

# Shropshire Botanical Society

## Newsletter

### Spring 2020



# Shropshire Botanical Society Newsletter No. 40

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Front Cover:

× *Dactyloctenium aegyptium* at Llynclys Quarry  
(photo by Dan Wrench)



Our thanks to the Shropshire Wildlife Trust and the Field Studies Council for their generous support of our society. Both organisations support the work of the society in recognition of the importance of the contribution we make to understanding Shropshire botany.



Welcome to the 2020 Spring Newsletter, after one of the wettest winters on record I had hoped to be bringing good news of an exciting summer ahead but unfortunately that is not to be.

I had written an upbeat introduction a few weeks ago inviting everyone to join in all our exciting field meetings but, events with Covid 19 have rather over taken everyday life, so although the flowers are still flowering, we will be restricted in how, as a group, we can enjoy them.

The BSBI issued the following guidance last week and, as a society, we have decided to follow these.

**“In order to comply with Government advice and to reduce the risk of transfer of the Covid 19 virus BSBI Board have decided that all BSBI events, either indoor or outdoor meetings, will be cancelled until at least the end of May. It is possible that this will need to be extended. We will review the Government’s ongoing advice and update this guidance regularly. Please see [www.bsbi.org](http://www.bsbi.org) for details. Clearly while gatherings are currently unsafe the countryside remains open and individuals can still enjoy activities like [Wild Flower Hour](#) as long as they are following Government advice about social distancing and hygiene procedures.”**

I have left our summer programme of field visits in here, in case restrictions are lifted earlier than anticipated, since there isn’t another newsletter until the autumn. We will keep you updated if events are able to go ahead via all possible methods as everything could be subject to change. So, our advice is, check the Shropshire Botanical Society website ([www.shropshirebotany.org.uk](http://www.shropshirebotany.org.uk)), Twitter, Facebook and email, and/or phone meeting organiser/lead.

As a taster of how exciting these trips can be, Dan has written up a visit made at the end of last summer to Llynclys quarry.

In addition to our own field meetings there may be opportunities to become involved in a number of other local activities. I think many of our members were inspired by the talk that Harriet, director of

Caring for God’s Acre, gave at our winter meeting and we have details here of where and how we can continue our support of Caring for God’s Acre this summer. I am guessing individuals visiting burial grounds on their own probably won’t get arrested, at least not at the moment, – but just keep up to date on the latest government guidance. There is a lot of summer to come. Or you might like to become involved with the Marches Meadow Group, more about that in David Poynton’s article. All these trips were meant to help boost the submission of biological records which seem to have fallen in recent years as documented in Alex’s article, meanwhile our own data processing wizards have been making good progress with the Botanical Society Web page and links to other data storage facilities.

In the context of our vision for the future of botany in Shropshire, Sue provides an update on the role that the Botanical Society itself has to play in the training and documentation of things botanical in the county.

Other exciting initiatives include the green walls of plants representing local habitats that Mark Duffell is setting up around Preston Montford, and he has written an article about this and how you might like to get involved.

Finally, in Botanical Society tradition we have two articles on taxonomically tricky groups. John has delved into the genetics of Limes whilst Martin Godfrey continues his series on fern identification. The issue of taxonomy causes much debate and we will, in due course, be adopting the nomenclature in the 4<sup>th</sup> edition of Stace. Full guidelines for contributors to the newsletter are available on the Shropshire Botanical Society web page.

## Botanical Society Meetings

### Spring meeting and AGM. POSTPONED until September 2020

Saturday 26<sup>th</sup> September

Venue: Preston Montford

The speaker at the AGM will be John Martin, who until recently was the National Specialist for Vascular Plants at Natural England.

The title of his talk is 'Mountain Plants'.

### Winter Meeting: Saturday 16 January 2021

AGM 2021: 14 April.

## Field meetings 2020

Please find below our list of field meetings for the year – plus an indoor session on the use of microscopes in botany. All these meetings are open to anyone irrespective of experience and they always include support for anyone wanting to learn more. We may occasionally hold additional visits to sites that are arranged on a more ad hoc basis – including some sites where large numbers of people are not appropriate or where access is difficult. Please contact Dan Wrench ([danwrench@gmail.com](mailto:danwrench@gmail.com)) if you are interested in these meetings.

