Wyre Forest Study Group

Entomology Day 2017

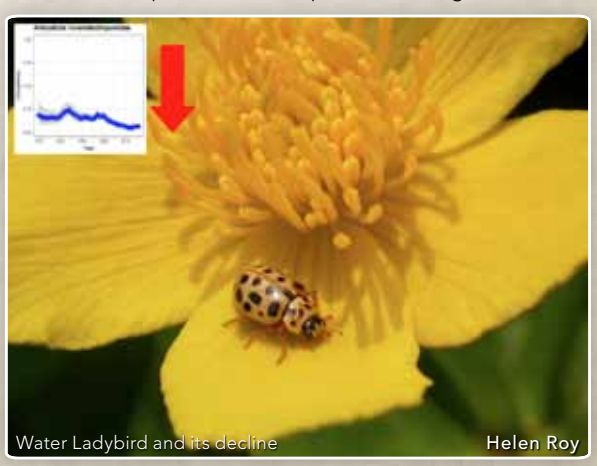
Insect Imagery

CHAIR: BRETT WESTWOOD, REPORT: SUSAN LIMBREY

From left: Kevin McGee, Richard Lewington, Brett Westwood, Helen Roy, Peter Shirley, John Bingham, Mike Bloxham, Peter Brown Wendy Carter

The morning (4th November 2017) was devoted to **Brilliant Beetles: a Focus on Ladybirds,** with the writers and the illustrator of the forthcoming 'The Ladybirds of Britain and Ireland' (Bloomsbury Publishing).

Helen Roy, of the Centre for Ecology and Hydrology, started by talking about the way some 90 recording schemes, built on the efforts of the recording community, lead to atlases and their updates showing changes in distribution. The 2012 'State of Nature Report' using 1604 species from 19 taxonomic groups showed a 40 year decline, and the 2017 JNCC Pollinator Indicator, with 389 species of wild bees and hoverflies in 1km occurrence records shows a 20 year decline. Questions then arise: does this reflect abundance, and can estimates be improved with structured surveys? Helen then introduced the Cambridge Ladybird Survey (www.ladybirdsurvey.org), originating in the 1970s and re-started in 2005 in response to the arrival of the Harlequin Ladybird, *Harmonia axyridis*. Accumulation of 'big data' is helped by the joys of recording well-loved species: engaging, inspiring, fun, captivating and creative, generating collaboration in research, out-reach, art projects, as well as recording. Participants are producing their own maps, graphs, blogs, spreadsheets and art works. Records come in via iRecord, the website, a smartphone app, and by post and e-mail (including one from Lord's Cricket Ground, with a photograph of Harlequins in the bronze ear of W.G. Grace). Records have reached 201,972, of which 188,397 are verified, 26% being Harlequins. Only the 37 species for which there are 50 or more records are used to identify trends. From 1995 to 2015, apart from the Harlequin, only one native species, the Orange Ladybird, *Halyzia sedecimguttata,* and two non-natives *Rhyzobius chrysomeloides* and *R. lophanthae,* first recorded in 1996 and 1999, show an increase. 14 species have decreased, the native species showing the strongest decline, 43%, being the Two-spot, *Adalia bipunctata.* Helen showed distribution maps for the four tiny *Rhyzobius* species, only *R. litura* having spread across Britain as far as Wales, Southern Scotland and Northern Ireland, the others having limited distribution in the east and south. Other species showing decline include the Kidney-spot, *Chilocorus renipustulatus,* the Cream-spot, *Calvia quatuordecimguttata,* the



Water Ladybird and its decline Helen Roy

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Water Ladybird, *Anistosticta novemdecimpunctata*, and, Helen's favourite which just makes the 50 species cut-off, the tiny hairy *Stethorus punctillum*. Recently recorded species include *Clitostethus arcuatus*, with only 13 records, and *Scymnus interruptus*, with 101 records, common across continental Europe and few British records from 1986 but a lot more from 1996, spreading from the SE, recorded in Oxfordshire in 2013 but not yet recorded in Worcestershire.

