Wyre Forest Study Group Worcestershire Entomology Day 2022

On the Record...making invertebrates count

CHAIR: JOHN COX

The day started with a strong incentive to ensure that our recording practices are up to scratch, followed by a demonstration that we all follow in the footsteps of a remarkable insect recorder 450 years ago. The significance of lowland heaths and the habitat they provide for ground-nesting insects was demonstrated with particular reference to the distinctive character of our region. Here and elsewhere we were shown the importance of keeping track of new arrivals (garden centres were mentioned a number of times). Finally, we were encouraged to fire up our enthusiasm, and sometimes to sit in a quiet spot and wait for insects to come to us.

Chris du Feu's subject was Biological Recording – Cost and lost. While saying that he was not really going to talk about slugs, Chris used the example of the 1998 record of *Testacella haliotida* in Lincolnshire, the first in 100 years, to emphasise the importance of recording, and then showed his workings in calculating the cost of a single record. To the recorder the cost might be time only, perhaps 50p when counting molehills on a journey being done anyway, to £17 for molluscs in a distant location when time and travel are included.

Beyond the recorder, verification can include costs of staff time, equipment, travel, and training, and can vary depending on whether records come from mass surveys, individuals, or projects done by paid staff. His sums gave a range from £1.50 to maybe £15. Difficult records might need additional funds for further professional work, for example DNA, or microscopic examination of insect genitalia.

Turning to the value of records, Chris quoted Oscar Wilde: 'A cynic - someone who knows the price of everything and the value of nothing', and John McMeeking: 'what is recorded is history; what is not is mystery', and said there was no point in recording if the record is not used. In a period of rapid environmental change, it is essential that records from earlier periods are not lost. The ideal would be for records to go smoothly from individuals to local to national recording systems with two-way communication between them and to users of records. He then illustrated the current situation as a network of broken lines with no consistent feedback, and no effective onward flow to users. Of particular concern are possessive individual recorders, survey companies claiming ownership of data, and casual watchers not bothering, all resulting in records not submitted and so lost.

Historic records may or may not be usable: perhaps lumped together for a whole year, or with insufficient detail of habitat or location, and many remain entombed in notebooks until the death of the recorder and then discarded by family. Many records may have been reduced to one record for a dot on a 10km distribution map. Difficult handwriting, old software and obsolete storage media can all make records inaccessible.

Some records are not made in the first place: 'mini-beast' searches where motivation could be stimulated by showing how finds relate to distribution maps and encouraging parental involvement; failed good intentions - "I'll make a note later"; ignoring the commonplace, especially the less popular groups. There is a huge imbalance in recording effort, birds winning hands down, followed by flowering plants and then butterflies and moths, with a long tail of other groups. Lack of awareness of the existence of recording schemes results in potential records never being made: for example, fishermen rarely submit records of fish species to a national recording scheme. Supposedly unproductive habitats are often ignored: Chris gave examples of human habitats out-performing non-human ones, and of a brown field site producing more species in half an hour than ancient woodland in two hours.

Inadequate data can result from taxonomic changes: splitting of species, allocation to a











different genus, distinguishing with a new species name, all compounded by alternative common names. This means that we cannot relate current to earlier records. Black holes in records can be the result of restrictive licences on sharing data, lack of verification – more verifiers needed, inadequate records centres, and records 'submitted' to social media.

In response to a comment that we could not possibly record every observation of every species, Chris said we have a choice between how much we record and how much guilt we die with! He then ended with (apologies to Monte Python):

> Every record valued Every record good Every record needed In your neighbourhood Every record sacred Every record great If a record's wasted We should be quite irate

We were asked beforehand to collect slugs and bring them with us, containers labelled with grid references. During the day, Chris made 113 slug records of 19 species and has submitted the records for us.

Introducing The First Insect Book - Ulisse Aldovandri: De Animalibus Insectis, and other stories, Diana Westmoreland told us about the 'scientific' books of the 16th, 17th and 18th centuries which were donated to Worcester Cathedral, often by wealthy residents of the city. Her role as a volunteer in the Cathedral library is to write about these books and make them known to a wider audience. Diana showed us first how insects have been used in images and on objects from early times, for decoration, to portray pests, and in religious works as symbols of death and manifestations of corruption. She talked about the context in which these books were produced: the Reformation, Gutenberg's printing press,

and the 'new knowledge', with the *lingua franca* of Latin used by the Church and by all scholars making communication possible throughout Europe and beyond. She said that very early books are a kind of encyclopaedia and include maps of the known world. However, the Wars of Religion impinged upon what could be written, with accusations of heresy and the banning of books putting constraints on scholarly work.