**In the light of Covid 19 the May trips are cancelled but we will continue to monitor the situation and look forward to resuming when it is safe and appropriate to do so.**

**Saturday 6th June. Muxton Marsh.** Meet at 11:00 am in Woodbine Close. This is a cul-de-sac off Marshbrook Way, Muxton at SJ7146 1351. Park between drive ways as discreetly as possible. For further information about the meeting please contact Penny Wysome, 01952 242617, [pennywysome@yahoo.com](mailto:pennywysome@yahoo.com)

**Sunday 28th June. Smiling Tree Farm, Chapel Lawn, Cardoc and Bryncambric.** Meet at 11:00 am in the farm yard at SO 3162 7582. Please car share where possible. You will see meadows, streamside vegetation, and upland acid grassland / heath. For further information about the meeting please contact Mags Cousins, 07873 532681, [mags@bagbatch.co.uk](mailto:mags@bagbatch.co.uk)

**Saturday 4th July. Secret Hills Discovery Centre, Meadows.** Meet at 9:00 am in the car park at SO434824. For further information about the meeting please contact Mags Cousins, 07873 532681, [mags@bagbatch.co.uk](mailto:mags@bagbatch.co.uk)

**Saturday 18th July. Clive Churchyard and Grinshill.** Meet at 10:00 am at Clive Church at SJ5146 2408. Please car share where possible as there are only a few parking places alongside Drawwell Street, just north of the Church. The access will be very easy in the churchyard for the first part of the walk and moderate going for the walk up Grinshill. It will be a mix of recording and training. Attending for just an hour or two in the churchyard is fine. For further information about the meeting please contact Andrew Perry, [andypassport@gmail.com](mailto:andypassport@gmail.com)

**Saturday 21th November. Microscopy for Botanists at Preston Montford.** Meet at 10:30 am in the main car park at SJ432143. This is a training event in the use of microscopes for botanist. For further information about the meeting please contact Martin Godfrey, [mfgodfrey49@gmail.com](mailto:mfgodfrey49@gmail.com)

Dan Wrench

## A Shropshire Interactive Flora is now within sight

The worrying and extraordinary tale of the stunning species rich meadow in Cumbria that was planted with trees with the “best of intentions” (carbon offsetting etc), only for the mistake to be spotted by a local botanist and the trees to be pulled out again a couple of weeks later (see Sue’s article and Miles King’s blog: <https://anewnatureblog.com/2020/02/21/chronicle-of-a-grassland-saved/>) highlights some important lessons. One of these is the urgency of ensuring botanical records are freely and easily accessible in the face of competing pressures and we are grateful to the Shropshire Ecological Data Network (SEDN) and Shropshire Council ecology team for helping make it so in Shropshire.

We now have a chance to go a step further in making Shropshire records even more accessible than they already are. Your Bot Soc techie working group, after 18 months of investigating

how to resurrect the 'data portal' to Shropshire botany records, written by Alan Hale years ago, have identified an exciting way forward with the help of the National Biodiversity Network (NBN) Atlas, the national store for biodiversity data. Your botanical and other Shropshire records after verification, are collated by Alex Lockton into a SEDN dataset which is sent to the NBN Atlas and now there is an opportunity to interrogate it more easily from there.

The NBN team have created some code and made it open source ie freely available to anyone, as they are keen to facilitate access for all users, not just Shropshire Bot Soc, which will enable the creation of a tailored interface, in our case to the SEDN botanical data. We will be able to make the SEDN data searchable by site name, or species, or square on a map etc as it used to be on the old portal. Finally, a simple interactive flora is within sight!

There will, of course, be a cost for an IT developer to create an Interactive Flora but we made savings on the production of the Shropshire Flora book publication and those savings could be spent on this project, which is after all, another way of getting flora records out there. There is also the potential to share costs since the basic premise of a tailored way to interrogate a dataset off the NBN, is likely to be attractive to other recording groups, such as the wider SEDN group, or even other recording groups outside the county. So it just remains to be seen who wants to join with us, and if there are no takers initially, decide whether or not we go it alone with an Interactive Flora which is sure to generate interest once it is done and the benefits have become more obvious.

Mags Cousins

## Looking for Fern hybrids – a Note

At the end of my article on Fern Hybrids I issued a challenge – to find the hybrid between *Dryopteris filix mas* and *D. borrieri*, *D. x critica*. I am pleased to say that during last autumn's visit to Benthall Edge woods we found two plants - one by Penny Wysome and the other by me, both new for VC40. The records are now with our VCR, Sarah Whild.

Martin Godfrey

## Activities at Preston Montford Field Centre

The field centre is undergoing a review of how it manages its land, and we are consulting with visitors to the centre such as yourself as to how you would wish to see the land managed/restored in the future?

We already have some successful recent projects including *Francesca's Meadow* (a meadow creation project, to the left of the main drive), Bee and Wasp Hotel, hibernaculum and new orchards. In the next few months we will be starting on the first of a series of green walls planted up with native flora.

We are now keen to develop the grounds further for education and biodiversity and **we would welcome your comments and suggestions.**

For more details see the Bot Soc Web page.

