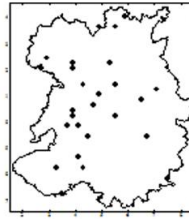


Shropshire Entomology



A bi-annual newsletter focussing upon the study of insects and other invertebrates in the county of Shropshire (V.C. 40)

October 2014 (Vol. 9)

Editor: Pete Boardman

pete@field-studies-council.org

~ Welcome ~

Welcome to the 9th and possibly final edition (at least under the current stewardship/ editorship) of the Shropshire Entomology newsletter. As this newsletter is compiled I find myself with an uncertain personal future due to the imminent end of the Invertebrate Challenge project that has employed me since 2011 at the Field Studies Council. Should no continuation of funding be forthcoming, or indeed should my employer change it is highly likely that I would not be able to continue putting this publication together. Therefore if this is to be the final newsletter of this series I would hope it would as ever be a good read! Thank you to everyone who has contributed over the past few years and shared their entomological knowledge so freely. I would especially like to thank Catherine Wellings for answering my plea for someone to summarise all previous articles into a useable index. These are included at the end of this edition and will be added to the website alongside past newsletters which are still available for download as PDF's from www.invertebrate-challenge.org.uk/newsletters-and-resources.aspx

If we are able to we will attempt to get Vol 10 out on or around the beginning of April. Please send any articles on any aspect of entomology in Shropshire to me for Friday 20th March 2015 at the email address above in the blue box.

~ Contents ~

- The 8th International Congress of Dipterology – Potsdam. 10th-15th August 2014: *Pete Boardman*
- Ephemeroptera, a new species for Shropshire: *Ian Thompson*
- Discovery of the Argent and Sable moth *Rheumaptera hastata* (L.) in a South Shropshire Wood: *Catherine Wellings and Ron Repath*
- Two significant beetles, including an RDB1 species, found in ten minutes: *David Williams*
- Northern Rustic revisits The Stiperstones!: *D.J. Poynton*
- *Ceraleptus lividus* (Hemiptera: Coreidae) new to VC40 (Shropshire) and other shieldbug news: *Keith Fowler*
- Predatory Shieldbug Caught in the Act: *David Williams*
- The Unkindest Cut of All (continued): *'Rear-Moth'*
- Joy of Invertebrates Walks: *Keith Fowler*
- The Invertebrate Challenge – 2011-2014: *Pete Boardman*
- Finding three elusive flies in Shropshire: *Nigel Jones*
- Beetle Update Autumn 2014 :*Caroline Uff*
- The County Recorder network
- Dates for your diary
- Submission guidelines for articles

8th International Congress of Dipterology – Potsdam. August 10th-15th 2014

In August I was fortunate enough to be able to visit most of the 8th International Congress of Dipterology (ICD8) in Potsdam, Germany. Like the Olympic Games, the ICD is held every four years and has already been to several continents, though unlike the Olympic Games I doubt there is the level of backhanders involved in the venue selection. After coming to terms with the cleanliness and punctuality of the German railway system, but not the way most destinations seem a closely guarded secret that are known to regular local travellers and a selected few others, (and obeyed the signs to beware of tricksters), I arrived at the close of proceedings of Day 1.



Photo – beware tricksters (Pete Boardman)

The venue, the massive Kongresshotel, on the site of a former Zeppelin factory was clearly geared up to host this scale of conference superbly and so 400 dipterists from 47 countries wandering around in a daze of phylogenetic, taxonomic, zoogeographic, and systematical bliss quoting lines from dichotomous keys, tales of derring-do in the field, and comparing the genitalia of every fly family you could ever

contemplate was dealt with without batted eye or complaint to law enforcement. To use a football analogy, if at the end of any given game the referee hasn't been mentioned in commentary then it is accepted that he's had a good game and all is well with the world. This was the case with the hotel and organisers of the conference, their expertise let the dipterists do what they do best.



Photo – Kongresshotel, Potsdam (Pete Boardman)

I won't hide the fact that I was a little nervous attending a conference with so many of the leading lights of world dipterology but the first indication I got that things were going to be fine struck me at breakfast when I was introduced to Jukka Salmella, Finland's 'crane fly man', someone who I had been on the worldwide crane fly email circulars with, and read papers by. Rather than looking like Gandalf the hoary old wizard and sitting on a cloud manufactured from his own importance, he was younger than me, welcoming, and displayed the most fabulous tattoo of an adder on his forearm. How could I not feel at home? That said, as I wandered around the conference common area where the posters were displayed I passed person after person wearing delegate badges that displayed most of the author's names that fill the diptera

section of our entomology library; Pape, de Jong, Evenhuis, Knutson, Pont, Oosterbroek, Meier, & Marshall to name but a few.

The congress had been organised so that each day started with a plenary session at 8.30am followed by four concurrent themed sessions in various rooms nearby from 9.00am with 15 minute talks throughout the day. Alongside this were close to 150 posters and a variety of trade stands to peruse.

I started with the posters which covered a huge taxonomic and geographic range. Highlights (for me at least) included a re-examination of work on the Japanese species of the crane fly group *Epiphragma* (we only have a single UK species); the crane flies of the South Kuril Islands, which are Russian territory to the north of Japan. These volcanic islands are incredibly remote and many of the areas had not been visited by people before, let alone dipterists! One of the authors Andrey Przhiboro of the Zoological Institute of the Russian Academy of Science in St Petersburg told me how difficult it had been to carry out the survey. He told of day-long hikes through barely accessible alder forests where it would take three hours to walk less than a kilometre, and unexplored, barely accessible canyons. The survey collected a total of 61 species of crane fly which represented fauna of several different zoogeographical areas. Another poster detailed the work done by the Japanese dipterist Takeyuki Nakamura who set out to solve the conundrum of the flightless snow crane flies of the *Chionea* genera. These unusual insects regularly turn up on snow during the winter in northern latitudes and so an area of the Japanese mountains with a regular 2m of winter snowfall was studied and the flies were found to be living underneath the snow on the ground surface and have an association with small mammal burrows.

I spent some time talking to Dr Doreen Werner of the Leibniz Centre for Agricultural Landscape Research about a remarkable citizen science

project that has been taking place in Germany since 2012. Members of the public were invited to send in specimens of mosquitoes for identification by Doreen and her team to analyse the spread of species including the Asian bush mosquito *Ochlerotatus japonicus*. Germany has no real history of mass participation in citizen science and so the team were surprised to find so much interest and delighted to receive 6,127 samples from just over 2,000 sites that year. The following year a total of 11,447 samples were received from 2,400 sites. This, in addition to CO₂ trap sampling from various stations around Germany enabled very good detailed maps to be compiled in the “Mückenatlas” (Mücken – the German word for midges and crane flies). The survey found two new areas of colonisation of the Asian bush mosquito in north and western Germany along with new records of rare species. Doreen commented on the amount of time needed to keep the volunteers involved and explained that she spent most of her Sunday’s during 2012 and 2013 writing emails to volunteers, sending identifications, and writing articles about the project outside of her Monday to Friday paid work.

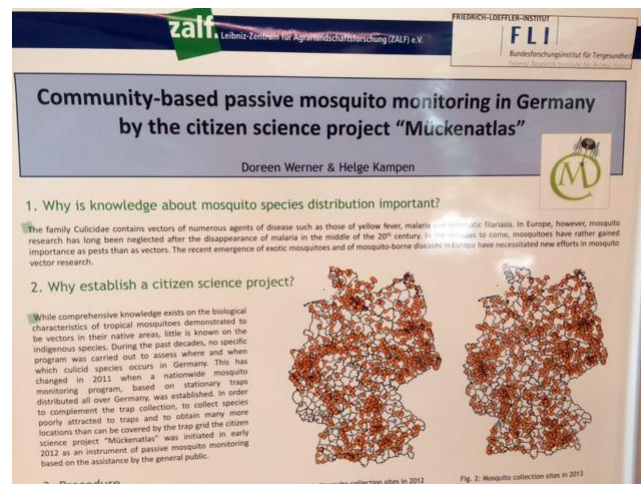


Photo – ‘Mückenatlas’ community mosquito project. (Pete Boardman)

Some interesting non-nematoceran posters examined (rather gruesomely) the medical uses of *Lucilia* sp. maggots, Tephritidae pests of

various afro and neo-tropical crops, the phorid pests of harlequin ladybird *Harmonia axyridis*, and, well, the list is just too long.....

The afternoon of Day 2 was ‘cranefly day’ for those of us Tipulomorpha-nuts but this did clash with ‘*Arthropods on mummies in the Catacombe dei Cappuccini in Palermo, Italy*’ which without doubt would have been an absolute riot, but in life, rarely can you have it all.

I won’t go into great detail about the cranefly session, as I’ve probably already exhausted much of the goodwill I might have already garnered in earlier accounts of cranefly species within this article so I’ll quickly outline the talks. They included a study of craneflies from Manitoba, Canada by Fenja Brodo who compared two surveys 30 years apart and concluded there was a major change in species at the location, possibly due to climate change. Two Trichoceridae talks followed in which associations between winter gnats and snow, and an assessment of where the gaps in our knowledge of winter gnat taxonomy might be. This was followed by two more interesting talks looking at the ancestors of modern craneflies within the fossil and amber record and putting together an ancestral map starting some 160 million years ago. Reassuringly, some of the oldest Tipulids (*Tipunia* sp.) have been found in good old Surrey, UK. Hurrah for the British establishment, be they human or Tipuloid!

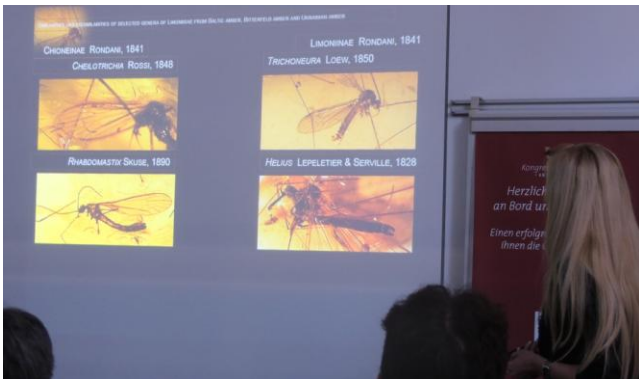


Photo: Craneflies from Baltic amber introduced by Iwona Kania (Poland) (Pete Boardman)

The evening of Day 2 was a delight. It began sharing supper with the aforementioned Fenja Brodo (officially now my favourite old lady) and her delightful husband Ernie, who as a lichenologist of great repute was not out of place discussing fieldtrips of yore with Pjotr Oosterbroek (Netherlands), Christophe Dufour and Jean-Paul Haenni (Switzerland), (Google their names to see their impressive back catalogues!). This adjourned to the bar later where a slightly younger crowd took over and the stories were shared amongst a whole range of the world’s dipterists.

Day 3 kicked off with many of us fuzzy-headed but not regretting a moment as we sat in the 8.30am plenary session led by Rudolf Meier who delivered an amazing presentation examining how new technologies are revolutionizing the study of flies and quickening the process markedly. Meier showed incredible digital video footage of Sepsidae mating strategies which have identified distinct (and recognisable) behaviour allowing anatomical study of the various adaptations that several of these flies possess. Video footage of “kissing” and “tickling” as a preface to mating were shown. Quick chemical analysis is now possible of those species that release chemical scents and scanning technology has enabled complex 3D mapping of how muscles control the appendages of male Sepsids. This has enabled comparison of a variety of species and we were shown a sequence of ever more developed and complex structures in those species such as *Themira* where males have particularly grandiose appendages. Of course many of these technologies have been in use in the health and other industries for a while but are now within the grasp of University-based taxonomists.

The theme of technology was then continued by several presenters who looked at the sharing of information through open source journals, biodiversity and phylogeny platforms such as Morphbank, Plazi, Figshare, Zoobank, Zenodo,

Orcid, and the Biodiversity Data Journal. These are all designed to increase the sharing of information and lead to the further democratisation of biological information and should help to simplify publishing accounts of new species, images of type specimens, revisions and details of museum collections, access to old or out of print papers etc. Though still in their early days some of these resources are beginning to attract invertebrate papers from UK authors so are worthy of consideration.

Erica McAlister and Duncan Sivell both of the Natural History Museum gave great talks representing the UK museum and recording society sector. Erica examined the depth of the diptera collection, exposing the pitfalls of such a huge and valuable collection (2nd in the world after the Smithsonian Institute). New legislation means material collected after 1992 is “owned” by the country it was collected from and not the institute it is housed in. This has lots of potential pitfalls and could lead to all sorts of difficulties concerning the usage of specimens within the collection.



Photo – Erica McAlister during her talk on the collections at the Natural History Museum (Pete Boardman)

Duncan’s talk featured the UK fly recording schemes and atlases, highlighting the evolution and cyclical activity associated with atlases. It turns out our system of volunteer involvement and publication is highly respected around the world and subsequent discussions with several

delegates confirmed their jealousy at the number of people involved in such endeavours. This means you dear reader! You are fantasized about by people all over the world – but obviously only in a wholly appropriate manner.

Day 3 concluded with a supper to honour the 250th anniversary of the birth of Johann Wilhelm Meigen, widely considered to be the father of European Dipterology.



Photo – J W Meigen (www.stolberg-abc.de)

We were all bussed some ten miles up the road to a banqueting suite at a former Royal Palace (which seriously sounds much grander than it actually was). Adrian Pont, the only person to have attended all 8 ICD’s, gave a keynote address about the life and career of Meigen, a polymath, who had to deal with many challenges in life including a society at war, and having to support a large family. Unlike many of his contemporaries, Meigen was not born into wealth, nor had a rich benefactor to fund his activities, so his achievements were all the greater for that.

After the supper, as we waited to be herded back to our transport I struck up conversation with a young research worker of Israel’s picture-winged

flies, and one of Africa's best known fly workers. The conversation continued on our return to the hotel long into the night and it was these social times when some of the best diptera-themed nuggets occurred. Alongside the 'picture-winged flies' chat came 'collecting trips into a war zone' (unconnected to the first chat), and where to source material for the study of forensic diptera (unconnected to the first or second chats). We also had 'injuries sustained on field trips' (also unconnected to war zones).

Day 4, my final day at the congress, saw me seek out talks on some of the general biodiversity surveys of diptera that have been carried out around the world. These included a profile of the diptera of Saudi Arabia, a country I know very little about, but has surprisingly rich areas for fly diversity. This was followed by assessments of the mangroves of Singapore using Dolichopodidae flies as a measure of quality of habitat, and a long term study of the diptera of previously unexplored areas of central Brazil. Also a fly worker from Iran highlighted the diptera interest in their temperate forests – Iran has temperate birch forests – who knew?

I was especially interested in the ecological studies carried out by the Russian researcher I'd talked to earlier in the week who seemed to excel in searching for flies in challenging habitats. He studied the flies of hyper-saline lake fringes and those of thermal springs by collecting vast amounts of larval material and rearing it through. He reared some 3000 flies from the hyper-saline lakes alone! This enabled him to find the precise habitats associated with the flies rather than Malaise trapping adults for example and surmising their habitat niches.

After the afternoon break I found myself flagging and so went back to my hotel room for ten minutes, but then slept through the time allotted to the conference group photo only waking on hearing a mass shout of whatever the equivalent of "say cheese" is in German that was used to get the 400 dipterists looking in the

correct direction. To a sleepy delegate it sounded like the end of days! I may have missed the official photograph but there is photographic proof I was there and that I'm not making all this up!



