



Plant hunters... PGP members examine the sward during the Eastbach visit

All on a summer's evening

This summer the PGP honoured its tradition of making an evening visit to a garden, farm or woodland whose owners/managers have something noteworthy that they wish to show us.

Our destination was Eastbach Court near Lydbrook, a property restored and landscaped at huge cost, and now



Bee orchid... one of the many species at Eastbach
Photos: Andy and Gill Stott

managed upon a slightly quirky rewilding principle. We were guided by Johathan Keyte and Anna Stankiewicz, two highly qualified horticulturalists with impressive backgrounds, who find themselves making the decisions about all that happens behind the Big House.

Their enthusiasm was infectious as they showed us the steep pasture, rescued from rye grass and grazing, which now boasts a rich variety of our favourite "weed" species and among which we were shown a fabulous new orchid (huge with stunning colours) known to few, if any, of us.

The new lake, an impressive sheet of water, gleamed invitingly toward swimmers and fishermen alike, yet it had an oddly sterile air about it, like a freshly-run bath. Time will, I hope, introduce algae, weeds, toads, coots, dragonflies, fish? and all those sounds that say "pond"!

Similarly, at the civil air strip overlooking the property I found myself cocking an ear for the lark ascending. But no sound came. I think perhaps these offbeat schemes need plenty of time to bed in and develop equilibrium.

I cannot speak highly enough of the commitment of our two hosts. Johathan and Anna reminded me of two children who have discovered a "Secret Garden" and can't wait to show the grown ups.

JOHN JOSEPHI



NEWSLETTER

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NATURE WATCH What to look for now



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Old man's beard

Revealed: history beneath our feet

Secrets of the past unearthed by technology of the future

Archaeologist Jon Hoyle, author of *Hidden Landscapes in the Forest of Dean*, will be the guest speaker at the Parish Grasslands Project's autumn meeting in the Mackenzie Hall, Brockweir, at 2.30pm on Saturday 21 October.

Jon has spent decades unearthing the secret history of the local landscape. Much is known and written about the Forest's industrial and medieval history, but Jon's book tells the story of its pre-history and early history. His research for the county council Archaeology Service uses aerial imaging with the latest LiDAR technology.

This has revealed for the first time many archaeological sites and features in the Forest previously obscured by woodland or unnoticed in the fields. These include stone circles, field systems, details of Offa's Dyke and Iron Age forts, with many examples from the parishes of Hewelsfield &



Hidden Landscapes of the Forest of Dean

Jon Hoyle

Jon Hoyle's book tells the story of the pre-history of the Forest, based on many years of archaeological research

Brockweir, St Briavels and Tidenham. This promises to be a fascinating talk and an opportunity to learn more about the recently discovered secrets of the peoples who lived here thousands of years ago. All welcome, admission free to members and non-members. We might even manage to squeeze in time for some tea and cake!



Two species of fungi rich grassland, **Crimson Waxcap** and **Pink Ballerina Waxcap**

Andy Karran on a new tool for environmental su Decoding nature's D

Ground-breaking work has been going on at Gwent Wildlife Trust using relatively new techniques to unlock the secrets of the DNA in fungi-rich grassland. Environmental DNA, or eDNA, is genetic material obtained from environmental samples such as soil, water, air, sediments, or the hair, droppings or remains of animals

As well as grassland fungi, the survey focused on invertebrates in the reens, or historic watercourses, on the Gwent Levels. Both fungi and invertebrates are excellent indicators of the health of the habitats they occupy, but they are also very difficult to identify unless you are a real expert, making them perfect candidates for eDNA work.

Factor in the fact that grassland fungi fruiting bodies are both unpredictable and ephemeral in showing themselves, and eDNA is an important survey method, although nothing beats actually seeing the beauty of the colourful fungi in the autumn.

Following a request for landowners with grassland fungi on their fields to take part in the survey, 30 sites across Monmouthshire and Newport were surveyed with the help of volunteers Peter Hunt, Claire Scawn and Julia Karran. At each site 36 Smarties-tube-sized cores of soil were collected, making a total of 1,210 soil core samples, and eDNA was

collected from 10 reens on the Levels (multiple water samples syringed through filters).

These samples were sent to the laboratories at Aberystwyth University for analysis, then we waited! In September we got the results back: lots of obscure scientific names. It was a bit bewildering at first, however the deeper we dug into the results the more interesting things we found.

Grassland fungi

We were provided with a list of CHEGD fungi from each site. CHEGD stands for the first letter of the five key fungi groups involved in this assessment and is a standard way to assess the value of grassland fungi sites: Clavarioids (spindles, club & coral fungi); Hygrocybe (waxcaps); Entoloma (pinkgills); Geoglossum (earthtongues and relatives); Dermoloma (crazed caps and relatives).