Against the background of medieval beliefs about nature, religious belief being entangled with superstition, as is illustrated by Sebastian Munster in Cosmographia (1544), with a map of the world including the Americas but with the sea full of monsters, and distant lands populated by brutish people, early scientific curiosity developed into the fashionable practice of collecting, and the formation of sometimes huge 'Cabinets of Curiosities'. Diana gave the example of Ole Worm, whose cabinet was illustrated in the Museum Wormianum (1655) and included, as well as a few insects, a pet Great Auk. The new 'Natural Philosophers', however, went out to observe, describe and classify, and Ulisse Aldrovandi was one of the first.

Aldovandri, a contemporary of William Shakespeare, was born in Bologna. He ran away to



Sea monsters, from "Cosmographia" 1544, Sebastian Munster.



Rome as a boy, studied arithmetic and became a clerk. At 16 he travelled as a Christian Pilgrim to France, Spain and Jerusalem, then studied law, philosophy, logic and mathematics in Bologna and Padua. He was put under house arrest for heresy, then pardoned, developed his interest in natural history, medicine and philosophy, and by 1553 was teaching logic. In 1561 he became the first Professor of Natural Science at Bologna, where he developed one of the earliest Botanic Gardens in Europe, and a Herbarium for the study of medicinal plants, both of which he directed for 38 years. He married a wealthy woman and built a massive estate that included a cabinet of curiosities with 7000 objects. After a dispute with the medical establishment, he was suspended from his Bologna post for five years, then reinstated by the Pope, and, supported by the city, started publishing books. The most famous of these is Opera Omnium (Work of Everything) in 13 volumes, of which the Worcester Cathedral library has about half.

De Animalibus Insectis was first published in 1602, and the Worcester copy, dated to 1623, is one of four published in Aldrovandi's lifetime. Diana describes him as the first entomologist and the first insect recorder, finding, examining and describing insects. He was able to employ a secretary and an artist, and they went out around the Bologna area collecting specimens and interrogating peasants, pro-



Chapter 2 "De Animalibus Insectis" 1623, Ulisse Aldrovandi.

ducing a huge number of drawings, the secretary taking dictation to record where and when the items were collected with a description of their habitat and behaviour. The book is divided into sections on groups broadly recognisable today, with group characteristics and examples of 'species' within the group.

Aldrovandi employed teams of artists over many years, including Bartolomeo Passarotti, who was employed for 30 years and produced beautiful drawings and watercolours, many of which are still extant. The enormous numbers of illustrations in the book are wood engravings of the artists' drawings and are of very high quality, species often being recognisable from them; many of the blocks survive. Bologna attracted some of the finest Italian renaissance artists, who were eager to use the drawings to inform their inclusion of accurate depictions of plants and animals in their paintings, often for symbolic purposes.

Aldrovandi worked at the intersection of the world of ancient and medieval texts and that of the scientific revolution. The former required respect for classical authority and the bible, and for proverbs, auguries, mythological stories and ideas of animal morality, which he included and illustrated in his books, alongside his own observations as the basis of knowledge required by the latter. In defining an insect, equivalent here to invertebrate, he started with Aristotle: animals with blood being vertebrates, those without blood mostly invertebrates, so including spiders, molluscs, crustaceans, worms etc. He then grouped them on morphology, some groups being those recognised today, e.g. bees, wasps and hornets (but ants have their own group); butterflies and moths; flies; others crossing boundaries - dragonflies with caddisflies and cicadas, beetles with cockroaches for example.

Huge misconceptions arose from the fact that insect reproduction was not understood and sexual dimorphism not recognised. For the



ancients, caterpillars and other larvae were 'worms', primitive things which generated spontaneously by putrefaction.