Photo – some attendees at ICD8 L-R – Mindy Tuan (Singapore), Chris Borkent (USA), Morgan Jackson (Canada), Pete Boardman (UK), Donat Agosti (Switzerland), front row; Erica McAllister (UK), Kai Burington (USA), Torsten Dikow (USA).

My travel arrangements and work schedule meant that I couldn't attend Day 5 which was due to transfer at lunchtime from Potsdam to the Berlin Natural History Museum for a farewell reception and a preview of the "Fliegen" exhibition. Intriguingly a Berlin Choir was due to perform an especially composed piece to accompany the fly exhibition. God only knows what that would have been like!

I departed content in the knowledge that this had been one of the most fascinating, fulfilling, and valuable experiences in my entomological career. It also inspired me to look beyond my immediate surroundings and challenge myself by looking at invertebrates farther afield. The next congress is to be held in Stellenbosch, South Africa in 2018. Ummm.... how to I swing that?

Pete Boardman

Ephemeroptera – a new species for Shropshire

In May this year Dan Wrench alerted me to some comments on Facebook (which is not a source on which I would expect to find ephemeroptera records) re *Potamanthus luteus* the Yellow Mayfly, having been found in Bridgnorth in 2013. The national recorder accepted this record on the basis of a photograph which with the insect having its full complement of three tails could not be anything else. The recorder for this specimen was Kain Prestwood who lives in Bridgnorth and the insect was found at his flat about one mile from the Severn from which it was assumed to have come. We hoped that it would turn up again in 2014.

And so it has. On 18th July Kain emailed me to report that he had taken another *P. luteus* in a moth trap, again about one mile from the Severn. This one was a sub-imago which Kain retained and to his delight it moulted into the imago stage later that day and after taking photographs he released it.

On 25th July Kain was reporting around 50 *P. luteus* in the moth trap on one night.

These records are very interesting for two reasons. Firstly this species has previously only been recorded in Britain from the rivers Wye and Usk where it has suffered a steep decline on the former and may be lost on the latter. It is also declining throughout Europe. Secondly the distance of Kain's records from the Severn seems a long way. For a single individual from last year I just considered it unusual. This year the first capture was of a sub-imago which stage generally do not move far from their emergence site. The later record of circa 50 begs the question as to whether they have come from the Severn. In the vicinity of Kain's flat and his

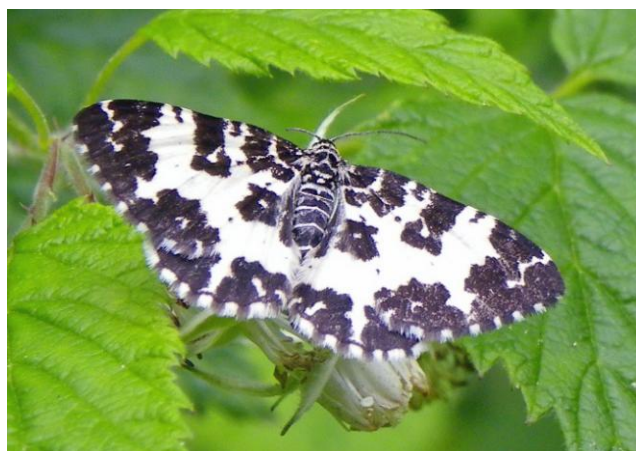
moth trap there is a large still pool. It seems possible and probable that they are breeding there. Next year I hope to make further investigations.

Ian Thompson

Discovery of the Argent and Sable moth *Rheumaptera hastata* (L.) in a South Shropshire Wood (and notes about the AONB)

Three Argent and Sable moths were found in Lodge Hill Wood SO514985 in the afternoon of 31 May 2014 by Catherine Wellings and Graham Wenman. The moths were resting on shrubs at the side of the main ride through the wood.

It is believed that this is the first time the species has been recorded from this wood.



Argent & Sable at Lodge Hill, Shropshire: Photo (Catherine Wellings and Graham Wenman)

THE SHROPSHIRE HILLS AREA OF OUTSTANDING NATURAL BEAUTY

This covers 23% of Shropshire and mostly lies in South Shropshire District. However part lies in Shrewsbury and Atcham District (previous to the introduction of Shropshire Unitary Council) and includes part of Frodesley and Ruckley.

We are lucky that this includes LODGE HILL, which rises to 1000feet and is owned by the Forestry Commission. It has become an open access area for walkers and is also known as Causeway Wood. Access may be obtained by footpath from Frodesley, Acton Burnell and Ruckley and there is also a small car parking area by the Longnor Green to Chatwall road at the foot of Hoar edge.

There are spectacular views from the top of the southern peak, which is crowned by a trig point. Within Causeway Wood there are a number of old Yews three of which have girths of about 4.5metres and may have been marker trees. There are also some Beech trees which were once pollarded. Just outside the AONB by a bridleway near the Lodge and converted barns is the Lodge Oak, which may be over 700 years old. This veteran has a girth of 7.73metres, is hollow and is now 90% dead. A recent survey states that it remains as one of Shropshire's greatest trees and a link to late medieval parkland landscapes.

The Forestry Commission is currently replanting the hill in a more natural way with curved species boundaries to bring out the natural shape of the hill. Some natural regeneration will be permitted.

The hill is made of very tough sandstone the Hoar Edge Grit which is Ordovician in age. The Romans quarried the stone for their town at Wroxeter known as Virconivm. The quarries lie near the Longnor to Chatwall road and the Causeway name may indicate the link road between the quarries and the Roman Road that runs through Frodesley NE to Virconivm. In Acton Burnell the remains of a high level Roman Bridge occurs where the road crossed a gorge. Later the Hoar Edge Grit was used to build Frodesley Lodge in 1591. It has tall, decorated brick chimneys, stone gables and a semi circular stair-tower. Later in 1750 the local Lord of the Manor, Godolphin Edwards created a Park on the hill by building a network of walls from the local stone. Whilst following good seam of rock

in a quarry not far from the Lodge a cave was created perhaps as a Folly. Also to be found is a ornate stone built construction at a spring on the east side of the hill and a stone lined underground pit capped by a boulder on the hill above the Lodge.

The 38 members of the Partnership who oversee the AONB have the legal duty to PRESERVE AND ENHANCE THE NATURAL BEAUTY OF THE LANDSCAPE. The Partnership has representatives from the local authorities, DEFRA, the NFU, the Forestry Commission, Shropshire Wildlife Trust etc and 6 individual members.

Ron Repath & Catherine Wellings

Ron Repath Frodesley Tree Warden.

Ron is also an A.O.N.B. partnership member representing the " British Horse Society"

For more information visit
www.shropshirehillsaonb.co.uk

Two significant beetles, including an RDB1 species, found in ten minutes

It is about 11:30pm on the night of 1st August 2014, in Apley Woods, Wellington. One of Tony Jacques' regular Friday night moth-trapping events is heading towards its conclusion. I wander over to Gwyn & Sue Hiatt, who have just caught a strange-looking beast in their trap. Now residing in a pot, it looks like a sort of sawfly/beetle hybrid & has us all stumped, even (embarrassingly) as to which Order it might belong. I take some photographs of it in its pot, then move on to Julie Burroughs' trap. My attention is immediately drawn to a large beetle, which is standing motionless on the trunk of the nearest tree, bathed in the light from the trap. It is about 25mm long & obviously a rove beetle

(Coleoptera: Staphylinidae) of some sort. More photos are taken.

The next day I found that, to my surprise, both creatures were readily identifiable. Once recognised as a beetle, Gwyn & Sue's mystery beast quickly revealed itself as the wasp-nest beetle, *Metoecus paradoxus* (Linnaeus, 1761), a parasitoid of social wasps. This is a good find, with just one VC40 record before 2014. (See *Shropshire Entomology* Vol. 4 for an account of its discovery in the county and a detailed description of its remarkable life history.)



Metoecus paradoxus, the wasp nest beetle (D.W. Williams)

It is fair to say, however, that this find was topped by the 'Staph', which turned out to be the hornet rove beetle, *Velleius dilatatus* (Fabricius, 1787). The combination of its size and serrated antennae made the identification straightforward (though confirmation had to await County Recorder Caroline Uff's return from holiday). I didn't, however, immediately realise the significance of this insect.

I mentioned both finds to Nigel Jones at a SIG field trip the following Sunday and showed him the photographs. On Monday morning I opened up my emails to find a message from Nigel, to the effect that *V. dilatatus* is an RDB1 species, and there appear to be only three sites in Britain with post-2000 records of it (as shown on the NBN

Gateway). In fact, overall presence in Britain is shown in just thirteen 10km squares on the NBN Gateway, with something like eleven records in the last fifty years. It is new to VC40.



Velleius dilatatus, the hornet rove beetle (D.W. Williams)

Brock (2014) states "Breeds in hornet nests ... has been found at night attracted to moth lights or at the sap of 'goat moth' (*Cossus*) trees, mostly in the New Forest... adults and larvae eat fly larvae developing at the bottom of the nest."



V. dilatatus, detail showing serrated antennae (D.W. Williams).

I would suggest that moth trappers, especially in woods known to host the hornet, *Vespa crabro* (Linnaeus, 1758), would do well to keep an eye out for this species in or around their traps. The serrated antennae are unique among British rove beetles, making identification unusually

straightforward (for this notoriously difficult family of beetles).

Grateful thanks go both to Nigel Jones and Caroline Uff for their help with & verifications of these finds.

Reference

Brock, Paul D. (2014). *A comprehensive guide to the Insects of Britain and Ireland*. Pisces Publications, Newbury

(All photos copyright D. W. Williams)

David Williams

Northern Rustic revisits The Stiperstones!

On Friday 25th August 2014 the Northern rustic moth (2104 *Standfussiana lucerneae*) made a welcome and much unexpected appearance at MV light at Pennerley House (SJ355987) on the western slope of the Stiperstones.



Northern Rustic – Photo: Ian Kimber from UK Moths (www.ukmoths.org.uk)

The trap was being run to collect seasonal moths to show at the Stiperstones Bioblitz event on the

Saturday. It was a cold and damp night so the trap was opened early Saturday morning to see if anything at all had been trapped. Amongst the 20 moths was a very unfamiliar female that was the last to be boxed. This I provisionally identified as the Northern rustic, which was later confirmed by the County Recorder Tony Jacques. Why was it so unexpected? Probably because I have been looking for this moth for over 25 years without success!

The Victoria County History records that in 1896 Newnham found it at the foot of the Devil's Chair, flying commonly over scree in hot sunshine. Riley searched for it at the same location in 1987 without success and I have spent numerous hours in suitable weather on the Devil's Chair with similar outcomes.

Thanks to the Bioblitz the moth has been recorded again in its old haunt, although no more sightings were made over the following three weeks.

If anyone has other Shropshire records for this moth I'd be most interested to hear from them.

D J Poynton

Ceraleptus lividus (Hemiptera: Coreidae) new to VC40 (Shropshire) and other shieldbug news

John and Denise Bingham visited Dudmaston on 1st June to look for long-horned beetles. They searched an area in one of the grasslands where the grass was short as it had been grazed by rabbits.

Denise found quite a number of *Coriomeris denticulatus* (Scopoli, 1763) Denticulate leatherbug which is noteworthy in its own right as there are less than 10 records of this species on the Shropshire list, but John noticed that one looked different.

John collected the “odd” insect and later identified it as *Ceraleptus lividus* Stein, 1858 Slender-horned leatherbug.



Ceraleptus lividus (photograph: © John Bingham)

Those of you who have read the Shropshire Shieldbug Atlas (Boardman 2014) will know that there is a section within it entitled “Shieldbugs and allies that we haven’t yet recorded or those that might be coming our way”. In this section Pete Boardman suggested that this insect may well be one of the new arrivals. Thanks to John’s diligence he has been proven correct and we have a species new to Shropshire.

C. lividus has a similar general appearance to several of the other Coreidae but lacks the lateral extensions of the pronotum that produce a “shoulder” effect. It is around 10mm in length. The identification features given in Hawkins (2003) are the hind femur which is black at the tip with a large spine and a few small ones; the edge of the pronotum is black, at least in its front half, which continues along the side of the head through the eyes to the base of the antennae; a pale edge to the base of the forewing. It is usually associated with clovers and trefoils on dry open habitats.

References

Boardman, P.J. (ed.) 2014. *A provisional atlas and account of the shieldbugs and allies of Shropshire*. FSC Publications

Hawkins, R. D. (2003). *Shieldbugs of Surrey*. Surrey Wildlife Trust

Other Shieldbug news

Is it my imagination or have all the shieldbugs come out of hiding this year? When we were actively looking for them in order to feed the records into the atlas apart from a short late summer burst they were very hard to find. But this year, from personal experience, they seem to be much more common. The records for a couple of our rarer species deserve special mention in this brief report.

To my knowledge there have been at least 5 sightings of *Rhacognathus punctatus* (Linnaeus, 1758) Heather shieldbug (doubling the total number of records) and I have been privileged to have been present when three of them were found. The first was by Michelle Furber and Warren Putter at Brown Moss (some distance from the nearest heather), the second at Lower Shortditch Turbary by Jim Cresswell and the following day at The Bog by a young bioblitzer during the Stiperstones Bioblitz. The other records came from Nigel Cane-Honeysett during the SIG at Fiddlers’ Elbow and finally from Maria Justamond at Shawbury Heath.



Rhacognathus punctatus (photograph: Maria Justamond)

In May I received a report from Graham Wenman that the Strettons Area Community Wildlife Group had uncovered a colony of *Legnotus limbosus* (Geoffrey, 1785) Bordered shieldbug during a Churchyard survey in Church Stretton. I went to have a look and was astounded to find about two dozen individuals under a reptile tile. Since then Graham has reported the shieldbug elsewhere in Church Stretton and Warren Putter and Jim Cresswell have both found it in Rea Brook Valley. So another of our “rarer” bugs has doubled its number of records in a year.

Keith Fowler

Predatory Shieldbug Caught in the Act

On 16th August, a handful of hardy souls met at the private Veolia site in Coalmoor, Telford, for a day chasing Orthoptera. I say ‘hardy’ as it turned out to be absolutely classic *Invertebrate challenge* weather – overcast, windy and just cool enough to discourage our quarry from appearing. However, courtesy of Jim Cresswell’s beating tray we did encounter a gorgeous bronze shieldbug nymph, *Troilus luridus* (Fabricius, 1775) with a small sawfly (Hymenoptera: Symphata) well & truly impaled on its rostrum.



T. luridus nymph with captured sawfly sp. (D.W. Williams)



T. luridus nymph – detail of rostrum (D.W. Williams)

Presumably the victim had been stabbed whilst too cold to move. The unhappy couple were variously posed for photographs, before being returned from whence they were beaten. This gave us the opportunity to observe the remarkable structure of a predatory shieldbug’s feeding apparatus. Much sturdier than those of their vegetarian cousins, the rostrum is also multiply hinged for flexibility. Isn’t nature amazing?