Helen said that research is proceeding to link trends with traits, climatic factors and habitat, and said that there are some indications of the impact of global warming, but also of loss of habitat and the impact of Harlequins. Further work is going on to unravel ecological networks to work out what determines invasiveness and invadibility.

In response to questions, Helen said that it was difficult to establish reliable methods for abundance and distribution, and that conspicuousness inevitably resulted in bias. More data is needed on regional as well as national trends.

Peter Brown, of Anglia Ruskin University, another member of the UK Ladybird Survey research group, whose work has also been funded by the Centre for Ecology and Hydrology, concentrated on the Harlequin Ladybird invasion. Native to East and Central Asia as far west as the north Caspian area, the Harlequin arrived in Britain in 2004. It had spread naturally, travelling on the wind or on flowers or vegetables, from northern Europe, after a few introductions, in around 2000, for control of aphids. In Britain, the northward spread stopped in 2009 at the southern Pennines, there being few records of breeding further north. Peter showed a dramatic series of maps: by 2014, the spread in Europe left out only Portugal, most of Spain, Corsica and Sardinia, and most of Greece, northward spread stopping in southern Norway and Sweden. Eastwards, they had reached around the Black Sea into the northern Caucasus and Anatolia, and across Eurasia into contact with their native range. Globally, Harlequins are now widespread in North America and present in parts of South America, including at high altitude in the Chilean Andes, and in South Africa.

For pest control it was not a good choice. It is too general a predator, not being fussy about which aphid species it eats. It is a fast breeder, with two or three generations per year, unlike most other ladybirds, and is cannibalistic, hatchlings happily eating each other and unhatched eggs. The larvae have spikey defences and readily exude particularly toxic haemolymph. By 2008,

Variation in Harlequin Ladybirds Peter Brown

larvae had been recorded on 50 plant families, but over 50% were on Aceraceae, Rosaceae and Malvaceae and another 10% on Poaceae. Negative impacts on biodiversity are by both competition and predation (for example, gobbling up eggs of noctuid moths), and on people from its habit of massing on pale surfaces and invading houses for hibernation.

The cost of invasive non-native species in Europe has been estimated at more than 12 billion euros. The Harlequin Ladybird survey is being used as a model to develop recording programmes for other alien invaders, examples being the American Bullfrog, the Citrus Longhorn beetle, Floating Pennywort, Water Fern, and Creeping Water Primrose.

Peter told us about the research being carried out and published by the UK Ladybird Survey team. Investigating mechanisms responsible for decline in other ladybird species, analysis of Harlequin gut contents revealed presence of 2-spot Ladybird DNA, giving proof of predation and confirming the impact on that species in particular that had been established by the long-term field studies. In considering what control measures might be used, a sexually transmitted parasitic mite is a possibility. Are natural predators, such as spiders and lacewing larvae adapting strategies to feed on them? Fungal diseases, and native parasitoids, such as *Dinocampus coccinellae* are possibilities, but the Harlequins seem to be able to resist this one, which affects the 7-spot Ladybird.

Peter then talked about the great variability of Harlequins, and though only three of the recognised forms, *succinea*, *conspicua* and *spectabilis* are found in Britain, each of these is also highly variable. He showed the features that, in spite of this variability, enable identification: size similar to the 7-spot, rounded and domed shape, conspicuous white 'eye'

markings on the pronotum, brown legs, and the keel across the rear of the elytra. Finally, he indicated the sometimes there are dramatic responses to the invasion in the news media and useful attention in more informative television programmes.

For **Richard Lewington's** contribution, he was interviewed by Brett Westwood whose questioning elicited a fascinating account of his working methods. He said that interest in biological matters began as a boy with an interest in insects. Following Art College, when a career in graphic design didn't appeal if it meant drawing for advertisements, he began to specialise in illustration, starting with birds, and then with insects in work for Reading Museum. His illustrations for the Reader's Digest English Countryside book then typecast him as an insect man. Butterflies of Britain and Europe was his first book as sole illustrator.