Identity was fluid: worms turned into pupae which gave birth to something quite different. Butterflies were flying worms that fed on flowers, having emerged from a chrysalis. He knew about the castes of honeybees and the nuptial flight by the 'king' bee with drones, but not what it was for, and the larvae in the hive were worms generated from putrefaction. The cultivation of silkworms was well known, apparently without an understanding of their reproduction. His familiarity with insect parasitoids added to the confusion.



Larvae or "worms" from "De Animalibus Insectis" 1623, Ulisse Aldrovandi.

Other challenges faced by Aldrovandi included the huge variety of insects, the small size of many (50 years before microscopes were available), and the problem of classification. His hierarchical system, starting with terrestrial/aquatic, then feet/no feet, then wings/ no wings, soon runs into anomalies and was largely a failure. However, other people built on his work, including Francis Willoughby who described the life cycle of insects in 1661 and devised a system of classification based on metamorphosis, and John Ray, who visited Bologna with Willoughby in 1664 and wrote about Aldrovandi's books. Linnaeus regarded him as the father of natural history. Diana finished by saying that the Latin learned at school was adequate for puzzling out the text, with its factual basis and reference to illustrations.

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Aaron Bhambra introduced his work on Hunting Heathland Bees and Wasps by talking about the habitat in which so many species of them are found, lowland heath, and explaining its importance. He said that these heaths developed about 3,500 years ago where tree growth on nutrient poor soils after forest clearance was prevented by grazing or burning. Globally, lowland heaths are rarer than tropical rain forest, and Britain has about 20% of the world total, though that is only about 16% of the area we had in 1800. Loss has been the result of urban development, intensive agriculture, conifer plantation, mining and quarrying; being regarded as wasteland, and lacking effective management contributed too. A map showed that, apart from some larger areas in Scotland, many heaths are patches near coasts, with clusters also in Southern England and in East Anglia, the Vale of York, and Lincolnshire. In the Midlands, Staffordshire has 2000ha, the West Midlands County 500ha, and the scattered fragments we know so well in Worcestershire add up to 180ha. The presence of heathland is demonstrated by the frequency of 'heath' placenames, with a map showing also the coincidence of past and present heaths with the predominantly sandstone geology.

Explaining the importance of lowland heaths, Aaron said that they support an unusual selection of plants and animals with adaptations to surviving in dry conditions, many invertebrates being species that flourish here but are rarely found elsewhere, and the dry sandy places with bare earth provide nesting habitat for many species of bees and wasps. He referred to work by Mike Archer, Steve Falk and





Andy Jukes in the late 1990s and early 2000s. They recorded at seven sites in the West Midlands, finding 216 species of bees and wasps, Highgate Common in Staffordshire being the richest site, with 130 species, joined in the 'rare' and 'scarce' categories by Hartlebury Common and the The Devil's Spittleful. Altogether they found six Red Data Book species, 26 nationally scarce, and 48 regionally scarce species. At the two Worcestershire sites, it was suggested that blown sand could be contributing to the presence of coastal species.

Saying that many of our heaths are understudied and that more research is needed to understand how they support pollinators, Aaron introduced his own research. A geographical study has been designed to look at how habitat fragmentation might be influencing pollinator assemblages. 25 sites have been chosen, varying in quality, age, size and management effort, along a gradient of urbanisation. They used GIS to locate survey areas representative of 70% of the heathy area of each site, and used hand search, sweep netting and randomised pan trapping for bees, wasps and hoverflies, in Spring - May/ June, and Summer - July/August. A colleague, Andy Purcell, pioneered the use of unmanned aerial vehicles (drones) to assess the habitat, measuring heather, bare earth, and woodland cover.

Turning to the results, Aaron said that assemblages do change along the gradient of urbanisation, becoming more specialised and increasing in conservation value away from the urban core. Larger sites had more species and more individuals which were at the edge of their range, and effective management by scrub removal or burning increased the number of species. The most specialised sites were on sandstone overlain by glacial or fluvioglacial sands or gravels. Higher altitude sites were wetter and had different soil structure and vegetation, and older sites had more distinctive pollinator populations than younger ones. To investigate indicators of the health of the habitat, the species were divided into true specialists with an obligate association with heather, semi-specialists with a loose association with heather or other dwarf shrub vegetation, and migrants which might just happen to visit heathland. They were also interested in monitoring the number of kleptoparasitic pairings as a measure of site quality.

