Atheroides Haliday, 1839 (Hemiptera:Aphididae: Chaitophorinae): the story of a search for identity.

Wendy Carter & Harry Green

In my day job of Communications Manager at Worcestershire Wildlife Trust I (Wendy Carter) wrote a press release in September 2016 to encourage residents across the county to record sightings of a relative newcomer: the ivy bee *Colletes hederae*. We already knew of both a confirmed and a potential nesting aggregation in Northwick, Worcester, from records in 2015 (Green 2016) but before I had chance to send out the release, Harry was contacted by a lady and her son who wanted to confirm the re-emergence of probable ivy bees from their garden lawn (15th September 2016, SO8457)).

With identification of ivy bees confirmed on a visit by Harry Green and Geoff Trevis , I popped round to get the official photos for the press on 17th September 2016. Several hours later, I was still sitting on the garden path in amazement - and the following day I returned for several more hours; this was definitely my 'other life' and not the day job! The lawn was teeming with hundreds and hundreds of bees and rapidly becoming covered in mini-volcanoes as more and more bees emerged from the ground and new females began to dig nest holes. I mainly stuck to the garden path as I didn't want to risk treading on a bee or a nest in the lawn but I found a reasonably bee-free spot near the edge of the lawn and gently crouched down in order to get some video footage that would help people identify to Ivy Bees (www.youtube.com/watch?v=1r-8rDAnS_w). After a short while I felt a tickle on my arm; thinking it was probably a bee, I glanced down but couldn't see anything. I felt another tickle. I looked again. And looked. And looked. And then I spied the tiniest of creatures crawling on my arm. I carefully placed it in a specimen tube with a blade of grass, wondering whether or not I'd found a triungulin of the blister beetle *Stenoria analis* associated on the Continent with Ivy Bees (it was highly unlikely as it's never been recorded in the UK before but we all live in hope of finding the unexpected). Several others crawled on my arm when I went back to the same part of the lawn but I let them go on their merry way.

I told Harry about this peculiar creature - even with a hand lens it was hard to see properly and getting a photograph was very difficult - and passed it on to him the next day for a better look down a microscope. Thus began Harry's international quest ...

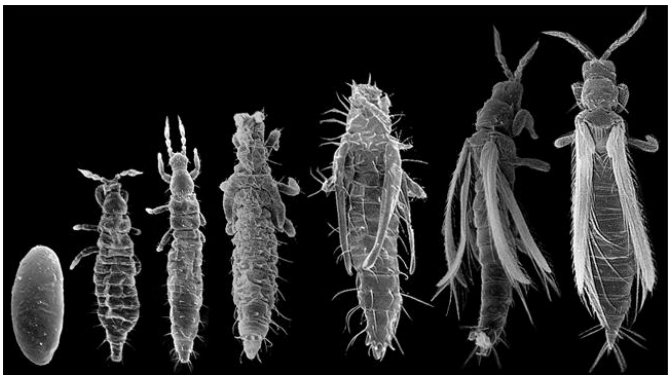
01. Unidentified insect on arm. Wendy Carter.

02. Unidentified insect on arm. Wendy Carter.

Before receiving the specimen I (Harry Green) received pictures (01, 02) of this 1.6 mm long mystery insect from Wendy, taken as it crawled on her arm. I did not recognise the insect but it was roughly the size and shape of a triungulin, the first larval stage of oil and blister beetles, images and specimens of which we had been studying earlier in the summer. This sent me down a completely mistaken but fascinating false identification trail. I asked a question on the beetles-britishisles email forum about triungulins possibly associated with Ivy Bees in Europe, which raised the interest of Johannes Lückmann in Germany who asked for photos. By then I had the specimen and so made and placed pictures on the email group. I was soon told "not a triungulin". I also discovered an interesting paper for which he was one author (Johannes Lückmann & Siegmund Scharf 2004) on identifying three European oil beetle *Meloe* triungulins and none of these looked like the mystery insect.