Richard explained how every order of insects presents different challenges, such as the shininess of beetles, three dimensional effects, textures and hairiness, and he aims for accuracy even in details that are not diagnostic to species. While photography has to cope with reflections and highlights, these can be controlled in painting. He always illustrates with lighting from the top left, and he explained how he depicts iridescence. Larvae are tricky because they change with each instar, and they do tend to eat each other! For tiny insects, he uses a microscope and can, for example, illustrate how hairs form directional patterns on the elytra that are essential to the appearance of some of the smallest ladybirds.

Richard Lewington's painting for a book cover

An illustration begins with a measured pencil drawing, the colour then being applied in gouache. He doesn't do much field sketching but does spend a lot of time observing his subjects to get characteristic poses and, for example, how they hold their legs, and makes diagrammatic pencil drawings. His aim is to show living insects, not pinned ones. He tries to recreate a perfect example, and uses preserved specimens. He has bred out all the British butterflies to get fresh specimens and to see colour forms and variability, and to see all instars of the larvae.

Illustrations usually include the plants on which insects are resting or are exploiting, and the detail of these is as important to Richard as is that of the insects. He projected slides showing how he builds up the images in stages. Larger pictures, such as book covers, involve more elaborate composition, and these large pictures can take a week, working full time. Nowadays, he scans and manipulates pictures digitally himself to retain control rather than letting the publisher do this.

The requirement of the Royal Mail commission for postage stamps was for butterflies in flight with no background, and it was necessary to place them so as to accommodate the Queen's head. Richard commented that payment for this job was double that for books, but the Royal Mail kept the copyright.

Richard expressed his awe at the variety of insects, and said he found reading about them inspirational, as was the enthusiasm of the authors with whom he collaborates.

One original painting and many prints that Richard brought with him enabled us to see his beautiful illustrations close to, and he found a ready market for them. We look forward eagerly to the publication of the ladybird book.

The afternoon began with **John Bingham's Invertebrate Rambles**, 'a talk without backbone', starting with some nice spiders to jolt entomological attention out of post-prandial stupor. He took us first to favourite local hunting grounds, the heathland of the Devil's Spittleful and the sandlands of Hartlebury Common. On the former, new to John was *Myopa hirsuta*, a parasite of solitary bees which Kevin Mcgee had already found at Hartlebury. Hartlebury is one of the few inland sites for *Chorosoma schillingi*, a coastal bug, and the Common also yielded the rare Pale-jawed Digger Wasp *Oxybelus uniglumis*.

Spreading up through the County is the Dotted Bee Fly *Bombylius discolor*, and John set a challenge for


Ampedus sanguinolentus John Bingham

Shropshire Entomologists to record it next year. The Heath Bee Fly, *B. minor,* is only common in southern heathlands, but the Downland Villa, *Villa cingulata,* is common now in Gloucestershire at Daneway Banks, as is the Large Blue butterfly, *Phengaris arion.* John photographed the large hoverfly, *Sericomyia superbiens* in Shropshire, but said it does occur in Worcestershire. On Haughmond Hill Denise made the first record for Shropshire of the mainly coastal Sulphur Beetle, *Cteniopus sulphureus.* The hoverfly *Callicera rufa* tantalised him by repeatedly settling above his reach on a tree, but his photographic skill and the marvel of modern camera manipulation eventually gave him success, and another tree in the New Forest yielded the hoverfly *Pocota personata.*

John is a regular visitor to The New Forest and the Dorset Coast. The forest is one of only two locations for the hoverfly *Caliprobola speciosa,* which he found on sap runs, and he was also able to record in its modern stronghold the very rare Oak Mining Bee, *Andrena ferox.* Hartland Moor yielded a sighting of the Purbeck Mason Wasp *Pseudepipona herrichii,* found only on Isle of Purbeck, and the rare Black Deer Fly, *Chrysops sepulcralis.* Turning to woodland beetles, the forest provided sightings of rare click beetles, *Ampedus cinnabarinus* and *A. sanguinolentus,* the very local and southern Golden Haired Longhorn *Leptura aurulenta,* and the rare, also southern, Tanner Beetle *Prionus coriarius.* After searching for the Stag Beetle *Lucanus cervus* in the forest, John found it in Brockenhurst High Street. Other beetles were the rare Hornet Rove Beetle *Velleius dilatatus,* which feeds on fly larvae in hornet nests, and the very local strange-looking Cramp Ball Fungus Weevil, *Platyrhinus resinosus.* The Large Marsh Grasshopper *Stethophyma grossum* and the Wart Biter *Decticus verrucivorus,* both rare, are only found in these very southern localities, and John also saw the Clifden Nonpareil moth, *Catocala fraxini,* which may be resident in the New Forest.