**Your responses can be sent by email to** Preston Montford Office [grounds.pm@field-studies-council.org](mailto:grounds.pm@field-studies-council.org)

or by post: Preston Montford Field Centre, Montford Bridge, Shrewsbury, SY4 1DX

Adrian Pickles

## Friends of Preston Montford

**Friends of Preston Montford**, a proposal has been made to create a 'Friends of' group, we are looking for expressions of interest from potential friends. If you wish to apply please email [enquiries.pm@field-studies-council.org](mailto:enquiries.pm@field-studies-council.org) or write to Preston Montford Field Centre, Montford Bridge, Shrewsbury SY4 1DX, with your name and contact details, and we will send a form through.

Mark Duffell

Below are two initiatives that you might like to get involved with:

The Marches Meadow Group

Caring for God's Acre



The group was constituted in 2015 as a non-profit making organisation of volunteers with the objectives of promoting the conservation, protection and enhancement of species rich hay meadows, grasslands and unimproved pasture.

Whilst focused initially on the Stiperstones and Corndon Hill, Country Landscape Partnership Scheme areas, membership continues to grow more widely. However, the original aim of conserving and restoring the diversity of plant and animal species native to the meadow environment remains the key focus for the Group.

As part of the National Trust's Stepping Stones Project, MMG has been awarded a People's Postcode Lottery Grant for 2020. This is a really exciting development as it will allow us to



accelerate many of the objectives we have set ourselves and to publicise the work we are doing more widely.

By building our data base of species rich meadows both within the Group and of those interconnected sites it will allow better utilisation of our "green hay" and seed collection techniques.

During 2020 we will target meadows both large and small and aim to capture the public's general interest in creating a small meadow area in their garden.

The 2020 Hay Meadow Festival on 11th July at the Discovery Centre Craven Arms will be a major attraction to the general public as well as participating specialised community wildlife groups. The list of those organisations attending continues to grow. A Bioblitz of this large site and meadow on the day of the Festival, will provide a good base from which to measure, in the future, the results from any management techniques developed for the site.

MMG have a number of events organised for its members throughout the year, from a talk in March by Richard Gulliver on his role in the selection of the 22 herbs used in the development of the "Botanist Gin" ; to a relaxed afternoon soaking up the sun in a hay meadow! For those of a more energetic nature scything sessions are also on offer. (see events list).

MMG will have a stand at the Meadows Festival and is planning to display some of our hay making equipment as well as providing advice on site and meadow development. We would be delighted to welcome to our stand, any members of the Shropshire Botanical Society attending.

In 2020 we are focusing on "**Making Meadows Matter**".

For more information please contact either myself at [d.j.poynton@googlemail.com](mailto:d.j.poynton@googlemail.com) or Richard Small our secretary at [richard.w.small@gmail.com](mailto:richard.w.small@gmail.com). Additional information and photographs plus Event details are on the website [www.marchesmeadowgroup.com](http://www.marchesmeadowgroup.com)



## Introduction

Thank you to the Botanical Society for hosting Harriet Carty from Caring for God's Acre for a recent talk at the winter meeting. Following the meeting it was proposed that publishing the list of unrecorded Churchyards in Shropshire would be useful. I have included the full list and these sites plotted on a map.

## Methods

To compile this list I started with all the listed churchyards in the Salop and Ludlow Archdeaconries from the Church of England. I then checked each site against the SEDN plant spreadsheet, removing sites that have more than 5 records since 2000. I expect that the list is not perfect, it's likely that I will have made some errors, misreading the database, forgetting an email, or unable to access some records. If you have surveyed

North Shropshire

a churchyard and I've listed it as not recorded, please let me know.