On a parallel course I visited Mark Telfer's website http://www.markgtelfer.co.uk/beetles/meloidae-oil-beetles/ page on triungulins where *Stenoria analis*, a blister beetle, is mentioned as a species that may eventually reach Britain because of its association with Ivy Bees in Europe. This led me to a paper by Nicolas J. Vereecken & Gilles Mahé (2007) where they reported observations on the parasitism of the Ivy Bee *Colletes hederae* by triungulin (first instar) larvae of *Stenoria analis*. The paper contains some fascinating pictures of large clusters of tiny triungulins on a dead flower head and a strand of barbed wire. These had received the close attention of male Ivy Bees, probably attracted by pheromones, so presumably the larvae aimed to climb aboard in order to later transfer to a female bee during mating and thence into the bee's nest where the contents would be consumed by the parasite. Although very interesting, this information did not help in identifying the unknown insect from Northwick.

Other people on the beetles-britishisles group suggested that possibly the mystery insect was an early instar of thrips (Thysanoptera) and I followed this route for a while; another interesting journey as I know very little about thrips. Diagrams and pictures found on the internet superficially supported this suggestion but it soon turned out to be another blind alley (03).



03. Life stages of Thrips, egg left to winged form right.

Next step came from Garth Foster of water beetle fame who suggested 'some sort of aphid' on the beetles-britishisles group. My knowledge of aphids is minimal and the insect in question seemed so far from the aphids that infest my broad beans each year that I could hardly believe it. However, web searches took me to http://influentialpoints.com/Gallery/Aphid_genera.htm and I was overwhelmed by the sheer quantity and variety of aphid species! Fortunately David Buckingham came in with an email to the beetles-britishisles as follows:

"Bob Dransfield (of Influential Points aphid ID website fame http://influentialpoints.com/Gallery/Aphid_genera.htm) had a look at the photos and confirmed the identification as an aphid: "The photos look very much like aphids of the genus *Atheroides*, most likely (given their colour) *Atheroides serrulatus*. This species feeds on the leaves of various grasses, and possibly Cyperaceae. It is usually obtained by sweeping vegetation (hence the uncertainty re

Cyperaceae). With just three UK species, this genus appears to be quite tractable. There is a key online at: http://zoolstud.sinica.edu.tw/Journals/48.5/693.pdf (Wieczorek 2009)". I followed this link and found the key which contains fine drawings and descriptions and I was able to confirm that the unknown insect from the Ivy Bee lawn was indeed an aphid *Atheroides serrulatus.* Stroyen's 1977 Royal Entomological Society's Handbook was also helpful in confirmation. Images of the named specimen 04, 05, 06, 07.

04. Live *Atheroides serrulatus* on grass blade. Harry Green

05. Live *Atheroides serrulatus* on grass blade. Harry Green

06. Live *Atheroides serrulatus* on grass blade. Harry Green.

07. *Atheroides serrulatus* specimen in alcohol. Harry Green

Although not uncommon this is probably the first record for Worcestershire and there are no records on the NBN! The original type specimen was from England and for your interest in the original report the genus *Atheroides* is described as follows *Corpus apterum lineare deplanatum, abdominis segmentis intermediis connatis, spiraculis penultimi simplicibus. Antennae dimidio corpore breviores, 6-articulatse, articulo ultimo capillaceo attenuato. Promuscis thorace brevior, mesosterni sulco incumbens. Femina vivipara.* And the type specimen is described as follows *"A. rugulosus subglaber, capitis et segmenti ultimi marginibus denticulatis setosis, m.f. Long. 1 line. On grasses; common in autumn on the sea coast at Holywood"* (Haliday 1839).

Comment

This is a very modern story of identification achieved by using a microscope, making digital pictures, spending a few hours visiting internet web sites, and greatly helped by correspondents on the beetles-britishisles egroup finally leading to an expert. These resources are wonderful assets to aid identification but expert confirmation is often important to avoid errors.

Acknowledgements

Many thanks to members of the beetles-britishisles email forum for their very helpful responses to my queries.
Many thanks to Mollie & John Pringle and Sandra and Steven Chapman who told us of Ivy Bees in their gardens which eventually led to *Atheroides serrulatus*.

Apology

For the poor quality of pictures are our equipment is not ideal for an insect 1.6 mm long.

References

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Images

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