To chime with the ladybird theme of the morning, John


Coelioxys inermis John Bingham

showed us the 5-spot, *Coccinella 5-punctata,* a rare species which he found in river shingle in Wales, and, in his response to a challenge from Brett Westwood to photograph a speck in a specimen tube, *Clitostethus arcuatus,* of which we had seen in Richard Lewington's beautiful painting.

His garden near the edge of Kidderminster provides John with a lot of records, many of them very much local in the region. Among them were the Red-Belted Clearwing moth *Synanthedon myopaeformis,* the Scarce Black Mining Bee *Andrena nigrospina,* the Mournful Bee *Melecta albifrons,* the Shiny-vented sharp-tail bee, *Coelioxys inermis,* the Banded General soldier fly *Stratiomys potamida,* and the Forget-me-not Shieldbug *Sehirus luctuosus* which he says appears to be increasing, though perhaps it is because he and Denise are such diligent searchers. After a few more spiders, John concluded with: 'ramble on, there's a lot to be found out there'.

A double act by **Mike Bloxham and Peter Shirley** took us **Behind the Scenes in the Birmingham Museums Trust's Insect Collections** of over 150,000 specimens, now housed at the Museums' Collections Centre in an industrial site in Nechels, rather than in the Natural History Museum planned for the City long ago but never built. Peter gave us an account of the way the collection was built up, mainly between 1890 and 1930, by incorporation of collections made by men of substance associated with the city and region, including Perrins of Worcester Sauce fame, the Pratt family of commercial collectors, Gorham - a polymath with an eye for insects, especially beetles; other names mentioned were Carlier, Bradley, Bethune-Baker, and South. In the dispersal of estates, some collections were split for sale at auction, Black's going to Manchester, York and Bolton as well as Birmingham, and the records could end up separated from the insects.

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Birmingham Museums Trust display Mike Bloxham

Acquisition in the museum world also includes exchange, and Peter explained how Birmingham was offered a wild boar shot by the Duke of Windsor when London requested some birds, so the boar-bird exchange rate had to be negotiated. The work station where Peter and Mike have excellent microscope and computer facilities for their work of curating the collections, was until recently presided over by an elephant.

The collections are used by scientists, students, teachers, artists, advertisers and others needing access to specimens and images. Long use (and the old practise of putting species names in the drawer but not on the data label attached to each specimen) means that specimens have been misplaced or separated from labels. Classifications and Latin names have changed, means of archiving have gone out of date, for example computer systems may be no longer accessible, so records must be preserved in several versions. The work to which Peter and Mike are giving so much of their time is making the collections and their documentation available in reliable and usable form to public access to inform and entertain. Research potential includes study of changing distributions of species, and molecular research such as genetics.

Mike chose the massive Coleoptera collection for a guided tour, showing the museum index and using the longhorn beetle *Alosterna tabacicola* as an example to track from the index to the cabinet and then the drawer, and then moving to Carlier's original card index to show how searching that could often provide additional information, emphasising the value of these old records.

Peter talked about the important South collection of British Lepidoptera. Richard South (1846-1932) was a prominent entomologist, who edited The Entomologist magazine and was author of The Butterflies of the British Isles and The Moths of the British Isles in Edward Warne's Wayside and Woodland series of pocket-sized field guides, the first to contain precise descriptions and photographs of species, which remained in print for much of the 20th century. Of South's two collections, Birmingham has the second, which he used for the books and which has some 790 macro- and 450 micro-lepidopteran species.

