% of these had to be discarded.



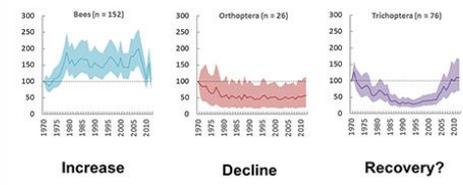
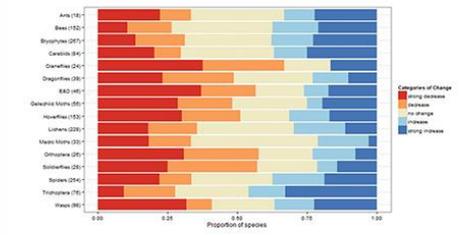
Q1: How has occurrence of UK species changed since 1970?



Composite indicator of **1,604 species** from **19 taxonomic groups**, showing an overall decline of **15%**.

Stack plots show the proportion of species within each category of change over the long and short term.

Q2: How do trends differ between taxonomic groups?



A1: UK species have declined by 15% since 1970. Of the 1,604 species 37% are declining over the long term. Most change occurred between 1987 and 1988 when there was a sudden decline.

Nearly 80% of the species modelled had to be discarded. This is a problem when modelling rare species with little data. Options to lessen this include reducing the temporal precision of the model outputs.

A2: Responses between and within taxonomic groups vary. Although the majority of groups are declining, there are some increases and some more variable patterns.

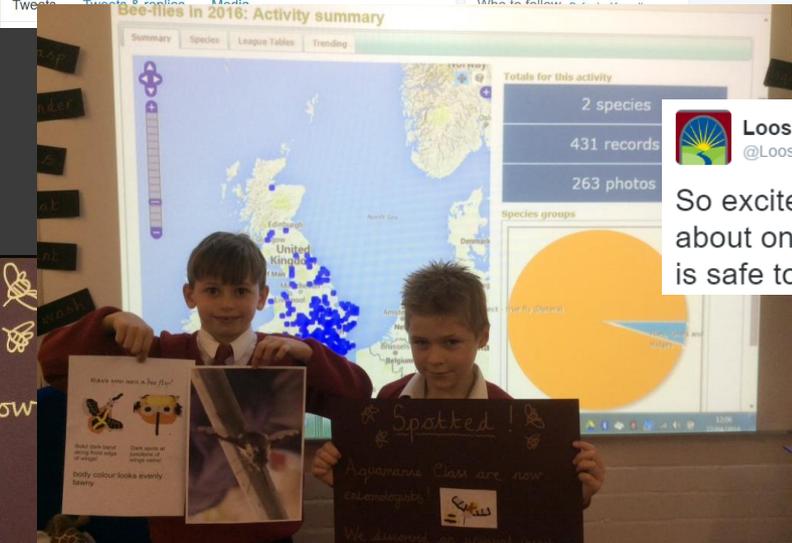


Another valuable and immensely worthwhile use of recording scheme data and information is to inspire people to take an interest in the species and natural world around them. Earlier in 2016 the very imaginative teachers at Loose Primary School in Kent got some of their classes to record wildlfe in the school grounds. One of the species they found was the Dark-edged Bee-fly, and the children were able to research the fly from the recording scheme website, and their record to iRecord – they were pleased to see their dot appear on the map!



Aquamarine have found and identified a Dark-edged Bee-fly in the school grounds. Sighting number 432 in the UK!

TWEETS 1,140 FOLLOWING 89 FOLLOWERS 431 LIKES 69



So excited to see our entry! We are learning about online safety at the same time and what is safe to post.