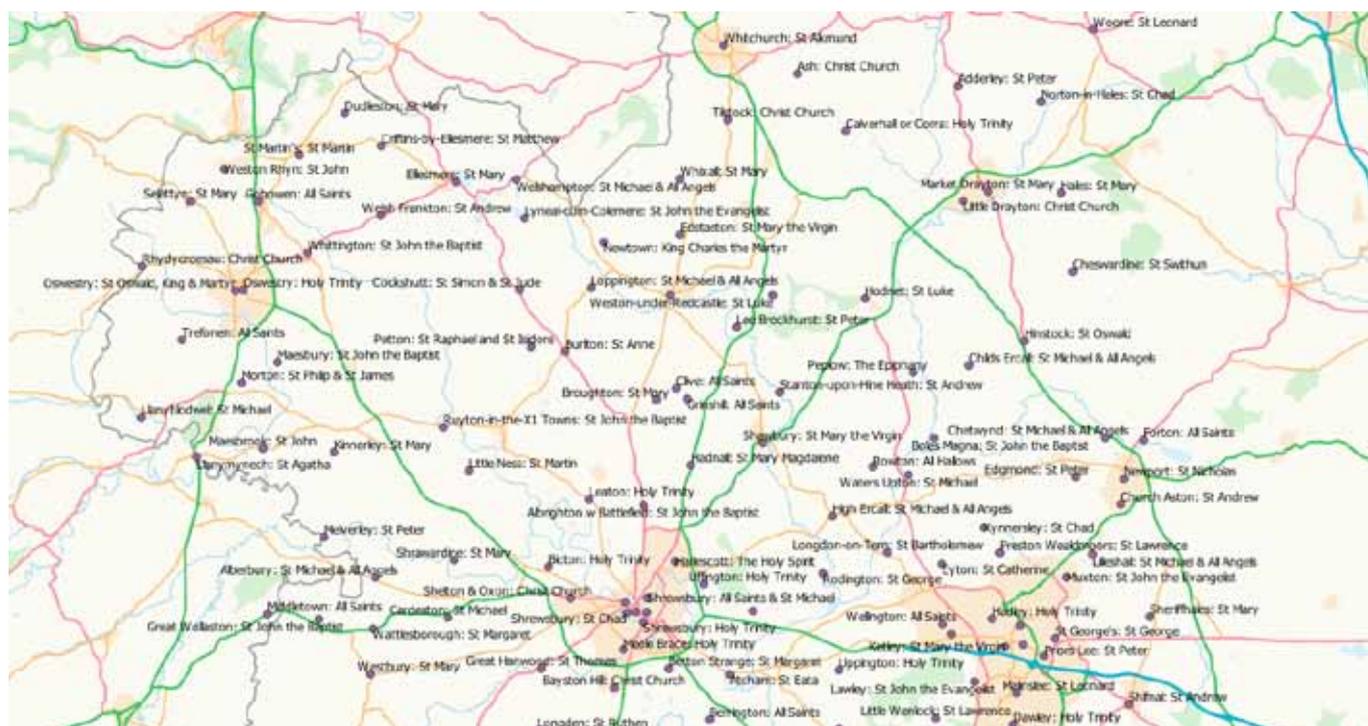
## Recording

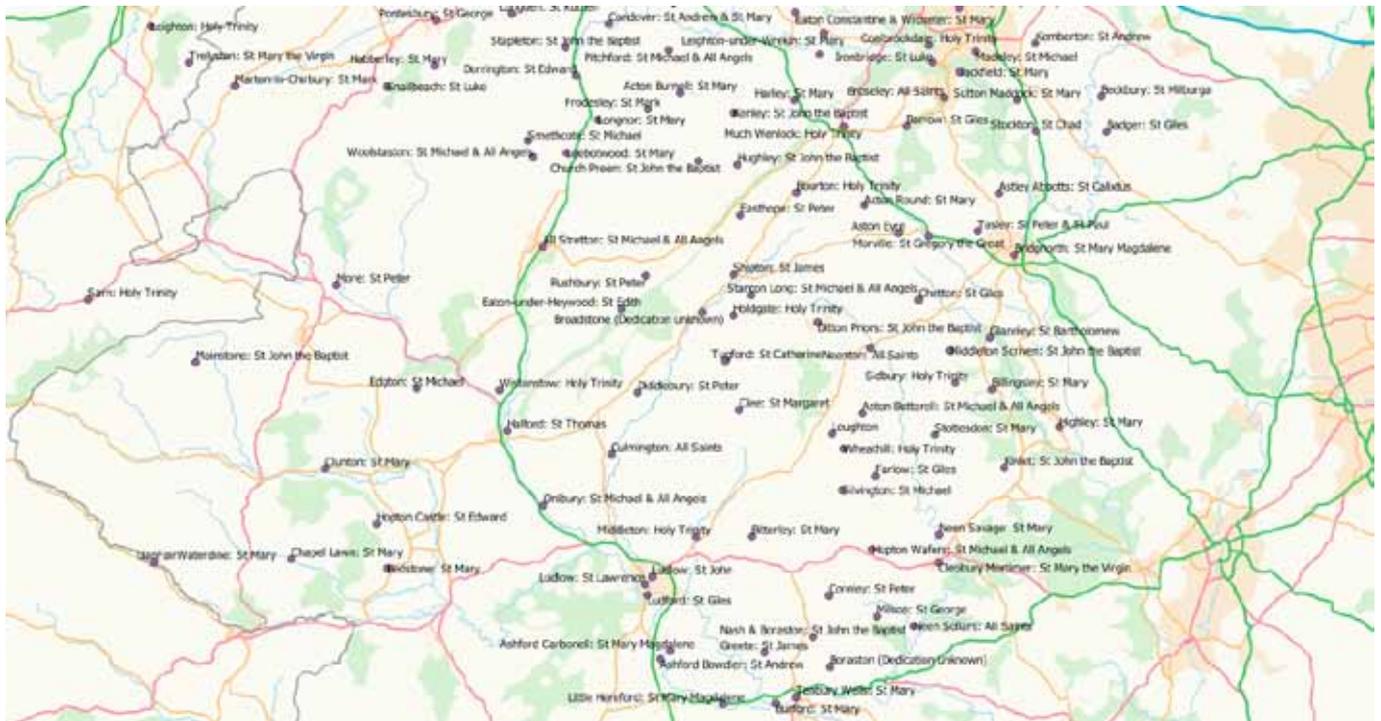
At latest count there are 313 churchyards we are aware of in Shropshire, to the best of my knowledge 113 have records, and 77 with records since 2000. We would love to report back to the newsletter in Autumn or next Spring with accounts of the recording that has taken place this year.