Aaron went on to talk about some of the



species they recorded. Starting with Digger Wasps, Mellinus arvensis, which hunts flies often taking them off herbivore droppings, was found on all sites, whereas Oxybelus uniglumis, another fly-hunter, impales its prey on its sting and was found only at Hartlebury Common and The Devil's Spittleful. Astata boops, which hunts only nymphs of shield bugs and is mainly a Southern England and East Anglian species, was found at The Devil's Spittleful and the Rifle Range. The Bee Wolf Philanthus triangulum, which preys on honey bees, used to be considered scarce, but is spreading widely. It was found at Highgate Common, The Devil's Spittleful and Hartlebury Common. The Slender bodied Digger Wasp, Crabro cribrarius, was found in Sutton Park. The male has curious expanded shields on its front leg tibiae which are patterned to filter light and are used to cover the eyes of the female during mating. It is usually found on lowland heaths and coastal dunes, but also inhabits woodland and chalk grassland. The Ornate Tailed Digger Wasp Cerceris rybyensis was recorded on Brownhills Common. It catches medium-sized solitary bees in mid-air, paralysing them and squeezing their necks in its mandibles, and is common and widespread, nesting in warm bare earth, often on footpaths, in heathlands, often in close proximity to the weevil hunting Cerceris arenaria. Sand Wasps were represented by the Red-banded Sand Wasp Ammophila sabulosa which was recorded at The Devil's Spittleful and the Rifle Range. It is a common and widespread species, found in sand pits and brownfield sites as well as heaths and coastal sites. It paraly-



ses the larvae of noctuid moths, sometimes much larger than itself, and drags them to its nest, sometimes stealing prey and nests from other females.

As examples of kleptoparasites, Aaron cited the scarce Catsear Nomad Bee Nomada integra which Mike Bloxham found at Gentleshaw Common, its host being the near-threatened Buff-tailed Mining Bee Andrena humilis, and the Red-thighed Epeolus Epeolus cruciger, recorded in Sutton Park, where it can be abundant feeding on heather and finding its host, the Heather Colletes Colletes succinctus found in Sutton Park.

Asking what else needs to be explored, Aaron referred to Steven Falk who suggested that geology, which they had also noted in this study was important. Sites along the Staffordshire/Worcestershire border were some of the best places for bees and wasps: Highgate Common, Kinver Edge, the Devil's Spittleful, Hartlebury Common, and Shire Oak. These sites have the right geology for free-draining friable sands that the insects need to burrow into. He then told us about a new site, Dunsley Sandpit, or Stourton Pit. Owned by Severn Trent, it is largely unmanaged and unmonitored and is on the same geology as the best sites. There is an extraordinary extent of bare earth, and it is also a lot less wooded than other sites. They found there the largest aggregation of the Early Colletes C. cunicularis he has ever seen, as well as the Pantaloon Bee Dasypoda hirtipes, and it points up the question as to why we have coastal bees in one of





the most land-locked regions of Britain. Steven Falk has hypothesised that the presence of blown sand might be the answer. Aaron then quoted Falk's observation that the West Midlands heaths contribute substantially to the biodiversity of bees and wasps in Britain and help extend the range of many of them. He cited the Noble Jewel-Wasp *Hedychrum nobile* as an example of a species using heaths as stepping stones in its spread. It was new to the UK in 1998 and underwent a population explosion in 2022 and is now most common on Kinver Edge.

Gary Farmer, discussing Imports, has been noticing a lot of alien species around the county, including in his Vale of Evesham stomping ground, identifying invaders and imports, some familiar and of long residence, some recent arrivals, and from many known and unknown sources. He began with the tiny weevil Euophryum confine which came all the way from New Zealand before 1937 and lurks under the bark of decaying wood. The House Cricket Acheta domesticus was once a familiar house guest, possibly first arriving with returning crusaders as long ago as the 13th Century and repeatedly thereafter, now scarce, and in Worcestershire only in protective custody in Bewdley Safari Park. We are all familiar with the Harlequin Ladybird Harmonia axyridis, imported in 2004 and perhaps now becoming less abundant. The Western Conifer Seed Bug Leptoglossus occidentalis got into Europe from the USA in 1999 and spread rapidly, with influxes in 2008-2011 on the South Coast of England.