Across the 30 sites a hugely-impressive 100 CHEGD fungi species were detected. Some sites had more than 40 of these, within the 30mx30m survey quadrat. This included 18 species that are assessed as vulnerable by the International Union for Conservation of Nature, indicating that they face a high risk of extinction in the wild.

Some of the sites surveyed were known

to be excellent grassland fungi sites and we were able to compare “traditional” and eDNA survey results: the eDNA compared very favourably.

The value at other sites was previously unknown, so we have discovered many new important grassland fungi sites and made the owners aware of their value, explained how to care for them and, we hope, ignited an enthusiasm.

Furthermore, by surveying a less favourable site immediately adjacent to a known exceptional fungi site we have demonstrated just how long it can take for grassland fungi to colonise sites and therefore how important it is to preserve those in existence.

As well as the fungi, the eDNA was able to identify the grasses and wildflowers present, which was a useful and interesting bonus survey result. Whilst this is no substitute, either scientifically or as the experience of surveying the flora conventionally, it did highlight a few species not previously recorded at sites and certainly would provide an important indication that a site is species-rich and worthy of further survey work.

Reens invertebrates

Evidence officer Lowri Watkins diligently sifted through the reen invertebrate results and produced a comprehensive report. It



Photos: Andy Karran

Surveying eDNA



Andy collecting cores of soil from one of the grassland sites *Photo Peter Hunt*

would appear that some species new to Wales and even the UK were detected.

Some headlines: a total of 194 taxa were detected; average taxonomic richness per sample site was 43.9 and ranged from 13 to 86; most abundant sequences: *Chaoborus pallidus* (a phantom midge/glassworm species); most commonly detected taxa: *Acricotopus lucens*, *Coryneura scutellata* (both non-biting midge species) and *Caenis robusta* (a small square-gill mayfly species); possible new UK records: 7 taxa; possible new Wales records: 17 taxa (9 excluding those new to UK); possible new Gwent records: 25 taxa (8 excluding those new to Wales); UK IUCN Red List of threatened species taxa detected: 11 taxa.

Taxa recorded as new to UK/Wales/Gwent are yet to be confirmed with specialist recording groups. Importantly we also found limitations to the survey, with hard-bodied invertebrates, such as beetles, shedding less eDNA, so perhaps being underestimated in the results, and the sampling took place mid-water, perhaps therefore missing species in the silt. Additionally, better data would be revealed by sampling a greater number of sites and repeating this as a form of monitoring, and that is our ambition for the future.

This pilot study has demonstrated great potential and with more funding and ever improving eDNA technology this

could be a valuable method of monitoring the health of the vitally important but threatened Gwent Levels.

We can conclude that the eDNA surveys were certainly useful towards our work and we will be hoping to do more in the future if funding can be secured. Further invertebrate work on the Levels would be extremely valuable and it is also hoped to carry out eDNA work on dung beetles.

It is likely that eDNA will become an increasingly important tool in undertaking ecological survey work in future years. It will never replace more traditional survey methods, however used in the right circumstances it can be very effective. We recognise we need to get the maximum value from our financial and staff resources to deliver the best value conservation work to protect our wildlife, which is why these new, emerging technologies need to be explored and where applicable embraced.

Andy Karran is Evidence Manager of Gwent Wildlife Trust. This article first appeared in the trust's membership magazine, Wild About Gwent, and is reprinted with permission. The project received funding through the Welsh Government Rural Communities - Rural Development Programme 2014-2020, which was funded by the European Agricultural Fund for Rural Development and the Welsh Government.

The moth who stayed for lunch

The Flower Hunt, which has been an annual PGP event for many years, is always a popular gathering, not only for the children but for all those attending, and this year was no exception. So, in midsummer, Jean Green once again prepared her meadow – strimming paths through the high vegetation and preparing the barn with hay bales to sit on and with drinks and hand-washing facilities.

Class One from St Briavels School, children between four and six years of age, walked a mile from the school to Hollyside Farm.

The evening before, a moth trap had been set up and perhaps the sight of the day was a large mottled grey moth – a Poplar Hawkmoth – dozing peacefully in the trap in the morning sun. [It later joined us for our lunch break, still sleepy, well camouflaged resting on a grey stone wall.]

There was much to see in the field, grasshoppers and beetles, ladybirds and



A Poplar Hawkmoth

day-flying moths and many flowers including orchids, lesser stitchwort and bird's foot trefoil. A newt was caught in the drinking trough; there were many efts and a leech.

We borrowed butterfly and fishing nets, lenses, identification charts and specimen jars for the children, and some creatures were put in a keep net to be released all together at the end of the day. The children's enthusiasm and energy were impressive – they seemed totally captivated. As their teacher, watching the children as they roamed in the field said: "This is the perfect way to educate children". With thanks to Jean for providing this wonderful experience.

URSULA WILLIAMS