(All photos copyright D. W. Williams)

David Williams

The Unkindest Cut of All (continued)

Some time ago (Shropshire Entomology Newsletter Volume 3) I brought you the news that this nasty government had proposed to cut the Large Skipper *Ochlodes venata* in the spirit of austerity that they’ve inflicted upon the working class, the poor, the disabled, the North, as well as badgers in Somerset and Gloucestershire. A DEFRA spokesman was quoted as saying “Given

the mess in which the last Labour government left our butterflies, it seems only fair to axe some species so that others may thrive. After much consideration it has been decided that the Large Skipper should make way. There are plenty of other Skipper species about that deserve our attention such as the Grizzled Skipper and Dingy Skipper, both of which are Biodiversity Action Plan species and so, in this age of austerity, sacrifices have to be made.” Though bankers (who arguably caused this mess in the first place have largely escaped censure of any kind) news reaches me that more targeted cuts are scheduled for our wildlife during 2014/15. The government’s axe looks likely to fall on one of the three species of ‘White’ butterfly, and a ‘Fritillary’ (they think no one would notice). Several species of moths are also earmarked for phasing out and many micro-moths are to be banned. The prospects for the Rosy Marsh Moth *Eugraphe subrosea* are said to be very much less than rosy, and the Straw Belle *Aspitates gilvaria* may be also going up in flames should the new Secretary of State (Liz Trash) have her way. After all – remember – *“we are all in this together.”*

The Daily Mail recently reported that large numbers of Clouded Yellow, Migrant Hawker, and the hoverfly *Episyrphus balteatus* have been seen camping rough outside Calais, France intent on stowing away on board Eddie Stobart lorries and illegally coming to Britain. One Southern Green Shieldbug *Nezara viridula* (a species from Africa and the southern Mediterranean) apparently stowed away in the back footwell of a car heading back from a family holiday in France and the first thing the driver knew about it was when she reached her home in Shepherdswell, Kent. Sue Taber said *“The bug went berserk”* in the back of her car. *“All it kept doing was flying around, then stopping and crawling over the seats and windows. I told it to get lost and it did!”* Mrs Taber said.

A spokesman for Kent Police said *“Officers located the bug in the Shepherdswell area and it has*

been transferred to the Home Office Immigration Enforcement Centre for them to take further action”.

Finally there seems some relief in Scotland amongst the victorious ‘No’ campaign that the Chequered Skipper *Carterocephalus palaemon* will continue to be part of the United Kingdom going forward. There had been fears that if Scotland had voted ‘Yes’ to independence the subsequent overnight collapse of the economy, the electricity supply, and a return to a generally medieval ‘Braveheart’ way of life as suggested by Gordon Brown, David Cameron and other prominent ‘No’ campaigners would have been a tragedy for the butterfly. The Chequered Skipper, with a distribution now limited to Scotland was formerly found in England but declared extinct in 1976. David Cameron was quoted as saying *“The Chequered Skipper became extinct under a Labour Government in England. History tells us that you can’t trust Labour when it comes to taxes and butterflies”.*

‘Rear-Moth’

Joy of Invertebrates walks

In 2012 I arranged walks with the aim of improving the number of invertebrate records in Telford, especially those tetrads with zero records; in 2013 the walks were arranged to support the recording effort for the various Shropshire Atlases which were in preparation. As all but the Long-horned Beetle Atlas had closed their books for new records what was to be the aim of the 2014 Invertebrately Challenged Tetrad walks? The answer was to visit places that were rather more welcoming and pleasant than some of the areas we had visited in the previous years. To complement this I decided to rebrand the walks as “Joy of Invertebrates” as this was what I wanted the walks to engender.

Have I succeeded? You will have to ask the participants, but I have enjoyed them!



Enjoying the fauna and flora at Llyncllys Common SWT Reserve (photograph: Keith Fowler)

Over the last six months there have been thirty walks which included four on Fridays as there were not enough Wednesdays, our usual day, in this period. Although many have been in the Telford area we have ventured far and wide throughout the county and even into Wales. We have carried out a series of monthly surveys at Lea Quarry on Wenlock Edge, which we hope will continue. We joined up with Invertebrate Challenge on several occasions when it held events on a Wednesday to support the Long-horned Beetle Atlas and the Rea Brook Valley Nature Reserve Survey as well as other ad-hoc events. We have supported a couple of local Friends groups in their quest to gain a wildlife status for their areas. Finally we have taken advantage of nature reserves by visiting several of Shropshire Wildlife Trust reserves as well as the National Nature Reserve at Whixall. On all these occasions we have recorded what we have found that we have been able to identify and all these records will be submitted to the various county recorders as well as those who are interested in the sites we visited.



Inspecting the flora at The Hollies SWT reserve (photograph: Keith Fowler)

Normally the walks attract half a dozen or so but on one occasion we could have fielded a football team however on another there were just two of us. We normally walk about three miles in five hours or so. How far we travel depends on what we find of interest, the terrain and the weather. We, of course, also attach great importance to coffee and lunch breaks and generally enjoying the company of our fellow walkers.



Painted Lady at Lower Shortditch Turbury SWT reserve (photograph: James Cresswell)

All being well there will be more Joy of Invertebrate walks in 2015, please come and join us.

Keith Fowler

The Invertebrate Challenge – 2011-2014

As the project comes to an end (it formally ends on December 17th) I felt it might be worth just briefly encapsulating what Invertebrate Challenge (IC) achieved during its tenure, the background to it happening in the first place, and speculating a little on the needs of entomology in Shropshire going forward.

The Past

The Invertebrate Challenge Project was funded by the Heritage Lottery Fund (HLF) with contributions from the Esmée Fairbairn Foundation, the Field Studies Council (FSC), and a variety of other funders. It followed a 5-year project called the Biodiversity Training Project (also HLF-funded) which (as well as its designed aims) showed that entomology had little designated support in Shropshire during its tenure (2006-2010), particularly so outside of the traditionally well supported butterfly, moth and dragonfly recording.



Invertebrate Challenge logo (Pete Boardman)

To their credit HLF were happy to be guided by our advice at FSC on the shape of the new project and rather than deal with hundreds of people we knew that intensive training of a small number of dedicated people was the way forward to increase the number of 'experts' in Shropshire. We chose aculeate hymenoptera, diptera,

coleoptera, and arachnids as our groups of focus, with hemiptera being added to this during the project, all areas that few people were involved in and all seriously under-loved in Shropshire until that date. At the beginning of 2011 we made our pitch to local naturalists and entomologists to join us in study of these groups. We'd budgeted for around 8 people per group in terms of equipment and tutor-time which indeed came to be what happened in the first year. Those who arrived in 2011 were a mix of people, mostly from the county but not entirely. In fact we had people from mid-Wales, south Wales, Derbyshire, Greater Manchester, Hampshire, and wider West Midlands as part of the original cohort. To a person these people maligned the lack of suitable entomological training in their own areas and stated the wish to be included in our project and their willingness to travel. In later years we'd also be joined by people from Wiltshire, and elsewhere.

At the end of 2011 there was a certain amount of sticking or twisting as the complexities or otherwise of the subjects people had chosen to study became obvious. This and the inevitable journey of human life led some people away to other lives in other places and new people towards us. I liken this period a little to the early 1980's kids TV programme 'Runaround' where I reprised the roll of the host Mike Reid.



Runaround (www.renownpictureltd.com)

In that show the kids were given a short period of time to pick an answer to a question by physically standing by the answer they'd picked. Then they were given a few more seconds to change their minds and move to a new "answer" if they wanted – the Runaround!

And so onwards. The project was initially to have ended at the close of 2013 but for the very timely intervention of a short DEFRA-funded project called Biodiversity Fellows (bio.fells) which took me away from my Invertebrate Challenge duties for most of 2013 and so to compensate that loss, IC continued for a final year through 2014. Bio.fells in fact was a huge bonus to IC volunteers as it offered extra training in most subject areas IC were targeting but over a wider geographical area.



Biofell aculeate training day 2013 (Pete Boardman)

As before, some people left, and others came and during 2013 & 2014 courses were attended by a core of people with the occasional extra attendee wanting to see what all the fuss was about.

So what did IC actually achieve? Rather than go into massive details I thought I'd bullet point what we've done. This only shows the "physical" achievements of the project – ie – those committed to paper, time, or history in some way and don't include the impact we've had on people's lives and experiences. Those

things are for those people to tell others if they want to.

- Delivered 180 training events.
- Annual Shropshire Entomology Day since 2011 (average 70 people per event)
- Published 9 x Shropshire Entomology Newsletters.
- Published 2 x county distribution atlases (with more in preparation). (Please set adverts at the end of this newsletter!)
- Established Entomology Library at Preston Montford.
- Established Insect Collection at Preston Montford.
- Directly / indirectly led to 9 new invertebrate County Recorders in Shropshire.
- Established Invertebrate Database as part of the Shropshire Ecological Data Network (SEDN – Shropshire's virtual local record centre). About 4 months time in-kind time contribution.
- Generated in excess directly / indirectly 100,000+ biological records.
- Supported external events and groups; Birmingham University / Manchester Metropolitan University, Floodplain Group, Soil Biodiversity Group, other FSC departments, Shropshire Spider Group, BBC, Royal Entomological Society, Dipterists Forum, Amateur Entomological Society Worcestershire Entomology Day, SGCT, Shropshire Wildlife Trust, Natural England, etc
- Built large bee hotel at Preston Montford
- Rea Brook Valley Invertebrate Survey

The Current

So if we look at where we stand now, on the eve of the project end, is Shropshire a better place in which to do entomology? I think it is fair to say very much so for the reasons bullet-pointed above, plus there are now more people interested and active in entomology in the

county than there were at the start of the project. Many of them are skilled in difficult taxon which has to be an incredible achievement for all of us. But equally we might predict that this is the peak of a curve that will flatten off as time passes if we cannot provide further support to Shropshire's entomologists current and future. In my view the project has been a focus (the glue if you like) to binding people and enabling them to grow their skills, and without this focus going forward there is a major risk of a gradual dissipation of effort. Also what happens to anyone new from this date forward that comes along wanting to further their interest in uncharismatic groups of invertebrates? To whom do they turn? I would argue that given the time needed to train people in these difficult groups (IC remember ran by a happy accident for 4 years rather than the initial 3 it was scheduled to run) we need a constant programme of training that is always looking ahead. Some might counter this argument and say the process should be a sustainable one and we can't continue to pump money into training. To me that is a lazy argument. Do we give money to anything else in society, our doctors, our teachers, our waste collectors, our farmers, the arts – just the once and say "right, now the money has gone, you are on your own, you should be sustainable?" It would be a tragedy if in 10 years time people look back at 2014 as the zenith of entomology in Shropshire, rather than viewing it as a foundation that was built on, and more people got involved, more species were mapped, more atlases were produced, and the county became at the forefront nationally.

We brothers, we band of brothers – hang on – someone else has already used those words!! So what can we actually 'do' about it once the funding is over?

The future

For entomology to continue to thrive in Shropshire we now have to look beyond Invertebrate Challenge and to other sources of

funding, other organisations, other funders, more voluntary input, and other – perhaps novel solutions, to make sure we don't lose what many of us have worked so hard to achieve.

There are a few practical things that FSC can do to support the current cohort of IC volunteers;

- Sue Townsend will continue to apply for funding to support training;
- Preston Montford is keen to continue to allow the use of the Entomology Library, collections, and equipment by volunteers, details of which will be circulated at Entomology Day;
- There will be 10 Invertebrate Challenge legacy events during 2015 working with the current IC tutors (again details to come later);
- There will be an Entomology Day in 2015, (please note that there may need to be sponsorship for this or a charge levied, as Worcestershire do for their day, as Invertebrate Challenge has funded this day since 2011) and...
- Continued support for biological recording in the county through working with SEDN
-

Sue Townsend is particularly keen that I plead with you all to keep nudging her and the FSC for support and help. Please tell her what you need for the continued collection of high quality records and help the FSC to support you. Your volunteering in collecting and submitting records is vital and she will be working to build on the successes and maintain and enhance invertebrate recording in the county. (sue.t@field-studies-council.org).

Ultimately I must thank all the volunteers, tutors, supporters, and colleagues who have made the Invertebrate Challenge such a success over the past 4 years and I truly hope we can continue to make Shropshire an entomological

great going forward. I look forward to spending time with you at Entomology Day on December 14th and celebrating what we have all achieved!

Thank You.

Pete Boardman

Finding three elusive flies in Shropshire

Last winter I read a report about the rare “southern silver stiletto fly” – *Clorismia rustica* Enderlein, 1927 in Cheshire, where it occurs on the River Dane in a much specialised niche. The larval stage of this fly live in sand that has been deposited by winter floods. The deposits must be of a relatively fine and pure sand composition and they must be above the summer flood horizon. So although rivers frequently deposit sand along their banks, very few deposits appear to be suitable for this species. The report contained a number of photographs of locations where the larva had been dug out of sand deposits. I recollected seeing similar looking deposits along the Cound Brook near Cound. So in June 2014, I set out to look for *C. rustica* on the Cound Brook. I spent a long day digging about in suitable looking sand banks, but found nothing at all. As the day drew to an end I had given up hope of finding the fly, but thought I would at least sweep around through some vegetation on a sandy bank. The net was gratifyingly full of many interesting looking flies which I pooted up eagerly. As I worked my way around the net, pooting up flies, I spotted a long slender fly that fitted the description for *C. rustica*. On returning home I quickly got the specimen under a microscope and soon confirmed it was indeed *C. rustica*. A week or so later I arranged to visit a second site at Eaton Mascott, where I was overjoyed to find both larvae and another adult *C. rustica*. One of the

larvae quickly pupated and hatched a further female *C. rustica*, confirming beyond doubt that this rarely recorded fly breeds along the River Cound. Elsewhere it is known from just a few rivers around England and Wales.

The discovery of *C. rustica* was the result of targeted survey for a specific species. Most discoveries of “new to Shropshire” flies are however more a result of chance catches in nets full of swept individuals. Two such discoveries are described here. Firstly, the “golden bearded Scath-fly” (my invented name!) *Pogonota barbata* Zetterstedt, 1838, was swept from lush stands of sedges around the old reservoirs at Bog Mine in July 2014. This Scathophagid fly has a long beard of golden hairs behind its head *and* a second beard at its rear end, making this a very distinctive fly.



IMAGE *Pogonota barbata* Stuart Ball

It is a rather scarce fly, most commonly encountered in northern and western parts of Britain.

The second chance discovery is of a tiny fly in the genus *Trixoscelis* (family Heleomyzidae). *Trixoscelis* are 2.5mm or less in length. Two species have dark marked wings and are relatively easy to spot in the bottom of a net, following a bout of sweeping. Both the pattern winged species are denizens of sandy ground and one species has been recorded in Shropshire; at Venus Bank, Cound – *T. obscurella* (Fallén, 1823). Two more species have no patterning and are much more difficult to spot in the net, and their habitat requirements are not clear.



IMAGE *Trixoscelis* c.f. *similis* Nigel Jones

I swept several of the clear winged *Trixoscelis* in my garden on 13 May 2014 and these appear to be *T. similis* Hackman, 1970, although it may be the very similar *T. frontalis* (Fallén, 1823) (I still need to check my specimen against a reliably named specimen). Both however are rarely recorded flies according to Alan Stubbs' draft

key to this genus, and either will make a new to Shropshire record.

Nigel Jones

Beetle Update Autumn 2014. Caroline Uff

The beetles described by David Williams in a separate article earlier in this publication were undoubtedly one of the highlights of the year – but there were also some other finds worthy of note.

On working through some of the smaller beetles from Nigel Jones' Bayston Hill Quarry pitfall traps, I was surprised to find the click beetle *Oedostethus quadripustulatus* (Fabricius, 1792).