Please continue to send your records following your usual protocol to Sarah Whild, just copy me in to the email, [liam@cfga.org.uk](mailto:liam@cfga.org.uk), or post a copy of the records to the address at the end of this article.

For the winter meeting I prepared 20 or so small sheets with a handful of church clusters on each one. Thank you very much to all who took these, we had a fantastic response. It would be ideal if anyone with firm plans to survey the sites on their sheet could email me so I'm aware.

We are displaying Burial Grounds across England and Wales on a dedicated Burial Grounds Portal on the NBN Atlas. If at all possible, please use 8-figure grid references with your records, as our system will frequently miss records at 6-figures.





## South Shropshire

### Sites

- |   |  |                                       |
|---|--|---------------------------------------|
| Acton Burnell: St Mary                        | Bourton: Holy Trinity                  | Culmington: All Saints                |
| Acton Round: St Mary                          | Bridgnorth: St Mary Magdalene          | Dawley: Holy Trinity                  |
| Adderley: St Peter                            | Broadstone (Dedication unknown)        | Diddlebury: St Peter                  |
| Alberbury: St Michael & All Angels            | Broseley: All Saints                   | Ditton Priors: St John the Baptist    |
| Albrighton w Battlefield: St John the Baptist | Broughton: St Mary                     | Dorrington: St Edward                 |
| All Stretton: St Michael & All Angels         | Burford: St Mary                       | Dudleston: St Mary                    |
| Ash: Christ Church                            | Burlton: St Anne                       | Easthope: St Peter                    |
| Ashford Bowdler: St Andrew                    | Calverhall or Corra: Holy Trinity      | Eaton Constantine & Wroxeter: St Mary |
| Ashford Carbonell: St Mary Magdalene          | Cardeston: St Michael                  | Eaton-under-Heywood: St Edith         |
| Astley Abbots: St Calixtus                    | Central Telford: Christ the King       | Edgmond: St Peter                     |
| Aston Botterell: St Michael & All Angels      | Chapel Lawn: St Mary                   | Edgton: St Michael                    |
| Aston Eyre                                    | Cheswardine: St Swithun                | Edstaston: St Mary the Virgin         |
| Aston: St Mary                                | Chetton: St Giles                      | Ellesmere: St Mary                    |
| Atcham: St Eata                               | Chetwynd: St Michael & All Angels      | Eyton: St Catherine                   |
| Badger: St Giles                              | Childs Ercall: St Michael & All Angels | Farlow: St Giles                      |
| Barrow: St Giles                              | Church Aston: St Andrew                | Forton: All Saints                    |
| Bayston Hill: Christ Church                   | Church Preen: St John the Baptist      | Frodesley: St Mark                    |
| Beckbury: St Milburga                         | Clee: St Margaret                      | Glazeley: St Bartholomew              |
| Bedstone: St Mary                             | Cleobury Mortimer: St Mary the Virgin  | Gobowen: All Saints                   |
| Berrington: All Saints                        | Clive: All Saints                      | Great Hanwood: St Thomas              |
| Betton Strange: St Margaret                   | Clunton: St Mary                       | Great Wollaston: St John the Baptist  |
| Bicton: Holy Trinity                          | Coalbrookdale: Holy Trinity            | Greenfields: United Church            |
| Billingsley: St Mary                          | Cockshutt: St Simon & St Jude          | Greete: St James                      |
| Bitterley: St Mary                            | Condover: Ryton Chapel                 | Grinshill: All Saints                 |
| Bolas Magna: St John the Baptist              | Condover: St Andrew & St Mary          | Habberley: St Mary                    |
| Boraston (Dedication unknown)                 | Coreley: St Peter                      | Hadley: Holy Trinity                  |
|   | Criftings-by-Ellesmere: St Matthew     | Hadnall: St Mary Magdalene            |
|   | Crudgington: St Mary                   |                                       |