Gardeners and growers of Asparagus, like those in the Vale of Evesham, have long battled with the Asparagus Beetle *Crioceris asparagi*, which could be native, but now there's another species *C. duodecimpunctata*, first recorded in Worcestershire in 2018. Gary has found another garden pest, the Lily Beetle *Lilioceris lilii*, on Fritillaries, and he showed us how the larvae cover themselves in excreta. It was first reported in 1839, took a century to become established, and has expanded its range since the 1990s. The Black Vine Weevil *Otiorhynchus sulcatus* has been repeatedly imported on plants, the larvae feeding on roots, and has now been joined in our gardens by another species, *O. crataegi*, first found in the 1980s, spreading and increasing rapidly in Worcestershire.



Saying that 150 new species of moth have been recorded in Worcestershire since 1998 (Tony Simpson pers. comm.), Gary mentioned that the caterpillars of the Elephant Hawkmoth Deilephila elpenor started turning up in gardens fairly recently feasting on imported fuscias. This has been joined by imported moth species, the Box Tree Moth Cydalima spectalis, and the very visible impact of the Horse Chestnut leaf miner Cameraria ohridella, which was first recorded in Macedonia in 1985 and in Britain in 2002. However, it does have a predator: the Southern Oak Bush Cricket Meconema meridionale, which was imported into Surrey in 2001 and was first recorded in Worcestershire in 2019. John Bingham photographed one on Horse Chestnut in October this year, and Rosemary Winnall found one in her wheelie bin in September.

A surprise arrival in a plant pot in Gary's house made its presence known with its very loud and continuous call. A Mole Cricket *Grillotalpa* sp. does not risk predation by calling when ex-



posed in the open but turns its burrow into an amplifier by constructing horns in an acoustic bulb. Despite recording the song and photographing the cricket, no one has been able to confirm the species.



Gary is hoping to find Mantids in Worcestershire: two species have turned up in Oxfordshire this year, Richard Lewington found a Praying Mantis Mantis religiosa in his garden, and a female Mantis of the Ameles genus being photographed near a garden centre in Chilton. Leaf hoppers found on Jasmine imported from the Netherlands presented an identification problem: there are many species of the genus Hishimonus present in Europe originally from Japan. Little is known about their distribution so Gary was able to extract the genitalia from a male specimen and sent it for determination, and is still waiting for a conclusion. Another import is the Lace Bug Stephanitis takeyai, which feeds on Pieris japonica in its native Japan and can be a pest here; Gary found it on Hemp-agrimony at Ipsley Alders. Among the aliens in garden centres is the Feather-legged Spider Uloborus plumipes, another import probably from the Netherlands which has rapidly colonised them in the last 20 years.

Laburnum, native to France, Switzerland and parts of Germany and Northern Italy and introduced into Britain in the 1500s, has colonised the hedgerows in the Vale of Evesham, and Gary has been recording the species which depend on it, as well as native species which exploit it. Leaves are host to dipterous leaf miners Phytomyza cytis and Agromyza demeijerie, and to the micromoth Leucoptera laburnella, which also mines Dyer's Greenweed and garden Lupins. He also finds the Horned Tree Hopper Centrotus cornutus, the Laburnum Psyllid Floria variegata and the Gorse Shieldbug Piezodorus lituratus. There are four species of Aphids known to feed on Laburnum, of which two are obligate on Laburnum. Despite finding many aphids Gary only found one predatory Lacewing Dishochrysa ventralis. Laburnum flowers support many nectaring insects, including beetles and bumblebees, and the spiders Gary has found waiting to catch them include *Philodromus dispar* and the large female Misumena vatia which in its yellow colour variation is perfectly camouflaged.

On the subject of spiders, the Volunteer Centre in Evesham where Gary has his office houses alien spiders that live indoors. The Spitting Spider *Scytodes thoracica* spits out strings of gummy fluid to pin down its prey. Cellar spiders, thought to have been introduced by the wine trade, include the 'Daddy Longlegs Spider' *Pholcus phalangoides*, now familiar in many houses preying on other spiders, and the smaller and much less common Wine Cellar Spider *Psilochorus simoni*. Gary suggested that the damp basement of the old building might be much like a wine cellar.