Oedostethus quadripustulatus. Image C.Uff.

The larva of this distinctive beetle develops in sandy or gravelly soils and is classed as Notable A. In May, an uncommon species, (red data list, vulnerable) *Ischnomera cinerascens* (Pandellé, 1867), appeared in my woodshed, along with two other Notable B species, *Pyrrhidium sanguineum* (Linnaeus, 1758) and *Hylecoetus dermestoides* (Linnaeus, 1761).



Ischnomera cinerascens. Image C.Uff.

Another nice record for the county was the distinctive *Oedemera (Oncomera) femoralis* (Olivier, 1803), Notable B, sent in by Sue Swindells from Llanymynech.



Oedemera (Oncomera) femoralis. Image C.Uff.

It was interesting to see that the only other Shropshire record for it was also from Llanymynech, but in the 1930's!

There were several focused searches this year. Firstly, the search for longhorns demonstrated that, as we all suspected, you find the best longhorns when you're not actually looking for them: the impressive Notable B musk beetle *Aromia moschata* (Linnaeus, 1758) was observed on a picnic bench at the Severn Valley Railway by Jennifer Eagle.



Musk beetle. Image Jennifer Eagle.

Nigel Cane-Honeysett's pitfall traps at Lea Quarry caught some nice ground beetles including a county first, *Asaphidion flavipes* (Linnaeus, 1761), active in early February! The Rea Brook Valley survey and Stiperstones Bioblitz threw up some new site and county records, but no real rarities. The muddy pond edge in one of the Rea Brook fields was a hive of beetle activity with mud loving species such as *Heterocerus fenestratus* (Thunberg, 1784), present.

At the bioblitz, leaf beetles put in a good show with good numbers of the green and yellow bedstraw-feeding *Sermylassa halensis* (Linnaeus, 1767), and broom-feeding *Gonioctena olivacea* (Forster, 1771), the latter turning up in a range of colours. There were also large numbers of heather beetle *Lochmaea suturalis* (Thomson, C.G., 1866) – both adults and larvae. According to the Heather Trust, heather beetle has had a good year across the country, - always a concern for commercial grouse moors.

Although not notable, I received a surprising number of bloody-nosed beetle *Timarcha tenebricosa* (Fabricius, 1775) records this spring. Most records came from Long Mynd, but I also received a first from Brown Clee (Bryan Sage). These wingless beetles exude a bright red-orange, foul tasting fluid by breaking thin membranes in their mouth when threatened.



Bloody-nosed beetle walking in its own 'blood'.
Image Richard and Silvia Hickman.

I am still working my way through 2014 beetles – so there could still be more exciting finds to come but thank you all for sending in your records, the Shropshire dataset look really excellent!

Caroline Uff

The County Recorder Network

This information is accurate at the time of press. All these people carry out their roles as volunteers and we are indebted to their hard work.

Please note new a couple of new changes in contact details below. Nigel Jones tells me I've had his email down incorrectly for the past couple of newsletters and I've changed my own email to reflect the forthcoming end of the project.

Lepidoptera (butterflies and moths)

Butterflies – Tony Jacques

Email: b-mcvc40@talktalk.net

Macro-moths – Tony Jacques

Email: b-mcvc40@talktalk.net

Micro-moths – Godfrey Blunt

Email: blunt.sig195@btinternet.com

Odonata (damselflies and dragonflies)

Dragonflies and damselflies (Odonata) Sue McLamb –

Email: mclamb1@btinternet.com

Hemiptera (true bugs)

Terrestrial Bugs (now including **shieldbugs**), the Auchenorrhyncha and Psylloidea (Hemiptera) – Keith Fowler –

Email: keith.c.fowler@blueyonder.co.uk

Aquatic Bugs (Hemiptera) – Frances Riding

Email: franrid@hotmail.com

Coleoptera (beetles)

All families except Ladybirds and water beetles –
Caroline Uff –
Email: caroline.uff@nationaltrust.org.uk

Ladybirds (Coccinellidae) – Ian Thompson –
Email: salopladybirds@f2s.com

Water beetles – Frances Riding –
Email: franrid@hotmail.com

Diptera (true flies)

Hoverflies (Syrphidae) – Nigel Jones –
Email: nipajones@tiscali.co.uk

Larger Brachycera (robber flies, horse flies,
soldier flies etc), tachinid flies, conopid flies and
picture-winged flies – Nigel Jones
Email: nipajones@tiscali.co.uk

Nematocera (craneflies, winter gnats, bibionids,
mosquitoes, etc) – Pete Boardman –
Email: peteboardman@rocketmail.com

Leaf-mining flies (Agromyzidae) – Godfrey
Blunt
Email: blunt.sig195@btinternet.com

Other fly groups – Nigel Jones –
Email: nipajones@tiscali.co.uk

Hymenoptera (bees, wasps, ants etc)

Aculeates (bees, wasps and ants) and sawflies
(symphyta) – Ian Cheeseborough –
Email: ian.cheeseborough@yahoo.co.uk

Aquatic insects

Mayflies (Ephemeroptera) - Ian Thompson –
Email: salopladybirds@f2s.com

Trichocera (Caddisflies) and Plecoptera
(Stoneflies) – Frances Riding –

Email: franrid@hotmail.com

Orthopteroids

Orthopteroids (Grasshoppers, Crickets, Ground
hoppers, Earwigs etc) – David Williams
Email: dw1971@btinternet.com

Arachnids

Spiders Harvestman Pseudoscorpions – The
Shropshire Spider Group –
Email: nigel@canehoneysett.plus.com

Hexapods

Collembola (Springtails) – Francisca Sconce –
Email: fsconce@harper-adams.ac.uk

Others

Plant Galls (of whichever taxonomic order
including mites) – Godfrey Blunt
Email: blunt.sig195@btinternet.com

Dates for your diary

Here is a selection of entomological goings on in
Shropshire and elsewhere that I am aware of.
Please note all are subject to change and you
should contact the nominated person ahead of
the event.

**WORCESTERSHIRE ENTOMOLOGY DAY –
Saturday 1st November. – Rock village hall near
Bewdley. – The fee for the day is £8 which
includes light refreshments on arrival, but not
lunch.**

**Please send your booking forms and fee
(cheques made payable to WYRE FOREST
STUDY GROUP) to:**

Professor Susan Limbrey, The Newalls, Station Road, Far Forest, Nr. Kidderminster, Worcs. DY14 9UQ

SHROPSHIRE ENTOMOLOGY DAY – Sunday December 14th 2014 – contact pete@field-studies-council.org to book – FREE OF CHARGE. Please come and celebrate the end of the Invertebrate Challenge and what we have achieved in Shropshire over the past few years!

Submission guidelines for future articles for inclusion in *Shropshire Entomology*

It would help me tremendously if authors thinking of submitting articles to future editions of *Shropshire Entomology* used the following formats;

Font – title: **Palatino Linotype size 14 in bold**

Font – body: Palatino Linotype size 11

Font – caption for photo or table: Palatino Linotype size 10

Please wherever possible state authors for species mentioned in the title eg;

Craneflies and parallel universes – the rediscovery of *Phylidorea (Phylidorea) heterogyna* (Bergroth, 1913) at Fenn’s, Whixall & Bettisfield Mosses NNR

or in the text eg. *Phaeostigma notata* (Fabricius, 1781) if it is a species central to the article.

Photographs should ideally be above 200kb in size and I am happy to crop large photos to make the best use of space. **Please send photos as**

attachments rather than include them in the text of your article or if they are included in the article please don’t wrap them in text or accompany them with a text box. Please state the photographer’s name or the source of the photograph.

Please send text in a word file without any formatting such as columns. Only use capital letters for site or people’s names. Lower case letters should be used for vernacular or common species names with the exception of those named after someone e.g.; Fallen’s leatherbug.

Many thanks

Pete Boardman – Editor.

INDEX OF SHROPSHIRE ARTICLES FROM VOLUME 1-VOLUME 8

This file and a word file showing article titles and author by subject area will be available shortly on the Invertebrate Challenge resources web page.

Arachnida	<i>affinis, Atypus</i>	8: 16-18
Arachnida	<i>agrestis, Pardosa</i>	8: 17
Arachnida	<i>agricola, Pardosa</i>	8: 16
Arachnida	<i>alsine, Araneus</i>	8: 16
Arachnida	<i>Araneidae</i>	4: 4
Arachnida	<i>arcuata, Evarcha</i>	7: 5, 8: 16
Arachnida	<i>bellicosus, Rugathodes</i>	8: 17
Arachnida	<i>britteni, Satilatlas</i>	8: 17
Arachnida	<i>bruenmichi, Argiope</i>	7: 5, 6, 8: 16
Arachnida	<i>caerulescens, Clubiona</i>	8: 16
Arachnida	<i>carcinoides, Neobisium</i>	6: 2-4
Arachnida	<i>castaneipes, Monocephalus</i>	8: 17
Arachnida	<i>congenera, Entelecara</i>	7: 5, 8: 16
Arachnida	<i>cottonae, Glyphesis</i>	8: 16
Arachnida	<i>cristatus, Trematocephalus</i>	8: 16, 17
Arachnida	<i>diodia, Zilla</i>	8: 17
Arachnida	<i>dorsata, Diaea</i>	7: 5
Arachnida	<i>emarginatus, Philodromus</i>	8: 17
Arachnida	<i>errata, Entelecara</i>	8: 16
Arachnida	<i>firma, Saaristoa</i>	8: 17
Arachnida	<i>floricola, Sitticus</i>	8: 17

Arachnida	<i>grossa, Steatoda</i>	7: 5
Arachnida	<i>halberti, Kewochthonius</i>	6: 2-4
Arachnida	<i>hamata, Singa</i>	8: 17
Arachnida	<i>incisa, Walckenaeria</i>	8: 17
Arachnida	<i>inconspicua, Araniella</i>	8: 16
Arachnida	<i>insignis, Lepthyphantes</i>	8: 16
Arachnida	<i>labyrinthica, Agelena</i>	5: 19
Arachnida	<i>latimana, Enoplognatha</i>	7: 5
Arachnida	<i>limnaea, Carorita</i>	8: 16
Arachnida	<i>luctuosus, Xysticus</i>	8: 17
Arachnida	<i>marianae, Meta</i>	5: 6
Arachnida	<i>menardi, Meta</i>	7: 5
Arachnida	<i>oblitum, Porrhomma</i>	7: 5, 8: 17
Arachnida	<i>paradoxus, Hyptiotes</i>	8: 16
Arachnida	<i>pinicola, Tetragnatha</i>	8: 17
Arachnida	<i>Poecilochirus</i>	4: 11-13
Arachnida	<i>praedatus, Philodromus</i>	8: 17
Arachnida	<i>pusilla, Dictyna</i>	8: 16
Arachnida	<i>radiata, Neriene</i>	8: 17
Arachnida	<i>romana, Ceratinopsis</i>	8: 16
Arachnida	<i>Salticidae</i>	4: 4
Arachnida	<i>silvestris, Haplodrassus</i>	8: 16
Arachnida	<i>striata, Tetragnatha</i>	8: 17
Arachnida	<i>truncatus, Episinus</i>	8: 16
Coleoptera	<i>10-punctata, Adalia</i>	8: 16
Coleoptera	<i>14-punctata, Propylea</i>	8: 15
Coleoptera	<i>19-punctata, Anisosticta</i>	6: 6
Coleoptera	<i>22-punctata, Psyllobora</i>	8: 16
Coleoptera	<i>2-punctata, Adalia</i>	8: 15
Coleoptera	<i>4-punctata, Harmonia</i>	6: 6
Coleoptera	<i>7-punctata, Coccinella</i>	3: 12, 8: 15
Coleoptera	<i>aena, Elmis</i>	8: 9
Coleoptera	<i>aequalis, Helophorus</i>	8: 9
Coleoptera	<i>alni (L.), Agelastica</i>	3: 10-11
Coleoptera	<i>americana (L.), Chrysolina</i>	1: 11
Coleoptera	<i>asper (Sulzer), Morimus</i>	3: 16, 4: 19-20
Coleoptera	<i>axyridis Pallas, Harmonia</i>	1: 11, 8: 15, 16
Coleoptera	<i>bifasciatum, Rhagium</i>	5: 21
Coleoptera	<i>biguttatus, Agrilus</i>	6: 6, 8: 28
Coleoptera	<i>bipustulatus, Agabus</i>	8: 9
Coleoptera	<i>brevipalpis, Helophorus</i>	8: 9
Coleoptera	<i>canaliculatus, Acilius</i>	8: 9
Coleoptera	<i>Cerambycidae</i>	5: 20-21
Coleoptera	<i>ceruus, Lucanus</i>	4: 2
Coleoptera	<i>cinerea Herbst, Donacia</i>	4: 7
Coleoptera	<i>coccinea, Pyrochroa</i>	6: 6, 8: 27
Coleoptera	<i>coriarius, Prionus</i>	7: 6, 8: 26
Coleoptera	<i>crassipes Fabr., Donacia</i>	4: 7
Coleoptera	<i>cupreus, Poecilus</i>	6: 13
Coleoptera	<i>cylindrica, Phytocia</i>	6: 7
Coleoptera	<i>dorsalis, Longitarsus</i>	8: 28
Coleoptera	<i>famelica, Amara</i>	4: 6
Coleoptera	<i>fenestratus, Ilybius</i>	8: 9
Coleoptera	<i>ferrugineus L., Elater</i>	4: 15