Hales: St Mary  
 Halford: St Thomas  
 Harlescott: Emmanuel Church  
 Harlescott: The Holy Spirit  
 Harley: St Mary  
 Haughton: St Chad  
 High Ercall: St Michael & All Angels  
 Highley: St Mary  
 Hinstock: St Oswald  
 Hodnet: St Luke  
 Holdgate: Holy Trinity  
 Hopton Castle: St Edward  
 Hopton Wafers: St Michael & All Angels  
 Hughley: St John the Baptist  
 Ironbridge: St Luke  
 Jackfield: St Mary  
 Kemberton: St Andrew  
 Kenley: St John the Baptist  
 Ketley: St Mary the Virgin  
 Kinlet: St John the Baptist  
 Kinnerley: St Mary  
 Kynnersley: St Chad  
 Lawley: St John the Evangelist  
 Leaton: Holy Trinity  
 Leaton: Holy Trinity  
 Leebotwood: St Mary  
 Lee Brockhurst: St Peter  
 Leighton: Holy Trinity  
 Leighton-under-Wrekin: St Mary  
 Lilleshall: St Michael & All Angels  
 Little Drayton: Christ Church  
 Little Hereford: St Mary Magdalene  
 Little Ness: St Martin  
 Little Wenlock: St Lawrence  
 LlanFairWaterdine: St Mary  
 Llanyblodwel: St Michael  
 Llanymynech: St Agatha  
 Longden: St Ruthen  
 Longdon-on-Tern: St Bartholomew  
 Longnor: St Mary  
 Loppington: St Michael & All Angels  
 Loughton  
 Ludford: St Giles  
 Ludlow: St John  
 Ludlow: St Lawrence  
 Lyneal-cum-Colemere: St John the Evangelist  
 Madeley: St Michael  
 Madeley Woodside  
 Maesbrook: St John  
 Maesbury: St John the Baptist  
 Mainstone: St John the Baptist  
 Malinslee: St Leonard  
 Market Drayton: St Mary  
 Marton-in-Chirbury: St Mark  
 Meverley: St Peter  
 Meole Brace: Holy Trinity  
 Middleton: Holy Trinity  
 Middleton Scriven: St John the Baptist  
 Middletown: All Saints  
 Milson: St George  
 More: St Peter  
 Morton: St Philip & St James  
 Morville: St Gregory the Great  
 Much Wenlock: Holy Trinity  
 Muxton: St John the Evangelist  
 Nash & Boraston: St John the Baptist  
 Neen Savage: St Mary  
 Neen Sollars: All Saints  
 Neenton: All Saints  
 Neenton: All Saints  
 Newport: St Nicholas  
 Newtown: King Charles the Martyr  
 Norton-in-Hales: St Chad  
 Oakengates: Holy Trinity  
 Onibury: St Michael & All Angels  
 Oswestry: Holy Trinity  
 Oswestry: St Oswald, King & Martyr  
 Peplow: The Epiphany  
 Petton: St Raphael and St Isidore  
 Pitchford: St Michael & All Angels  
 Pontesbury: St George  
 Preston Wealdmoors: St Lawrence  
 Priors Lee: St Peter  
 Radbrook: Church of Christ the King  
 Rhydycroesau: Christ Church  
 Rodington: St George  
 Rowton: All Hallows  
 Rushbury: St Peter  
 Ruyton-in-the-X1 Towns: St John the Baptist  
 Sarn: Holy Trinity  
 Selattyn: St Mary  
 Shawbury: St Mary the Virgin  
 Sheinton: St Peter & St Paul  
 Shelton & Oxon: Christ Church  
 Sheriffhales: St Mary  
 Shifnal: St Andrew  
 Shipton: St James  
 Shrawardine: St Mary  
 Shrewsbury: All Saints & St Michael  
 Shrewsbury: Holy Cross  
 Shrewsbury: Holy Trinity  
 Shrewsbury: St Alkmund  
 Shrewsbury: St Chad  
 Shrewsbury: St George of Cappadocia  
 Shrewsbury: St Peter  
 Sidbury: Holy Trinity  
 Silvington: St Michael  
 Smethcote: St Michael  
 Snailbeach: St Luke  
 Stanton Long: St Michael & All Angels  
 Stanton-upon-Hine Heath: St Andrew  
 Stapleton: St John the Baptist  
 St George's: St George  
 St Martin's: St Martin  
 Stockton: St Chad  
 Stottesdon: St Mary  
 Sutton Maddock: St Mary  
 Tasley: St Peter & St Paul  
 Tenbury: St Michael & All Angels  
 Tenbury Wells: St Mary  
 Tilstock: Christ Church  
 Trefonen: All Saints  
 Trelystan: St Mary the Virgin  
 Tugford: St Catherine  
 Uffington: Holy Trinity  
 Uppington: Holy Trinity  
 Upton Magna: St Lucia  
 Waters Upton: St Michael  
 Wattlesborough: St Margaret  
 Wellington: All Saints  
 Wellington: Christ Church  
 Welshampton: St Michael & All Angels  
 Welsh Frankton: St Andrew  
 Wem: St Peter & St Paul  
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 11 Drover's House, The Auction  
 Yard  
 Craven Arms, Shropshire  
 SY7 9BZ