Both speakers emphasised the importance of such collections for scientific research and as cultural and social history documents.

For the last contribution, **Kevin McGee** gave us his **Highlights of 2017,** and we were able to enjoy the results of his patience and skill in finding, photographing and identifying the insects of his Worcestershire haunts. We saw again how rich a habitat The Devil's Spittleful is, Kevin making the first Worcestershire record of the sawfly *Zaraea lonicerae,* and finding the rare ground bug *Megalonotus dilatatus.* Also found there is the digger wasp *Harpactus tumidus,* and one of Britain's smallest bees *Chelostoma campanularum* found on its preferred food source, the Harebell flower. Another very small bee is the Welted Mason Bee *Hoplitis claviventris.* The Common Stiletto Fly *Thereva nobilitata* is, Kevin says, not really common.

Close to where he works, the south facing sandstone revetment to Martley churchyard has rewarded Kevin's regular inspection with numerous bees, many of them scarce, including the Big-headed Mining Bee, *Andrena bucephela* and its kleptoparasite *Nomada hirtipes,* and the Red-girdled Mining Bee *A. labiata* which tantalises the photographer by weighing down the flower of Germander Speedwell on which it is feeding. Trimmer's Mining Bee, *A. trimmerana,* presented Kevin with a difficult identification, as did the Dull-vented Sharp-tail Bee *Coelioxys elongata.* The Rufescent Sharp-tail Bee, *C. rufescens* finds its host, the Fork-tailed Flower Bee *Anthrophora furcata* on the flowers of Black Horehound, where the Wool Carder Bee *Anthidium manicatum* also feeds. Another kleptoparasite, the Dark Blood Bee *Sphecodes niger* and its probable host the Brassy Mining Bee *Lasioglossum morio* are also paired up at Martley, and as a cap to this gruesome story, Kevin also finds the conopid fly *Thecophora atra,* which lays an egg in female *Sphecodes.*

Among Kevin's Martley records are the little spider-hunting wasps *Agenioideus cinctellus* and *Evagetes crassicornis,* the latter being a kleptoparasite, both of which he has previously seen on Hartlebury Common, and a chafer, *Oxythyrea funesta,* which is common in the Mediterranean region, larvae feeding on the roots

of shrubs, and probably introduced on large pot plants; significantly there are olive trees near Martley.

Kevin loves post-industrial sites because you never know what might turn up there. It was at such a site next to the Perrins factory and alongside the railway in Worcester that the empty snail shells on limestone ballast provided nest sites for the scarce Red-tailed Mason Bee *Osmia bicolor,* vegetation on the hard ground mimicked the dry grassland needed by the Rhopalid bug *Stictopleurus punctatonervosus,* and the very local Bombadier Beetle *Brachinus crepitans* found something in common with its more usual coastal habitat.

Finally, Kevin turned to the Wyre Forest, and just into Shropshire, finding more scarce insects, including the rove beetle *Deleaster dichrous* on gravelly banks in the shallow bits of Dowles Brook, and the weevil *Magdalis carbonaria*, needing the microscope for identification, on a log pile near the brook. Also on that log pile he had the quite rare sawfly *Aulacus striatus* ovipositing under bark of a birch log, probably into a larva of the wood wasp *Xiphydria camelus.* Only represented by a couple of dots in the British map, the parasitic wasp *Ibalia leucospoides* needs the larvae of Siricid wood wasps, probably here the Giant Wood Wasp *Urocerus gigas,* in conifer logs.


Chelostoma campanularum Kevin McGee


Zaraea lonicerae Kevin McGee

To conclude: at the end of another successful Entomology Day, our 14th, Brett thanked everyone who had made the day so enjoyable including the Wyre Forest Study Group committee who planned the event and masterminded the day, the folk who provided and served the refreshments, Roger Marston from U3A for the sound system, the speakers who delivered such stimulating talks, and all who attended.


Lunchtime at the Worcestershire Entomology Day Wendy Carter