Coleoptera	<i>frontalis, Scymnus</i>	8: 15
Coleoptera	<i>frumentarium L., Apion</i>	2: 15
Coleoptera	<i>fuscipes, Hydrobius</i>	8: 9
Coleoptera	<i>grapii, Rhantus</i>	8: 9
Coleoptera	<i>Helophorus</i>	6: 14
Coleoptera	<i>Hypera</i>	4: 5
Coleoptera	<i>investigator Zett., Microphorus</i>	4: 11-13
Coleoptera	<i>kugelammi, Poecilus</i>	6: 13
Coleoptera	<i>laticornis, Agrilus</i>	8: 28
Coleoptera	<i>lepidus, Poecilus</i>	6: 13
Coleoptera	<i>littoralis, Paederus</i>	8: 28
Coleoptera	<i>longulus, Hydroporus</i>	8: 9
Coleoptera	<i>marginatus (L.), Coreus</i>	2: 15-16
Coleoptera	<i>melanarius (Illiger), Pterostichus</i>	6: 21-22
Coleoptera	<i>minutus, Platycis</i>	8: 27
Coleoptera	<i>monocerus, Notoxus</i>	8: 28
Coleoptera	<i>novemdecimpunctata, Anisosticta</i>	6: 6
Coleoptera	<i>obscura, Cantharis</i>	8: 27
Coleoptera	<i>ochropterus, Enochrus</i>	8: 9
Coleoptera	<i>octodecimguttata, Myrrha</i>	8: 15
Coleoptera	<i>orni Fuchs, Hylesinus</i>	3: 13
Coleoptera	<i>palustris, Hydroporus</i>	8: 9
Coleoptera	<i>paradoxus (L.), Metoecus</i>	4: 9-10
Coleoptera	<i>parallelopedus, Dorcus</i>	4: 2
Coleoptera	<i>pellio (L.), Attagenus</i>	3: 16-17
Coleoptera	<i>pictus, Graptodytes</i>	8: 9
Coleoptera	<i>problematicus Herbst, Carabus</i>	5: 2-3
Coleoptera	<i>pubescens, Contactyphon</i>	8: 9
Coleoptera	<i>rumicis (L.), Hypera</i>	2: 15
Coleoptera	<i>sanguineum, Pyrrhidium</i>	4: 6, 8: 26-27
Coleoptera	<i>semucuprea, Donacia</i>	4: 7
Coleoptera	<i>septempunctata, (L.) Coccinella</i>	3: 12, 8: 8
Coleoptera	<i>serraticornis, Pyrochroa</i>	8: 27
Coleoptera	<i>sibiricus, Halipilus</i>	8: 9
Coleoptera	<i>sinuatus, Agrilus</i>	6: 6
Coleoptera	<i>suturalis, Scymnus</i>	8: 15
Coleoptera	<i>suturellis, Rhantus</i>	8: 9
Coleoptera	<i>tardus, Harpalus</i>	8: 28
Coleoptera	<i>truncatellus, Limnebius</i>	8: 9
Coleoptera	<i>variegata, Hippodamia</i>	5: 21-22
Coleoptera	<i>verbasci (L.), Anthrenus</i>	3: 16
Coleoptera	<i>versicolor, Poecilus</i>	6: 13
Coleoptera	<i>versicolore, Donacia</i>	8: 9
Coleoptera	<i>viburni (Paykull), Pyrrhalta</i>	2: 17-18, 3: 15
Coleoptera	<i>violaceus L., Carabus</i>	5: 2
Coleoptera	<i>violaceus Marsham, Meloe</i>	6: 19-20
Coleoptera	<i>viridula (DeGeer), Gastrophysa</i>	2: 14-15
Coleoptera	<i>ytensis, Laccobius</i>	8: 9
Collembola	<i>hyemalis (L.), Boreus</i>	1: 12, 2: 5
Collembola	<i>saundersi, Dicyrtomina</i>	7: 15
Dermaptera	<i>auricularia (L.), Forficula</i>	7: 2, 8: 19
Dermaptera	<i>lesnei (Finot), Forficula</i>	7: 2
Dermaptera	<i>minor (L.), Labia</i>	7: 2
Diptera	<i>adjunctum, Dicranophragma</i>	7: 11
Diptera	<i>affinis, Dicranomyia</i>	7: 11

Diptera	<i>albimana</i> , <i>Ptychoptera</i>	7: 12
Diptera	<i>albimanus</i> (Loew), <i>Platycheirus</i>	3: 6
Diptera	<i>albipes</i> , <i>Dolichozepe</i>	7: 11
Diptera	<i>albipila</i> , <i>Cheilosia</i>	3: 6
Diptera	<i>albitibia</i> , <i>Ormosia</i>	7: 12
Diptera	<i>albiventris</i> von Roser, <i>Hilara</i>	8: 15
Diptera	<i>alboscuteclatus</i> (von Roser), <i>Ellipteroides</i>	6: 14, 15, 7: 9
Diptera	<i>alpium</i> , <i>Tipula</i>	7: 12
Diptera	<i>ambiguus</i> , <i>Platycheirus</i>	3: 6
Diptera	<i>analis</i> , <i>Nephrotoma</i>	7: 12
Diptera	<i>annulata</i> , <i>Trichocera</i>	7: 13, 8: 4
Diptera	<i>anthophila</i> , <i>Eurithia</i>	6: 26
Diptera	<i>aperta</i> , <i>Dicranomyia</i>	8: 30
Diptera	<i>apicata</i> , <i>Elocephila</i>	7: 11
Diptera	<i>appendiculata</i> , <i>Nephrotoma</i>	7: 12, 8: 4
Diptera	<i>appendiculatus</i> , <i>Molophilus</i>	7: 11
Diptera	<i>aquosa</i> , <i>Dicranomyia</i>	7: 11
Diptera	<i>atrata</i> (L.), <i>Tanyptera</i>	1:10
Diptera	<i>atrata</i> , <i>Tanyptera</i>	7: 12
Diptera	<i>autumnalis</i> , <i>Dicranomyia</i>	7: 11
Diptera	<i>balteatus</i> , <i>Episyrphus</i>	3: 12
Diptera	<i>batava</i> , <i>Neolimnomyia</i>	7: 12
Diptera	<i>bifasciata</i> (Shrank), <i>Metalimnobia</i>	1:10, 6: 14, 7: 11
Diptera	<i>bifidus</i> , <i>Molophilus</i>	7: 11
Diptera	<i>bifurcatus</i> , <i>Rhypholophus</i>	7: 12
Diptera	<i>bihamatus</i> de Meijere, <i>Molophilus</i>	6: 14
Diptera	<i>bimaculata</i> , <i>Dicranota</i>	7: 11
Diptera	<i>bimaculata</i> , <i>Dictenidia</i>	7: 11
Diptera	<i>calcaratus</i> (Collin), <i>Teuchophora</i>	8: 14
Diptera	<i>calceata</i> , <i>Thaumastopectera</i>	7: 12
Diptera	<i>carbonaria</i> Egger, <i>Cheilosia</i>	8: 13
Diptera	<i>carteri</i> , <i>Neolimnophila</i>	7: 12
Diptera	<i>cava</i> , <i>Tipula</i>	7: 12
Diptera	<i>chorea</i> , <i>Dicranomyia</i>	7: 11
Diptera	<i>cinerascens</i> , <i>Cheilotrichia</i>	7: 11, 8: 4
Diptera	<i>cinereifrons</i> , <i>Molophilus</i>	7: 11
Diptera	<i>claripennis</i> , <i>Dicranota</i>	7: 11, 8: 4
Diptera	<i>confusa</i> , <i>Tipula</i>	7: 12, 8: 4
Diptera	<i>conoviensis</i> , <i>Gonomyia</i>	7: 11
Diptera	<i>consobrina</i> , <i>Eurithia</i>	6: 26
Diptera	<i>consobrinum</i> , <i>Platyzepe</i>	8: 12
Diptera	<i>consobrinus</i> Haliday in Walker, <i>Tachytrechus</i>	8: 14
Diptera	<i>contaminata</i> , <i>Ptychoptera</i>	7: 12
Diptera	<i>cornicina</i> , <i>Nephrotoma</i>	8: 4
Diptera	<i>crassipygus</i> , <i>Molophilus</i>	7: 11
Diptera	<i>crocata</i> (L.), <i>Nephrotoma</i>	1:10, 3: 9-10, 6: 14, 7: 12, 8: 31
Diptera	<i>ctenophora</i> Löew, <i>Rhipidia</i>	6: 14
Diptera	<i>curvatus</i> , <i>Molophilus</i>	7: 11
Diptera	<i>didyma</i> , <i>Dicranomyia</i>	7: 11
Diptera	<i>dilutior</i> (Edwards), <i>Limonia</i>	6: 14
Diptera	<i>discicollis</i> , <i>Pilaria</i>	7: 12
Diptera	<i>discimanus</i> , <i>Platycheirus</i>	3: 6-7
Diptera	<i>dispar</i> , <i>Euphyllidorea</i>	7: 11

Diptera	<i>distinctissima</i> , <i>Cylindrotoma</i>	7: 11
Diptera	<i>diuturna</i> , <i>Eriocnopa</i>	7: 11, 8: 4
Diptera	<i>divisa</i> (Walker), <i>Erioptera</i>	6: 14, 7: 11
Diptera	<i>domestica</i> L., <i>Musca</i>	4: 9
Diptera	<i>dumetorum</i> , <i>Neolimonia</i>	7: 12, 8: 4
Diptera	<i>errans</i> , <i>Lipsothrix</i>	7: 11
Diptera	<i>eunotus</i> Loew, <i>Chalcosyrphus</i>	1: 3-5
Diptera	<i>Eurithia</i>	6: 26
Diptera	<i>exclusa</i> , <i>Dicranota</i>	8: 4
Diptera	<i>fascipennis</i> , <i>Tipula</i>	7: 12
Diptera	<i>ferruginea</i> , <i>Phyllidorea</i>	7: 12
Diptera	<i>filata</i> , <i>Neolimnomyia</i>	7: 12
Diptera	<i>flava</i> , <i>Gonempeda</i>	7: 11
Diptera	<i>flavata</i> , <i>Erioptera</i>	7: 11
Diptera	<i>flavescens</i> , <i>Nephrotoma</i>	7: 12, 8: 4
Diptera	<i>flavipes</i> , <i>Limonia</i>	7: 11
Diptera	<i>flavolineata</i> , <i>Tipula</i>	7: 12
Diptera	<i>flavus</i> , <i>Helius</i>	7: 11
Diptera	<i>fulvopennis</i> , <i>Tipula</i>	7: 12, 8: 4
Diptera	<i>fulvonervosa</i> , <i>Phyllidorea</i>	7: 12, 8: 4
Diptera	<i>fusca</i> , <i>Dicranomyia</i>	7: 11
Diptera	<i>fuscescens</i> , <i>Tasiocera</i>	7: 12
Diptera	<i>fuscipennis</i> , <i>Pilaria</i>	7: 12
Diptera	<i>fuscula</i> , <i>Paradelphomyia</i>	7: 12
Diptera	<i>glabrata</i> , <i>Diogma</i>	7: 11
Diptera	<i>grata</i> Loew, <i>Argyra</i>	8: 14
Diptera	<i>griseipennis</i> , <i>Erioptera</i>	7: 11
Diptera	<i>griseus</i> , <i>Molophilus</i>	4: 5, 7: 11, 8: 4
Diptera	<i>grossa</i> , <i>Cheilosia</i>	3: 6
Diptera	<i>guestfalica</i> , <i>Nephrotoma</i>	7: 12
Diptera	<i>hederae</i> , <i>Ormosia</i>	7: 12
Diptera	<i>heterogyna</i> (Bergroth), <i>Phyllidorea</i>	1: 9, 10, 6: 14, 23-24, 7: 10, 7: 12
Diptera	<i>hiemalis</i> , <i>Trichocera</i>	7: 13, 8: 4
Diptera	<i>holoptera</i> , <i>Tipula</i>	8: 4
Diptera	<i>hortorum</i> , <i>Tipula</i>	7: 12
Diptera	<i>hybrida</i> , <i>Symplecta</i>	7: 12
Diptera	<i>immaculata</i> , <i>Triclyphona</i>	7: 13, 8: 4
Diptera	<i>inanis</i> (L.), <i>Volucella</i>	6: 22-23
Diptera	<i>insensilis</i> Collin, <i>Brachyopa</i>	8: 14
Diptera	<i>insignis</i> Stannius, <i>Tachytrechus</i>	8: 14
Diptera	<i>insularis</i> , <i>Wiedemannia</i>	6: 27
Diptera	<i>inustus</i> , <i>Atypophthalmus</i>	7: 11
Diptera	<i>jaroschewskii</i> (Schnabl), <i>Phaonia</i>	6: 24
Diptera	<i>lackschewitzianus</i> , <i>Molophilus</i>	7: 11
Diptera	<i>lacustris</i> , <i>Ptychoptera</i>	7: 12
Diptera	<i>lappona</i> (L.), <i>Sericomyia</i>	1: 3
Diptera	<i>lardarius</i> (Fabr.), <i>Polieties</i>	4: 9
Diptera	<i>lateralis</i> , <i>Ellipteroides</i>	7: 11
Diptera	<i>lateralis</i> , <i>Tipula</i>	7: 12, 8: 4, 7
Diptera	<i>leucepeza</i> Macquart, <i>Aulacigaster</i>	8: 14
Diptera	<i>limnophiloides</i> , <i>Crypteria</i>	7: 11, 8: 4
Diptera	<i>lineata</i> , <i>Ormosia</i>	7: 12
Diptera	<i>lineola</i> , <i>Euphyllidorea</i>	7: 11, 8: 4

Diptera	<i>linnei</i> Oosterbrook, <i>Idioptera</i>	1: 9, 7: 11
Diptera	<i>littoralis</i> , <i>Pedicia</i>	7: 12
Diptera	<i>livens</i> (Fabr.), <i>Hydromyza</i>	2: 3-4
Diptera	<i>longicauda</i> , <i>Ptychoptera</i>	7: 12
Diptera	<i>longirostris</i> , <i>Heliuss</i>	7: 11
Diptera	<i>lucorum</i> , <i>Pseudolimnophila</i>	7: 12
Diptera	<i>luna</i> , <i>Tipula</i>	7: 12
Diptera	<i>lunata</i> , <i>Tipula</i>	7: 12
Diptera	<i>lutea</i> , <i>Dicranomyia</i>	7: 11
Diptera	<i>lutea</i> , <i>Erioptera</i>	7: 11, 8: 4
Diptera	<i>luteipennis</i> , <i>Tipula</i>	7: 12, 8: 4
Diptera	<i>macrostigma</i> , <i>Limonia</i>	7: 11
Diptera	<i>maculata</i> , <i>Eloeophila</i>	7: 11
Diptera	<i>maculata</i> , <i>Ilisia</i>	8: 4
Diptera	<i>maculata</i> , <i>Rhipidia</i>	7: 12, 8: 4
Diptera	<i>major</i> , <i>Trichocera</i>	8: 4
Diptera	<i>maxima</i> , <i>Tipula</i>	7: 12, 8: 4
Diptera	<i>medius</i> , <i>Molophilus</i>	7: 11
Diptera	<i>meigeni</i> , <i>Euphyllidorea</i>	7: 11, 8: 4
Diptera	<i>melampodia</i> (Loew), <i>Arctoonopa</i>	3: 15
Diptera	<i>melanoceros</i> , <i>Tipula</i>	7: 12
Diptera	<i>meridiana</i> , <i>Pilaria</i>	7: 12
Diptera	<i>micans</i> (Meigen), <i>Rhaphium</i>	8: 14
Diptera	<i>minuta</i> , <i>Ptychoptera</i>	7: 12
Diptera	<i>mitis</i> , <i>Dicranomyia</i>	7: 11
Diptera	<i>mixta</i> Stary, <i>Ula</i>	6: 14, 7: 13
Diptera	<i>modesta</i> , <i>Dicranomyia</i>	7: 11, 8: 4
Diptera	<i>mollissima</i> , <i>Ula</i>	7: 13
Diptera	<i>Molophilus</i>	4: 5-6
Diptera	<i>montivaga</i> Villeneuve, <i>Paracraspedothrix</i>	2: 5
Diptera	<i>morio</i> , <i>Dicranomyia</i>	7: 11
Diptera	<i>morrisii</i> Curtis, <i>Oxycera</i>	8: 14
Diptera	<i>mulleibris</i> (Harris), <i>Palloptera</i>	6: 15
Diptera	<i>murina</i> , <i>Tasiocera</i>	7: 12
Diptera	<i>nemorale</i> , <i>Dicranophragma</i>	7: 11, 8: 4
Diptera	<i>Neoascia</i>	6: 25
Diptera	<i>nervosa</i> , <i>Lipsothrix</i>	6: 6, 7:11
Diptera	<i>nielseni</i> , <i>Erioptera</i>	7: 11
Diptera	<i>nielseni</i> , <i>Paradelphomyia</i>	7: 12, 8: 31
Diptera	<i>niger</i> , <i>Molophilus</i>	4: 5-6
Diptera	<i>nigra</i> (L), <i>Nigrotipula</i>	4: 2
Diptera	<i>nigristigma</i> Neilsen, <i>Dicranomyia</i>	6: 14, 8: 31
Diptera	<i>nigristigma</i> , <i>Lipsothrix</i> = <i>nobilis</i> , <i>Lipsothrix</i>	7: 9
Diptera	<i>nigropunctata</i> , <i>Limonia</i>	7: 11
Diptera	<i>nobilis</i> , <i>Lipsothrix</i>	7: 9, 11
Diptera	<i>nodulosa</i> , <i>Ormosia</i>	7: 12
Diptera	<i>notatus</i> Stannius, <i>Tachytrechus</i>	8: 14
Diptera	<i>nubeculosa</i> , <i>Limonia</i>	7: 11, 8: 4
Diptera	<i>obscurus</i> , <i>Molophilus</i>	7: 11, 8: 4
Diptera	<i>occoecata</i> , <i>Ilisia</i>	7: 11
Diptera	<i>occulta</i> , <i>Pedicia</i>	7: 12
Diptera	<i>occultus</i> , <i>Molophilus</i>	7: 11
Diptera	<i>ocellare</i> , <i>Epiphragma</i>	7: 11, 8: 4
Diptera	<i>ochracea</i> , <i>Austrolimnophila</i>	7: 11
Diptera	<i>ochraceus</i> , <i>Molophilus</i>	7: 11