## Visit to Llyncllys Quarry

Dan Wrench

This visit was the third by Shropshire Botanical Society to Llyncllys Quarry. As it's such a large site there are plenty of unexplored corners and previous visits have tended to focus on different areas.

The last visit by Shropshire Botanical Society was in June 2012. In the last 15 years 59 axiophytes have been recorded at the site which is more than many Sites of Special Scientific Interest.

This visit was focussed on the developing base-rich fen in an area of the quarry known as Lagoon 1. In a previous article in the Autumn 2015 edition of this newsletter I described how this fen has been enhanced by moving freshly cut hay from the nearby Sweeny Fen SSSI to Llyncllys Quarry on at least 3 different years. Plug plants of a few species have also been planted, most notably Black Bog-rush *Schoenus nigricans*. See the 2015 article for the full list (<http://bit.ly/SBS-N15>).

The site did not disappoint. Several plants from Sweeny Fen do seem to have made the move to Llyncllys Quarry. These include Marsh Valerian *Valeriana dioica*, Purple Moor-grass *Molinia*

*caerulea*, Blunt-flowered Rush *Juncus subnodulosus*, Bog Pimpernel *Anagallis tenella*, Marsh Thistle *Cirsium palustre*, Marsh Arrowgrass *Triglochin palustre*, and Common Spike-rush *Eleocharis palustris*.

In addition it would seem the Black Bog-rush has established very well. Plants were found in all the areas where they were planted back in 2014. Even better, many were fruiting and forming more dense tussocks - albeit rather shorter than I have seen elsewhere.

Perhaps of greatest excitement, however were the orchids. I had hoped that someday - and perhaps via the hay from Sweeny Fen - we would see Marsh Helleborine *Epipactis palustris* and Marsh Fragrant Orchid *Gymnadenia densiflora*. Not only did we have both of these, and the former in very good numbers, but Stephen O'Donnell spotted a hybrid between Marsh Fragrant Orchid and Common Spotted Orchid, *Dactylorhiza fuchsii*. This hybrid has yet to be given a name because one parent used to be a sub-species and most hybrids found were lumped together under the main Fragrant Orchid parent. These are mapped under the name *x Dactyloдения heinzliana*<sup>1</sup>. This is a new hybrid for Shropshire, and the West Midlands. The hybrid with Chalk Fragrant Orchid and Common Spotted

<sup>1</sup> Stace, Clive A.; Preston, Chris D.; Pearman, David A. 2015 *Hybrid flora of the British Isles*. Bristol, Botanical Society of Britain and Ireland.



Bog Pimpernel *Anagallis tenella*



Marsh Valerian *Valeriana dioica*



Black Bog-rush fruiting in 2019



Black Bog-rush when first planted in 2014

Orchid, or with undetermined Fragrant Orchid parentage, is fairly frequently recorded in the UK but the specific cross with Marsh Fragrant Orchid appears to be much less common. However it may just be poorly recorded due to the taxonomic changes.

The site still suffers from invasion by willow scrub despite at least three sessions by volunteers and contractors to keep it in check. Grazing by sheep was maintained for many years since 2004 but hasn't occurred for the last three years or so which has led to a reduction in the quality of the nearby grassland and, of course, ongoing battles with scrub in the developing fen.

We aim to reinstate grazing to this part of the quarry to help maintain the habitat. Another possible step would be treat this site as something of an ark for rare plants by introducing additional species from similar fens in the area. This could include Globeflower *Trollius europaeus*, Marsh Lousewort *Pedicularis palustris*, Common Butterwort *Pinguicula vulgaris*, Knotted Pearlwort *Sagina nodosa*, and Broad-leaved Cottongrass *Eriophorum latifolium*. Watch this space!



× *Dactylodenia heinzliana*

# Root and Branch – Where is our Shropshire Botanical Society (SBS) Going?

A personal view – Sue Dancey

## Introduction

I have been involved with the Shropshire Botanical Society since I first met Charles Sinker in 1988. Charles, and subsequently Ian Trueman, opened my eyes to the importance of botanical recording, and when I did my first course with Sarah Whild I was hooked and became a member. I could really see the importance of involving people to get reliable data, care for their flora and furthermore – I loved the camaraderie it brought – without too much social pressure.