Finally, Gary turned to a speciality of his: woodlice. While looking under logs in the Wyre Forest in March 2019, he found some that looked a bit different to Common Striped Woodlouse *Philoscia muscorum*, and was able to identify them as *P. affinis*, the first inland record of a species otherwise recorded only in a few coastal sites. Then, in April 2022, Gary fossicked among woody flood debris lying in a hollow in the Avon floodplain and found *Hyloniscus riparius*, which can survive many weeks underwater. This was the first UK record of a species native to Central and Eastern Europe.



Brett Westwood, in Chasing the Spark, explored the ways in which his curiosity has been stimulated in the past year: for example, by looking for one thing only to be surprised by something else; noticing unusual habitat conditions and rapidly changing environments; just sitting and waiting to see what turns up. He started by going to the dingle in Eymore Wood to look for the caddis parasitoid Agriotypus armatus described by Norman Hickin who fired his imagination to look for this elusive creature. Hickin never saw it in Wyre, but it has been found by Ian Wallace in the Dowles valley. No luck at Eymore, though Brett found lots of the Giant Lacewing larvae Osmylus fulvicephalus that he had only previously seen in Seckley Ravine; and under one particular stone 12 of the rare Harvestman Sabacon viscayanum ramblaianum. His example of an unusual habitat with a changing environment, was a roadside pond in Hawkbatch, a flushed site which is wet in winter and dry in summer, rare for Worcestershire, which provided a possible first for the County for the Slender Pond Snail or Mud Snail *Omphiscola glabra*, with eggs and young, so a breeding population in an ancient landscape. (Since his talk Brett has unearthed a previous Worcestershire record from Hartlebury Common in 1913). A more likely Worcestershire first was the rare soldier fly Silver Colonel *Odontomyia argentata* in Wilden Marsh.

Noting that changes can be so fast that maps are out of date, Brett turned to Burlish Meadows, a former dumping site and now a nature reserve with a wide range of dry and wet conditions. The spreading of topsoil from elsewhere and dumping of garden waste has produced a flora of 250 species, with alien species probably including introductions via garden centres; the Pill-woodlouse *Armadillidium nasatum* probably came there by that means. Lots of the local Bombardier beetle *Brachinus crepitans*, which for defence squirts acid out of its anus, were also to be seen.





Sitting and waiting has provided Brett with some unexpected sightings. At The Devil's Spittleful the very local weevil *Platystomos albinus* turned up, and a Large Red-belted Clearwing moth *Synanthedon culiciformis* emerged from a birch stump, and another one appeared while he sat in a secluded glade in Wyre, along with a White-barred Clearwing *S. spheciformis*, the local and rare Alder Woodwasp *Xiphydria camelus*, which he watched ovipositing, and a Green Huntsman spider *Micrommata virescens*.

Brett's garden has provided sightings of a number of species which should not be there, for example the Eyed Cranefly *Epiphragma* ocellare hatching out in the base of a hazel hedge. Between Hagley and Stourbridge Brett came across the Scarce Black Mining Bee *Andrena nigrospina*, which is also found around Bewdley, and he has found the Garden Centre Spider *Uloborus plumipes* in two garden centres, large numbers lurking among pots!

While Brett was having his lunch in Wilden Marsh, sitting among a mass of flowers, several males of the Locust Blowfly *Stomorhina lunata* landed on Gypsywort, and a female turned up later. There were lots of Short-

winged Coneheads *Conocephalus dorsalis* around too, and he wondered if there could be an association between these two species as the former could be becoming resident, though there is as yet no proof of breeding. While watching Bee-wolves *Philanthus triangulum* Brett noticed a European Paper Wasp, *Polistes dominula*, first recorded in Britain only in 2003 and perhaps spreading with hotter weather.

Brett had been delighted to find the large spider *Segestria florentina* living in holes in a brick wall in Bewdley, its furthest north county sighting. He had shown us during a Study Group field meeting how by touching the long silk lines fanning out around the spider's lair could tempt it out. Another Bewdley find was the Southern Oak Bush Cricket *Meconema meridionale*, also spreading northwards. Returning to The Devil's Spittleful, Brett found another newcomer to this region, the Wasp Nest Beetle *Metoecus paradoxus* ovipositing into the bark of a tree, from which its triangulin offspring will catch a lift on a passing wasp to drop off in the nest and feed on the larvae.

Brett finished by emphasising the excitement of discovery.