Diptera	<i>oleracea</i> , <i>Tipula</i>	7: 12, 8: 4
Diptera	<i>pabulina</i> , <i>Tipula</i>	7: 12
Diptera	<i>pagana</i> , <i>Tipula</i>	7: 12, 8: 4
Diptera	<i>pallirostris</i> , <i>Heliuss</i>	7: 11
Diptera	<i>paludosa</i> , <i>Ptychoptera</i>	7: 12
Diptera	<i>paludosa</i> , <i>Tipula</i>	3: 12, 7: 12, 8: 4
Diptera	<i>parva</i> , <i>Trichocera</i>	7: 13, 8: 4
Diptera	<i>pavida</i> , <i>Dicranota</i>	7: 11
Diptera	<i>pentagonalis</i> , <i>Scleroprocta</i>	7: 9, 12
Diptera	<i>phaeostigma</i> , <i>Euphyllidorea</i>	7: 11
Diptera	<i>phragmitidis</i> , <i>Limonia</i>	7: 11, 8: 4
Diptera	<i>physoprocta</i> Frey, <i>Rhamphomyia</i>	2: 4 -5
Diptera	<i>pierrei</i> , <i>Tipula</i>	7: 12
Diptera	<i>pilipes</i> , <i>Trimicra</i>	7: 13, 8: 4
Diptera	<i>pseudosimilis</i> , <i>Ormosia</i>	7: 12
Diptera	<i>pseudovariipennis</i> , <i>Tipula</i>	7: 12
Diptera	<i>pubescens</i> Loew, <i>Prionocera</i>	1:10, 7: 12
Diptera	<i>pulchella</i> , <i>Idioptera</i>	7: 11
Diptera	<i>quadrifaria</i> , <i>Nephrotoma</i>	7: 12, 8: 4
Diptera	<i>quadrinotata</i> , <i>Metalimnobia</i>	7: 11
Diptera	<i>rara</i> (Scop.), <i>Oxycera</i>	8: 14
Diptera	<i>recta</i> , <i>Gonomyia</i>	7: 11
Diptera	<i>regelationis</i> , <i>Trichocera</i>	7: 13, 8: 4
Diptera	<i>remota</i> , <i>Lipsothrix</i>	7: 11
Diptera	<i>replicata</i> (L.), <i>Phalacrocer</i>	1: 10, 7: 12
Diptera	<i>riparia</i> , <i>Lispocephala</i>	6: 26
Diptera	<i>rivosa</i> , <i>Pedicia</i>	7: 12, 8: 4, 7
Diptera	<i>robusta</i> , <i>Tasiocera</i>	7: 12
Diptera	<i>rufa</i> Schumel, <i>Callicera</i>	4: 16, 8: 13
Diptera	<i>rufescens</i> , <i>Trichocera</i>	7: 13
Diptera	<i>rufina</i> , <i>Tipula</i>	7: 12, 8: 4
Diptera	<i>saltator</i> , <i>Trichocera</i>	7: 13, 8: 4
Diptera	<i>schranksi</i> , <i>Limnophila</i>	7: 11
Diptera	<i>schummeli</i> Edwards, <i>Tricyphona</i>	1:10, 7:13
Diptera	<i>scripta</i> , <i>Tipula</i>	7: 12, 8: 4
Diptera	<i>scurra</i> , <i>Nephrotoma</i>	7: 12
Diptera	<i>scutellata</i> , <i>Pilaria</i>	7: 12
Diptera	<i>selene</i> , <i>Tipula</i>	7: 12
Diptera	<i>semifasciata</i> Becker, <i>Cheilosia</i>	1: 5-6
Diptera	<i>senilis</i> , <i>Paradelphomyia</i>	7: 12
Diptera	<i>sepium</i> , <i>Pseudolimnophila</i>	7: 12
Diptera	<i>serpentiger</i> , <i>Molophilus</i>	7: 11
Diptera	<i>sorocula</i> (Zett.), <i>Scleroprocta</i>	6: 14
Diptera	<i>Sphaerophoria</i>	5: 19-20
Diptera	<i>Sphegina</i>	6: 25
Diptera	<i>squalens</i> , <i>Phyllidorea</i>	7: 12
Diptera	<i>squalida</i> , <i>Erioptera</i>	7: 11
Diptera	<i>staegeri</i> , <i>Tipula</i>	7: 12, 8: 4
Diptera	<i>stictica</i> , <i>Symplecta</i>	7: 12, 8: 4
Diptera	<i>sticticus</i> , <i>Platycheirus</i>	3: 7
Diptera	<i>straminea</i> , <i>Pedicia</i>	7: 12
Diptera	<i>subcunctans</i> , <i>Tipula</i>	8: 4
Diptera	<i>submarmorata</i> , <i>Eloeophila</i>	7: 11
Diptera	<i>submarmorata</i> , <i>Tipula</i>	7: 12
Diptera	<i>subserricornis</i> (Zett.), <i>Prionocera</i>	1:10, 7: 12

Diptera	<i>superbiens</i> , <i>Arctophila</i>	6: 26
Diptera	<i>sylvatica</i> , <i>Ula</i>	7: 13
Diptera	<i>transversa</i> , <i>Dactylolabis</i>	7: 11
Diptera	<i>trilineata</i> (L.), <i>Oxycera</i>	8: 14
Diptera	<i>trivialis</i> , <i>Eriocnopa</i>	7: 11, 8: 4
Diptera	<i>trivittata</i> , <i>Limonia</i>	7: 11
Diptera	<i>turcica</i> (Fabr.), <i>Prionocera</i>	1:10
Diptera	<i>turcica</i> , <i>Prionocera</i>	7: 12
Diptera	<i>unca</i> , <i>Tipula</i>	7: 12
Diptera	<i>undulatus</i> , <i>Molophilus</i>	7: 12
Diptera	<i>unicolor</i> Oldenburg, <i>Agathomyia</i>	8: 12
Diptera	<i>uniseriata</i> Schiner, <i>Rhipidia</i>	8: 15
Diptera	<i>varicornis</i> , <i>Tipula</i>	7: 12
Diptera	<i>varipennis</i> , <i>Tipula</i>	7: 12, 8: 4
Diptera	<i>varius</i> , <i>Rhypholophus</i>	7: 12
Diptera	<i>ventralis</i> , <i>Dicranomyia</i>	7: 11
Diptera	<i>vernalis</i> , <i>Tipula</i>	7: 12, 8: 4
Diptera	<i>verralli</i> , <i>Eloophila</i>	7: 11
Diptera	<i>verralli</i> , <i>Erioptera</i>	7: 11
Diptera	<i>vicina</i> (Tonnoir), <i>Hoplotabis</i>	6: 14
Diptera	<i>virescens</i> Loew, <i>Chrysogaster</i>	1: 3
Diptera	<i>viridipennis</i> , <i>Gnophomyia</i>	7: 11
Diptera	<i>vitripennis</i> , <i>Antocha</i>	7: 11
Diptera	<i>vittata</i> , <i>Tipula</i>	7: 12, 8: 4
Diptera	<i>vulgaris</i> (Fallén), <i>Parapiophila</i>	8: 15
Diptera	<i>zonaria</i> , <i>Volucella</i>	6: 22-23
Ephemeroptera	<i>lacustris</i> , <i>Siphonurus</i>	8: 28
Hemiptera	<i>aceris</i> (L.), <i>Rhinocola</i>	8: 21
Hemiptera	<i>acuminatus</i> (Fabr.), <i>Evacanthus</i>	8: 23
Hemiptera	<i>affinis</i> Fieber, <i>Stiroma</i>	8: 23
Hemiptera	<i>albicinctus</i> (Kirschbaum), <i>Psallus</i>	8: 26
Hemiptera	<i>albiventris</i> (Förster), <i>Bactericera</i>	8: 20
Hemiptera	<i>albomarginatus</i> Curtis, <i>Cixius</i>	8: 23
Hemiptera	<i>ambigua</i> (Förster), <i>Cacopsylla</i>	8: 21
Hemiptera	<i>anceps</i> (Germar), <i>Conomelus</i>	7: 17-18
Hemiptera	<i>Anthocoridae</i>	8: 25
Hemiptera	<i>Auchenorrhyncha</i>	8: 19-21
Hemiptera	<i>aurita</i> (L.), <i>Ledra</i>	1: 13, 7: 17, 8: 23
Hemiptera	<i>baccarum</i> (L.), <i>Dolycoris</i>	1: 14, 5: 13
Hemiptera	<i>basalis</i> (A. Costa), <i>Orthops</i>	8: 25
Hemiptera	<i>bicolor</i> (Douglas & Scott), <i>Platycranus</i>	8: 25
Hemiptera	<i>bicolor</i> , <i>Sehirus</i> = <i>bicolor</i> (L.), <i>Tritomegas</i>	1: 15
Hemiptera	<i>bidens</i> (L.), <i>Picromerus</i>	1: 15, 5: 13
Hemiptera	<i>biguttatus</i> (L.), <i>Sehirus</i>	1: 16, 4: 13-14, 5: 11
Hemiptera	<i>brunnea</i> (Melichar), <i>Eurysella</i>	8: 23
Hemiptera	<i>butleri</i> Le Quesne, <i>Anthocoris</i>	8: 25
Hemiptera	<i>caerulea</i> (L.), <i>Zicrona</i>	1: 16, 8: 7
Hemiptera	<i>callosa</i> (Then), <i>Ossiannilssonola</i>	8: 23
Hemiptera	<i>caricis</i> (Fallén), <i>Cyrtorhinus</i>	8: 25
Hemiptera	<i>carpini</i> (Sahlberg), <i>Oncopsis</i>	8: 23
Hemiptera	<i>Cicadellidae</i>	8: 22-23
Hemiptera	<i>Cixiidae</i>	8: 23
Hemiptera	<i>coccineus</i> (Meyer-Dür), <i>Pseudoloxops</i>	8: 26

Hemiptera	<i>coleopratus</i> (Fabr.), <i>Issus</i>	4: 16-17
Hemiptera	<i>commutatus</i> (Fieber), <i>Allygidius</i>	8: 22
Hemiptera	<i>cornutus</i> (L.), <i>Centrotus</i>	1: 13, 8: 22
Hemiptera	<i>curvatinervis</i> (Förster), <i>Bactericera</i>	8: 21
Hemiptera	<i>decempunctata</i> (Fallén), <i>Linnaeuoriana</i>	8: 23
Hemiptera	<i>Delphacidae</i>	8: 23
Hemiptera	<i>depressus</i> Mulsant & Rey, <i>Orsillus</i>	6: 9, 8: 20
Hemiptera	<i>dimidiatus</i> Kirschbaum, <i>Phytocoris</i>	8: 25
Hemiptera	<i>distinguendus</i> Kirschbaum, <i>Cixius</i>	8: 23
Hemiptera	<i>elongata</i> , <i>Notostira</i>	8: 25
Hemiptera	<i>fabricii</i> , <i>Eysarcoris</i>	1: 14, 5: 13
Hemiptera	<i>falleni</i> , <i>Arenocoris</i>	5: 11
Hemiptera	<i>femahi</i> Young, <i>Graphocephala</i>	7: 17
Hemiptera	<i>foersteri</i> (Flor.), <i>Baopelma</i>	8: 21
Hemiptera	<i>fonscolombii</i> Förster, <i>Spanioneura</i>	8: 21
Hemiptera	<i>fraxinicola</i> (Förster), <i>Psyllopsis</i>	8: 21
Hemiptera	<i>frustrator</i> (Edwards), <i>Edwardsiana</i>	8: 22
Hemiptera	<i>genistae</i> (Fabr.), <i>Gargara</i>	1: 13
Hemiptera	<i>genistae</i> (Latreille), <i>Arytaina</i>	8: 20
Hemiptera	<i>grisea</i> (L.), <i>Elasmucha</i>	1: 14, 4: 8
Hemiptera	<i>haemorrhoidale</i> (L.), <i>Acanthosoma</i>	1: 14, 5: 11, 13
Hemiptera	<i>hartigii</i> (Flor), <i>Chamaepsylla</i>	8: 21
Hemiptera	<i>horvathi</i> (Wagner), <i>Macrosteles</i>	8: 23
Hemiptera	<i>hyoscyami</i> (L.), <i>Corizus</i>	4: 14
Hemiptera	<i>infusata</i> (Sahlberg), <i>Macropsis</i>	8: 23
Hemiptera	<i>interruptus</i> (L.), <i>Evacanthus</i>	7: 16
Hemiptera	<i>interstinctus</i> (L.), <i>Elasmostethus</i>	1: 14, 4: 8, 5: 14
Hemiptera	<i>laevigata</i> , <i>Stenodema</i>	8: 8
Hemiptera	<i>lepidus</i> (Boheman), <i>Euconomelus</i>	7: 17
Hemiptera	<i>limbosus</i> , <i>Legnotus</i>	5: 11
Hemiptera	<i>lituratus</i> (Fabr.), <i>Piezodorus</i>	1: 15
Hemiptera	<i>lividus</i> , <i>Ceraleptus</i>	5: 11
Hemiptera	<i>luridus</i> (Fabr.), <i>Troilus</i>	1: 16, 4: 8
Hemiptera	<i>marginatus</i> (L.), <i>Coreus</i>	1: 16
Hemiptera	<i>melanoneura</i> (Förster), <i>Cacopsylla</i>	8: 21
Hemiptera	<i>montanus</i> Josifov, <i>Psallus</i>	8: 26
Hemiptera	<i>najus</i> (DeGeer), <i>Aquarius</i>	6: 17-19
Hemiptera	<i>nemorum</i> (L.), <i>Anthocoris</i>	7: 18, 19, 8: 8
Hemiptera	<i>ocellaris</i> , <i>Errastunus</i>	8: 22
Hemiptera	<i>oleracea</i> , <i>Eurydema</i>	3: 15
Hemiptera	<i>peregrina</i> (Förster), <i>Cacopsylla</i>	8: 21
Hemiptera	<i>pilosus</i> , <i>Tachycixius</i>	8: 20
Hemiptera	<i>pini</i> (L.), <i>Rhyparochromus</i>	4: 15
Hemiptera	<i>planicornis</i> (Germar), <i>Heterotoma</i>	7: 18
Hemiptera	<i>plurispinosa</i> (Wagner), <i>Edwardsiana</i>	8: 22
Hemiptera	<i>prasina</i> (L.), <i>Palomina</i>	1: 15, 5: 13
Hemiptera	<i>prasinus</i> (Fallén), <i>Orthotylus</i>	8: 25
Hemiptera	<i>pruni</i> (Scop.), <i>Cacopsylla</i>	8: 21
Hemiptera	<i>Psylloidea</i>	8: 19-21
Hemiptera	<i>pulchra</i> Low, <i>Zyginella</i>	8: 23
Hemiptera	<i>punctatonervosus</i> , <i>Stictopleurus</i>	5: 11
Hemiptera	<i>punctatus</i> (L.), <i>Rhacognathus</i>	1: 15, 16, 4: 14, 5: 11, 6: 24-25
Hemiptera	<i>pusilla</i> (Gmelin), <i>Neottiglossa</i>	1: 13