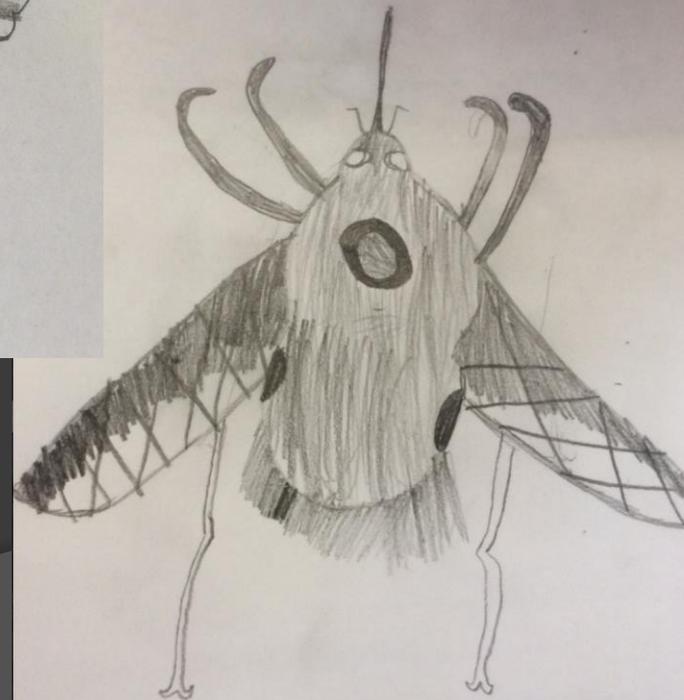
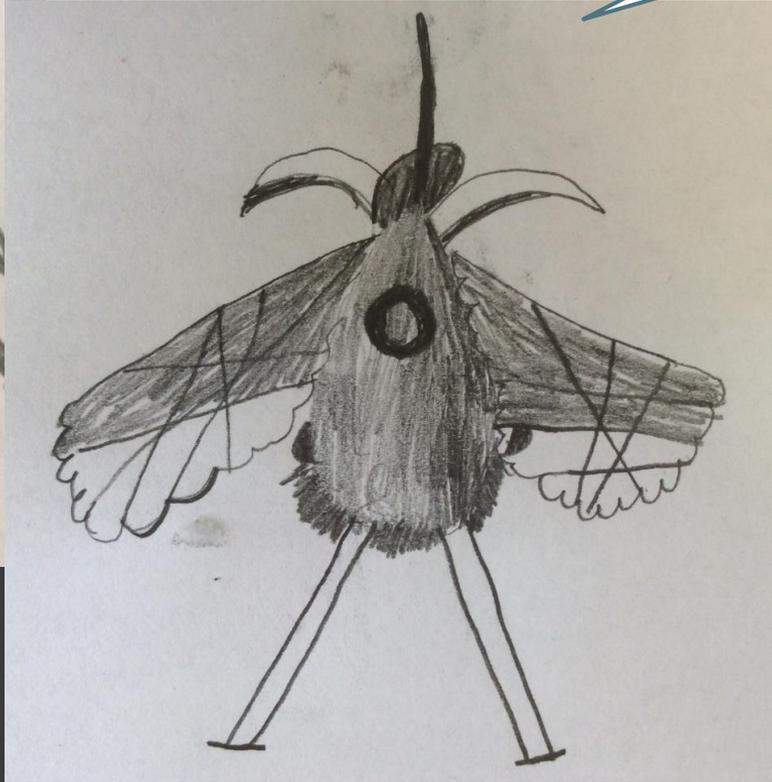
Spotted!
 Aquamarine Class are now entomologists!
 We discovered an unusual insect during our science fieldwork. We identified it as a Dark-edged Bee-fly which has a very long pointed proboscis!



We have added the photo and finding to the iRecord research database for the Bee-FLY season 2016.



They even sent me some charming drawings of Dark-edged Bee-fly!



Loose Primary School

TWEETS 1,140 FOLLOWING 89 FOLLOWERS 431 LIKES 69

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Who to follow Retain View all

Further bee-fly excitement arrived via Twitter in 2016, when this photo was circulated by Rob Mills. This clearly shows the distinctive markings of the bee-fly *Anthrax anthrax*, a species never confirmed in Britain before.



Anthrax anthrax

The rather alarming name "*Anthrax anthrax*" derives from the Greek word for coal, referring to the coal-black wing markings. It doesn't yet have an agreed English name, but we are suggesting "Anthracite Bee-fly" as an appropriate name to help explain the derivation. It has been spreading in recent years on the near-continent, with many new records in the Netherlands originating from cities where people have set up 'bee hotels'. Like many other bee-flies, *Anthrax* is a parasitoid of bee nests.

- Found by Rob Mills
- Sutton, Cambs, August 2016
- First confirmed British record
 - Dubious records from Leics, 1929 & 1930
- Spreading in the Netherlands, due to popularity of bee hotels?
- What should we call it – Anthracite Bee-fly?



Rob found the bee-fly investigating the bee hotel in his garden in suburban Cambridgeshire – proof that you never know what you're going to find if you keep your eyes open!



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Superb soldierflies and amazing allies

- Look out for them, enjoy watching them, and please send in your records!
- But also take time to study their natural history and ecology
- Lots more still to find out
- Training course 19 November, Reading
- Join Dipterists Forum if you can

Superb soldierflies and amazing allies

A final reminder that while there is much to learn about the adult flies, there is even more to find out about their larvae. The photo by Judy Webb shows a larva of the very rare Clubbed General (*Stratiomys chamaeleon*). Judy has been studying this species to find out how it lives and interacts with other species (see notes in the latest Dipterists Forum Bulletin). An excellent example of how, with dedication, anyone can add to our knowledge of these fascinating flies.