Hemiptera	<i>quercus</i> (Fabr.), <i>Typhlocyba</i>	8: 23
Hemiptera	<i>resedae</i> , <i>Kleidocerys</i>	4: 8
Hemiptera	<i>reticulata</i> (Fabr.), <i>Ulopa</i>	7: 16
Hemiptera	<i>rufescens</i> (Herrich-Schäffer), <i>Metatropis</i>	2: 2-3, 8: 24
Hemiptera	<i>rufipes</i> (L.), <i>Pentatoma</i>	1: 15, 4: 8
Hemiptera	<i>rutilans</i> (Kirschbaum), <i>Metidiocerus</i>	8: 23
Hemiptera	<i>schillingi</i> , <i>Chorosoma</i>	5: 12
Hemiptera	<i>spartiophila</i> (Förster), <i>Arytainilla</i>	8: 20
Hemiptera	<i>testudinaria</i> (Geoffroy), <i>Erygaster</i>	4: 14, 5: 11
Hemiptera	<i>tristatus</i> (Fabr.), <i>Cyphostethus</i>	5: 8-9, 7: 4-5
Hemiptera	<i>tunicatus</i> (Fabr.), <i>Pantilius</i>	3: 5-6, 4: 8, 7: 18
Hemiptera	<i>variatus</i> (Fallén), <i>Macrosteles</i>	8: 23
Hemiptera	<i>viridis</i> (L.), <i>Cicadella</i>	7: 16
Hemiptera	<i>visci</i> (Curtis), <i>Cacopsylla</i>	8: 21
Hemiptera	<i>vulnerata</i> Rossi, <i>Cercopis</i>	7: 16
Hymenoptera	<i>aeneus</i> (Fabr.), <i>Omalus</i>	4: 3, 8-9
Hymenoptera	<i>Agenioideus</i>	4: 4
Hymenoptera	<i>Ammophila</i>	3: 4
Hymenoptera	<i>Ancistrocerus</i>	4: 5
Hymenoptera	<i>Andrena</i>	2: 9, 10, 6: 8, 12
Hymenoptera	<i>Anoplius</i>	4: 4
Hymenoptera	<i>Anthidium</i>	2: 10
Hymenoptera	<i>Anthophora</i>	2: 10
Hymenoptera	<i>apicata</i> , <i>Andrena</i>	2: 9, 10, 11
Hymenoptera	<i>Apis</i>	2: 10
Hymenoptera	<i>Arachmospila</i>	4: 4
Hymenoptera	<i>ardens</i> , <i>Hedychridium</i>	6: 8
Hymenoptera	<i>Argogorytes</i>	3: 4
Hymenoptera	<i>Auplopus</i>	4: 4
Hymenoptera	<i>austriaca</i> , <i>Vespula</i>	4: 5
Hymenoptera	<i>barbilabris</i> , <i>Andrena</i>	2: 10, 6: 8
Hymenoptera	<i>bicolor</i> , <i>Osmia</i>	2: 9, 11, 8: 10
Hymenoptera	<i>bimaculata</i> , <i>Andrena</i>	2: 9, 11, 6: 8
Hymenoptera	<i>binotatus</i> , <i>Crossocerus</i>	3: 3
Hymenoptera	<i>bohemicus</i> , <i>Bombus</i>	5: 3
Hymenoptera	<i>Bombus</i>	2: 10
Hymenoptera	<i>brunneus</i> (Latreille), <i>Lasius</i>	6: 6
Hymenoptera	<i>bucephala</i> , <i>Andrena</i>	2: 11
Hymenoptera	<i>campanularum</i> , <i>Chelostoma</i>	2: 10
Hymenoptera	<i>carbonarius</i> , <i>Auplopus</i>	4: 3
Hymenoptera	<i>caviventris</i> , <i>Anoplius</i>	4: 3
Hymenoptera	<i>Cerceris</i>	3: 5
Hymenoptera	<i>Chelostoma</i>	2: 10, 4: 4
Hymenoptera	<i>Chrysis</i>	4: 4
Hymenoptera	<i>Chrysuria</i>	4: 4
Hymenoptera	<i>cineraria</i> (L.), <i>Andrena</i>	1: 8
Hymenoptera	<i>clavicornis</i> , <i>Monosapyga</i>	4: 3
Hymenoptera	<i>claviventris</i> , <i>Hoplitis</i>	6: 8
Hymenoptera	<i>Cleptes</i>	4: 3
Hymenoptera	<i>coccinellae</i> (Schrank), <i>Dinocampus</i>	5: 21-22, 7: 23
Hymenoptera	<i>Coelioxys</i>	2: 10
Hymenoptera	<i>Colletes</i>	2: 9
Hymenoptera	<i>concinuus</i> , <i>Anoplius</i>	4: 3

Hymenoptera	<i>corniger</i> Shuckard, <i>Passaloecus</i>	4: 8
Hymenoptera	<i>Crabro</i>	3: 4, 6: 8
Hymenoptera	<i>crabro</i> , <i>Vespa</i>	6: 23
Hymenoptera	<i>crassus</i> , <i>Sphecodes</i>	2: 9, 11
Hymenoptera	<i>Crossocerus</i>	3: 4
Hymenoptera	<i>cruciger</i> , <i>Epeolus</i>	2: 10
Hymenoptera	<i>daviesanus</i> , <i>Epeolus</i>	2: 10
Hymenoptera	<i>dimidiatus</i> , <i>Nysson</i>	3: 3, 6: 8
Hymenoptera	<i>Diodontus</i>	3: 5, 6: 8
Hymenoptera	<i>Dipogon</i>	4: 4
Hymenoptera	<i>Dolichovespula</i>	4: 5
Hymenoptera	<i>Ectemnius</i>	3: 4, 6: 8
Hymenoptera	<i>Entomognathus</i>	3: 4
Hymenoptera	<i>Epeolus</i>	2: 10
Hymenoptera	<i>Episyron</i>	4: 4
Hymenoptera	<i>Eucera</i>	2: 10
Hymenoptera	<i>Eumenid</i>	4: 4
Hymenoptera	<i>Evagetes</i>	4: 4
Hymenoptera	<i>femorata</i> , <i>Tiphia</i>	8: 10, 11
Hymenoptera	<i>ferruginatus</i> , <i>Sphecodes</i>	2: 11
Hymenoptera	<i>flavopicta</i> , <i>Nomada</i>	2: 9, 10, 11
Hymenoptera	<i>florisomme</i> , <i>Chelostoma</i>	2: 10
Hymenoptera	<i>fulvicornis</i> , <i>Nomada</i>	2: 9, 11
Hymenoptera	<i>furcata</i> , <i>Anthophora</i>	2: 10
Hymenoptera	<i>germanica</i> , <i>Vespula</i>	6: 23
Hymenoptera	<i>Gorytes</i>	3: 4
Hymenoptera	<i>gracilis</i> , <i>Symmorphus</i>	4: 5
Hymenoptera	<i>guttulata</i> , <i>Nomada</i>	2: 9, 11, 12
Hymenoptera	<i>Gymnomerus</i>	4: 5
Hymenoptera	<i>haemorrhoidalis</i> , <i>Melitta</i>	2: 9, 10, 11
Hymenoptera	<i>Halictus</i>	2: 10
Hymenoptera	<i>hederae</i> , <i>Colletes</i>	8: 11, 12
Hymenoptera	<i>Hedychridium</i>	4: 4
Hymenoptera	<i>Heriades</i>	2: 10
Hymenoptera	<i>hirtipes</i> , <i>Nomada</i>	2: 11
Hymenoptera	<i>Hoplitis</i>	2: 10
Hymenoptera	<i>humilis</i> , <i>Andrena</i>	2: 9, 11
Hymenoptera	<i>humilis</i> , <i>Bombus</i>	2: 11
Hymenoptera	<i>hyalinata</i> , <i>Priocnemis</i>	8: 10, 11
Hymenoptera	<i>Hylaeus</i>	2: 9
Hymenoptera	<i>insidiosus</i> , <i>Diodontus</i>	3: 3, 6: 8
Hymenoptera	<i>integra</i> , <i>Nomada</i>	2: 11
Hymenoptera	<i>labiata</i> , <i>Andrena</i>	2: 12
Hymenoptera	<i>lapidarius</i> , <i>Bombus</i>	3: 8
Hymenoptera	<i>Lasioglossum</i>	2: 10, 6: 8
Hymenoptera	<i>leaiana</i> , <i>Osmia</i>	4: 4
Hymenoptera	<i>leporina</i> , <i>Melitta</i>	2: 10
Hymenoptera	<i>Lindenius</i>	3: 4
Hymenoptera	<i>longicornis</i> , <i>Eucera</i>	2: 9, 11, 8: 10, 11
Hymenoptera	<i>lucorum</i> , <i>Bombus</i>	3: 8, 5: 17
Hymenoptera	<i>lugubris</i> Zett., <i>Formica</i>	6: 4
Hymenoptera	<i>lugubris</i> , <i>Pemphredon</i>	4: 8
Hymenoptera	<i>magnus</i> , <i>Bombus</i>	5: 17
Hymenoptera	<i>malachurum</i> , <i>Lasioglossum</i>	8: 10, 11
Hymenoptera	<i>maritime</i> , <i>Megachile</i>	2: 9

Hymenoptera	<i>mediata, Chrysis</i>	8: 10, 11
Hymenoptera	<i>Megachile</i>	2: 10
Hymenoptera	<i>Melecta</i>	2: 10
Hymenoptera	<i>Melitta</i>	2: 10
Hymenoptera	<i>Mellinus</i>	3: 5
Hymenoptera	<i>Mimesa</i>	3: 4
Hymenoptera	<i>Mimumesa</i>	3: 4
Hymenoptera	<i>minuta, Tiphia</i>	4: 4
Hymenoptera	<i>minutula, Arachmospila</i>	4: 3, 6: 8
Hymenoptera	<i>monilicornis, Passaloecus</i>	8: 12
Hymenoptera	<i>Monosapyga</i>	4: 4
Hymenoptera	<i>monticola (Smith), Bombus</i>	3: 8-9, 5: 17-18
Hymenoptera	<i>morio, Pemphredon</i>	3: 3
Hymenoptera	<i>Myrmosa</i>	4: 4
Hymenoptera	<i>niger, Sphecodes</i>	2: 9
Hymenoptera	<i>nigriceps, Andrena</i>	2: 11
Hymenoptera	<i>Nomada</i>	2: 10
Hymenoptera	<i>Nysson</i>	3: 5
Hymenoptera	<i>obtusifrons, Nomada</i>	2: 11
Hymenoptera	<i>Odynerus</i>	4: 5
Hymenoptera	<i>Omalus</i>	4: 3, 8-9
Hymenoptera	<i>ornatula, Stelis</i>	2: 9, 11, 6: 8
Hymenoptera	<i>Osmia</i>	2: 10, 4: 4
Hymenoptera	<i>Oxybelus</i>	3: 4
Hymenoptera	<i>palmipes, Crossocerus</i>	6: 7, 8
Hymenoptera	<i>parietina, Osmia</i>	2: 11
Hymenoptera	<i>Passaloecus</i>	3: 5, 4: 4
Hymenoptera	<i>pellucidus, Sphecodes</i>	2:10, 6: 8
Hymenoptera	<i>Pemphredon</i>	3: 5, 4: 4, 6: 8
Hymenoptera	<i>pendulus, Stigmus</i>	8: 10, 12
Hymenoptera	<i>phaeoptera, Stelis</i>	2: 9, 11, 8: 10
Hymenoptera	<i>Philanthus</i>	3: 4
Hymenoptera	<i>pictipes, Hylaeus</i>	2: 11
Hymenoptera	<i>plumipes, Anthophora</i>	2: 10
Hymenoptera	<i>pompiliformis, Tachysphex</i>	4: 4, 6: 8
Hymenoptera	<i>Pompilus</i>	4: 4
Hymenoptera	<i>pratorum, Bombus</i>	3: 8
Hymenoptera	<i>Priocnemis</i>	4: 4
Hymenoptera	<i>Psenelus</i>	3: 4, 4: 4
Hymenoptera	<i>Pseudomalus</i>	4: 4, 8-9
Hymenoptera	<i>pubescens, Ammophila</i>	3: 3
Hymenoptera	<i>puncticollis, Omalus</i>	4: 3
Hymenoptera	<i>punctulatissima, Stelis</i>	2: 9, 11
Hymenoptera	<i>quinquepunctata, Sapyga</i>	4: 5
Hymenoptera	<i>radians, Chrysura</i>	4: 3
Hymenoptera	<i>Rhopalum</i>	3: 5, 4: 4
Hymenoptera	<i>ribesii, Nematus</i>	4: 3
Hymenoptera	<i>runderarius, Bombus</i>	2: 11
Hymenoptera	<i>rufa L., Formica</i>	6: 4-5
Hymenoptera	<i>rufa, Vespa</i>	4: 5
Hymenoptera	<i>rupestris, Bombus</i>	5: 17
Hymenoptera	<i>sanguinea Latreille, Formica</i>	6: 4-5
Hymenoptera	<i>Sapyga</i>	4: 4
Hymenoptera	<i>semiauratus, Cleptes</i>	4: 3
Hymenoptera	<i>signata, Nomada</i>	2: 11

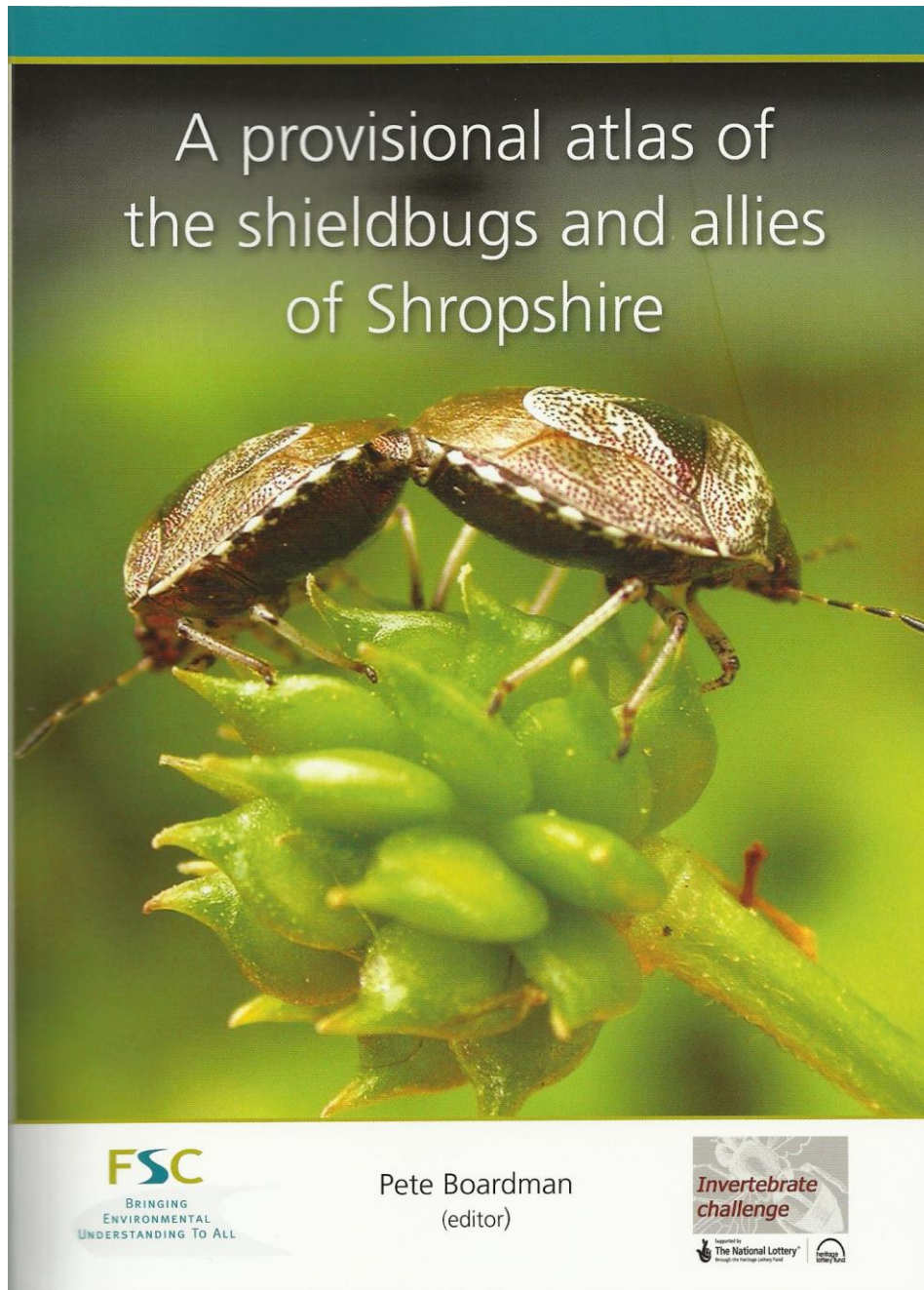
Hymenoptera	<i>signatus, Hylaeus</i>	2: 9, 11
Hymenoptera	<i>Sphecodes</i>	2: 10
Hymenoptera	<i>Spilomena</i>	3: 4
Hymenoptera	<i>spinipes, Odynerus</i>	4: 5, 8: 11
Hymenoptera	<i>Stelis</i>	2: 10
Hymenoptera	<i>Stigmus</i>	3: 4
Hymenoptera	<i>succinctus, Colletes</i>	2: 9-10
Hymenoptera	<i>susterae, Priocnemis</i>	4: 3
Hymenoptera	<i>sylvestris, Bombus</i>	3: 8
Hymenoptera	<i>Symmorphus</i>	4: 5
Hymenoptera	<i>Tachysphex</i>	3: 4
Hymenoptera	<i>tarsata, Andrena</i>	2: 11
Hymenoptera	<i>tibialis, Andrena</i>	2: 11
Hymenoptera	<i>Tiphia</i>	4: 4
Hymenoptera	<i>triangulum, Philanthus</i>	3: 3
Hymenoptera	<i>Trichrysis</i>	4: 4
Hymenoptera	<i>trifasciatus, Ancistrocerus</i>	8: 11
Hymenoptera	<i>trimmerana, Andrena</i>	2: 9, 11
Hymenoptera	<i>tristis, Diodontus</i>	3: 3, 6: 8
Hymenoptera	<i>Trypoxylon</i>	3: 4, 4: 4
Hymenoptera	<i>tumidus, Harpactus</i>	6: 7, 8
Hymenoptera	<i>uniglumis, Oxybelus</i>	6: 8
Hymenoptera	<i>varians, Andrena</i>	2: 11
Hymenoptera	<i>variegatus, Epeolus</i>	2: 10
Hymenoptera	<i>Vespa</i>	4: 5
Hymenoptera	<i>Vespula</i>	4: 5
Hymenoptera	<i>vestalis, Bombus</i>	5: 3-4
Hymenoptera	<i>violaceus, Pseudomalus</i>	4: 3, 8-9
Hymenoptera	<i>viridula, Chrysis</i>	4: 3
Hymenoptera	<i>walkerii, Crossocerus</i>	3: 3
Lepidoptera	<i>acanthodactyla, Amblyptilia</i>	2: 20
Lepidoptera	<i>angusticoella, Emmetia</i>	4: 11
Lepidoptera	<i>annadactyla, Stenoptilia</i>	2: 21
Lepidoptera	<i>argus (L.), Plebejus</i>	2: 7-8
Lepidoptera	<i>aridus, Stenoptilia</i>	2: 21
Lepidoptera	<i>atrata (L.), Odezia</i>	1: 2,3
Lepidoptera	<i>azaleella, Caloptilia</i>	4: 11
Lepidoptera	<i>baliodactylus, Merrifieldia</i>	2: 21
Lepidoptera	<i>bennetii, Agdistis</i>	2: 20
Lepidoptera	<i>bipunctidatyla, S</i>	2: 21
Lepidoptera	<i>britanmiodactyla, Capperia</i>	2: 6, 20
Lepidoptera	<i>calodactyla, Platyptilia</i>	2: 20
Lepidoptera	<i>camilla, Limenitis</i>	6: 7
Lepidoptera	<i>carphodactyla, Euleioptilus</i>	2: 6, 21
Lepidoptera	<i>chrysocoma, Hellinsia</i>	2: 6, 21
Lepidoptera	<i>distans, Oxyptilus</i>	2: 6, 20
Lepidoptera	<i>erxebella (Fabr.), Roeslerstammia</i>	2: 13
Lepidoptera	<i>euphrosyne (L.), Boloria</i>	2: 7
Lepidoptera	<i>fasciana (L.), Pammene</i>	2: 13
Lepidoptera	<i>galactodactyla, Pterophorus</i>	2: 6, 21
Lepidoptera	<i>gonodactyla, Platyptilia</i>	2: 20
Lepidoptera	<i>hepariella, Zellaria</i>	4: 11
Lepidoptera	<i>heterodactyla, Pselnophorus</i>	2: 21
Lepidoptera	<i>islandicus, Stenoptilia</i>	2: 21
Lepidoptera	<i>isodactylus, Platyptilia</i>	2: 20

Lepidoptera	<i>jungiella</i> , <i>Grapholita</i>	6: 11
Lepidoptera	<i>laetus</i> , <i>Oxyptilus</i>	2: 20
Lepidoptera	<i>lantanela</i> , <i>Phyllonorycter</i>	4: 11
Lepidoptera	<i>leucodactyla</i> , <i>Merrifieldia</i>	2: 21
Lepidoptera	<i>lienigianus</i> , <i>Ovendenia</i>	2: 21
Lepidoptera	<i>lithodactyla</i> , <i>Oedaematophorus</i>	2: 6, 21
Lepidoptera	<i>locupletella</i> , <i>Mompha</i>	4: 11
Lepidoptera	<i>louisella</i> , <i>Ectoedemia</i>	4: 11
Lepidoptera	<i>lunaedactyla</i> , <i>Marasmarcha</i>	2: 6, 20
Lepidoptera	<i>mellonella</i> (L.), <i>Galleria</i>	2: 13
Lepidoptera	<i>meridionalis</i> , <i>Agdistis</i>	2: 20
Lepidoptera	<i>Merrifieldia</i>	2: 6
Lepidoptera	<i>microdactyla</i> , <i>Adaina</i>	2: 6, 21
Lepidoptera	<i>millieridactyla</i> , <i>Stenoptilia</i>	2: 21
Lepidoptera	<i>monodactyla</i> , <i>Emmelina</i>	2: 21
Lepidoptera	<i>murinata</i> (Scop.), <i>Minoa</i>	2: 7
Lepidoptera	<i>ochrodactyla</i> , <i>Platyptilia</i> = <i>tetradactyla</i> , <i>Platyptilia</i>	2: 6, 20
Lepidoptera	<i>Oidaematophorus</i>	2: 6
Lepidoptera	<i>osteodactylus</i> , <i>Hellinsia</i>	2: 6, 21
Lepidoptera	<i>Oxyptilus</i>	2: 6
Lepidoptera	<i>padella</i> (L.), <i>Yponomeuta</i>	1: 17
Lepidoptera	<i>pallidactyla</i> , <i>Platyptilia</i>	2: 6, 20
Lepidoptera	<i>paludum</i> , <i>Buckleria</i>	2: 6, 20
Lepidoptera	<i>parvidactyla</i> , <i>Oxyptilus</i>	2: 6, 20
Lepidoptera	<i>pentadactyla</i> , <i>Pterophorus</i>	2: 6, 21
Lepidoptera	<i>pilosellae</i> , <i>Oxyptilus</i>	2: 20
Lepidoptera	<i>Platyptilia</i>	2: 6
Lepidoptera	<i>pneumonantes</i> , <i>Stenoptilia</i>	2: 20
Lepidoptera	<i>pseudospretella</i> (Staint.), <i>Hofmannophila</i>	4: 9
Lepidoptera	<i>pterodactyla</i> , <i>Stenoptilia</i>	2: 21
Lepidoptera	<i>punctidactyla</i> , <i>Amblyptilia</i>	2: 20
Lepidoptera	<i>rhododactyla</i> , <i>Cnaemidophorus</i>	2: 6, 20
Lepidoptera	<i>selene</i> (D. & S.), <i>Boloria</i>	2: 7
Lepidoptera	<i>sinapis</i> (L.), <i>Leptidea</i>	2: 6-7
Lepidoptera	<i>sommulentella</i> , <i>Bedellia</i>	4: 11
Lepidoptera	<i>spilodactylus</i> , <i>Pterophorus</i>	2: 21
Lepidoptera	<i>tages</i> (L.), <i>Erymnis</i>	2: 7, 6: 11
Lepidoptera	<i>tamaricis</i> , <i>Agdistis</i>	2: 20
Lepidoptera	<i>tephrodactyla</i> , <i>Euleioptilus</i>	2: 6, 21
Lepidoptera	<i>tesserodactyla</i> , <i>Platyptilia</i>	2: 20
Lepidoptera	<i>tridactyla</i> , <i>Merrifieldia</i>	2: 21
Lepidoptera	<i>ulmivora</i> , <i>Stigmella</i>	4: 11
Lepidoptera	<i>woodiana</i> , <i>Celypha</i>	7: 20
Lepidoptera	<i>zophodactylus</i> , <i>Stenoptilia</i>	2: 21
Neuroptera	<i>capitata</i> (Fabr.), <i>Nothochrysa</i>	8: 3-4
Odonata	<i>aenea</i> , <i>Cordulia</i>	8: 29
Odonata	<i>coerulescens</i> (Fabr.), <i>Orthetrum</i>	3: 2, 7, 5: 15, 8: 29
Odonata	<i>danae</i> , <i>Sympetrum</i>	6: 5
Odonata	<i>depressa</i> , <i>Libellula</i>	5: 14
Odonata	<i>ephippiger</i> , <i>Hemianax</i>	8: 29
Odonata	<i>flaveolum</i> , <i>Sympetrum</i>	5: 14
Odonata	<i>fonscolombii</i> Selys, <i>Sympetrum</i>	6: 9-10, 8: 30
Odonata	<i>fulva</i> , <i>Libellula</i>	5: 14
Odonata	<i>najas</i> , <i>Erythromma</i>	6: 6

Odonata	<i>nymphula</i> , <i>Pyrrhosoma</i>	5: 14, 8: 30
Odonata	<i>pratense</i> , <i>Brachytriton</i>	5: 14, 8: 29
Odonata	<i>puella</i> , <i>Coenagrion</i>	5: 14
Odonata	<i>pulchellum</i> , <i>Coenagrion</i>	5: 14, 8: 29
Odonata	<i>pumilio</i> , <i>Ischnura</i>	5: 15, 8: 29
Odonata	<i>sanguineum</i> , <i>Sympetrum</i>	5: 14, 6: 6
Odonata	<i>striolatum</i> , <i>Sympetrum</i>	8: 30
Odonata	<i>virgo</i> , <i>Calopteryx</i>	5: 14
Odonata	<i>vulgatissimus</i> , <i>Gomphus</i>	5: 14
Orthoptera	<i>albomarginatus</i> (De Geer), <i>Chorthippus</i>	7: 2, 8: 19
Orthoptera	<i>brachyptera</i> (L.), <i>Metrioptera</i>	7: 2
Orthoptera	<i>brunneus</i> (Thunberg), <i>Chorthippus</i>	3: 12, 5: 5, 7: 2
Orthoptera	<i>discolor</i> Thunberg, <i>Conocephalus</i> = <i>fuscus</i> (Fabr.), <i>Conocephalus</i>	7: 2, 8: 18
Orthoptera	<i>domesticus</i> (L.), <i>Acheta</i>	7: 2
Orthoptera	<i>dorsalis</i> (Latrielle), <i>Conocephalus</i>	7: 2, 8: 19
Orthoptera	<i>fuscus</i> (Fabr.), <i>Conocephalus</i>	7: 2, 8: 18
Orthoptera	<i>griseoptera</i> (De Geer), <i>Pholidoptera</i>	7: 2
Orthoptera	<i>maculatus</i> (Thunberg), <i>Myrmeleotettix</i>	7: 2
Orthoptera	<i>meridionale</i> Costa, <i>Meconema</i>	8: 19
Orthoptera	<i>paralellus</i> (Zett.), <i>Chorthippus</i>	7: 2
Orthoptera	<i>punctatissima</i> (Bosc.), <i>Leptophyes</i>	7: 2, 8: 19
Orthoptera	<i>roeselii</i> (Hagenbach), <i>Metrioptera</i>	7: 2, 3, 8: 18
Orthoptera	<i>subulata</i> (L.), <i>Tetrix</i>	7: 2
Orthoptera	<i>thallasinum</i> (De Geer), <i>Meconema</i>	7: 2, 8: 19
Orthoptera	<i>undulata</i> (Sowerby), <i>Tetrix</i>	7: 2
Orthoptera	<i>viridulus</i> (L.), <i>Omocestus</i>	7: 2
Raphidoptera	<i>notata</i> (Fabr.), <i>Phaeostigma</i>	6: 19-20
Strepsiptera	<i>melittae</i> , <i>Stylops</i>	6: 11-12

Thanks again to Catherine Wellings for putting this together!!

AVAILABLE from Field Studies Council Publications



£15.00 plus P+P. You can order online at www.field-studies-council.org (follow the link for brc-atlases), email publications@field-studies-council.org or call 0845 3454072 (Local rate phone call - UK only)

All funds raised through the sale of this book will go towards publications of further Shropshire atlases.

AVAILABLE from Field Studies Council Publications

Early Bird Offer until October 20th - £10.00 plus P+P (£11.50 after October 20th). You can order online at www.field-studies-council.org (follow the link for brc-atlases), email publications@field-studies-council.org or call 0845 3454072 (Local rate phone call - UK only)