I joined, I think, in 1996 and, when Head of Preston Montford Field Studies Council (FSC), welcomed the annual and winter meetings; I even attended a few field meetings. It then, of course, got heavy! The wonderful committee is always stretched and I was persuaded that I really wanted to be Treasurer. How did that happen? And I'm still here – and happy to keep going – but not jealously guarding the position – so please let me know if you want to do some simple bookkeeping!

## Constitution

We recently reviewed our SBS constitution which was adopted formally on November 14<sup>th</sup> 1998, amended in 2013 and we feel, is still fit for our 3 main purposes:

- (ii) The promotion of the study and appreciation of botany
- (iii) Research into and recording of the flora and plant communities of Shropshire (VC 40)
- (iv) Co-operation and liaison with other organisations to promote the conservation of the flora of Shropshire.

It is always good to remember what we are here for – and we feel that the above purposes are fulfilled by the activities we currently engage in and would love to do even more yet are always limited by capacity – mostly time – it turns out that botanists are very busy people! If you would like a copy of the full constitution, please get in touch with our lovely secretary, Penny who keeps track of our documents.

At a recent meeting the committee explored what we can do to work harder at this and decided that we should make sure you all knew what your committee

was trying to do for you the members and the society:

- Continue to publish our newsletter twice a year and encourage more of **YOU** to please write articles or submit information. What groups do **you** know – where have you seen nice botanically inspiring things in our region or indeed somewhere you are concerned about?
- Continue with our great speakers – they are well received and great value for the members and committee – please let us know if there is someone **YOU** would like to hear?
- Continue our Field meetings and introduce some shorter ones and indoor training to maximise opportunities for all. Once again – is there anything else **YOU** might like to suggest?
- Engage new field and visit leaders to spread the load – can **YOU** help? Might you be prepared to offer a botany day where members and non-members could meet up and record plants? Do we offer enough in a variety of places – we unashamedly often meet where a site is under recorded or perhaps has not been visited for a while – are we right – are there other priorities? Let us know PLEASE.
- Expand our social media following and encourage more partnership and informal liaison across our county. Can **YOU** help here? Can you retweet and share?
- Continue to support the BSBI County Recorders (currently Sarah Whild and Alex Lockton) in drawing together the data for the validated county records. **PLEASE KEEP YOUR RECORDS** flowing over to Sarah – it is important to keep on recording and the number of member records has declined over recent years.
- Publish appropriately, when we find things of interest and continue to consider and project be it a book, paper, article or social media tweet that shares botanical information about our county.
- Ask **YOU** to talk to us – let us know if there is anything we might be able to share in between

the newsletters, a new field site, a different organisation to link with. Please let your committee know via email: shropbotsoc@gmail.com

## Membership

It is worth remembering who ‘we’ are! Our membership has remained stable since a decline after the Flora publication – see the graph below. With our informal supporters, we remain a strong local group, affiliated to BSBI (Botanical Society of Britain and Ireland) and active through our newsletter and field meetings. The graph shows a ‘prediction’ for future membership – and I suspect that this will continue to show stability but may decline slightly to reflect the societal norm of not formally ‘joining up’ but supporting through other media.



The current committee are listed below – but they are no more important than the rest of the members and we are always looking for more help so please feel free to make contact with any of us if you would like to attend or lend a hand.

Chair	John Handley
Secretary	Penny Wysome
Comms Officer	Mags Cousins
Committee member	Andrew Perry
Newsletter Ed	Hilary Wallace
Field Meetings	Dan Wrench
Membership Sec	Currently Sue Dancey for 2019/2020 only
Treasurer	Sue Dancey
BSBI County Rec	Sarah Whild (corresponding member)

## The Future – it can be diverse and GREEN

So what is changing? We think that ‘membership’ remains VERY important AND so is the informal support we get from non-members such as followers of Facebook, Twitter and the blogs and web pages of ours and of others in the

botanical community. There is also the important collaborative opportunities with others eg Caring for God’s Acre, the FSC and its project work and publications, Shropshire Wildlife Trust, Natural England, Shropshire Ecological Data Network (SEDN) and the councils in our region. The committee felt that anything we can do to extend the reach and influence of botanical concerns should be explored, recognising that we have a small membership and limited capacity. Remember we can grow our influence through working with others and harnessing the power of those who support us through social media. Plants have power. In my experience there is a resurgence of interest in the natural world and plants have been headline news recently. With climate change, biodiversity loss, agricultural intensity, flooding and eutrophication, botanists and those who are botanically aware can make a difference.

Just have a look at some examples across the country:

### 1 The Road Verge Campaign organised by Plantlife



Posted: January 23 2020 on their webpage

<https://plantlife.love-wildflowers.org.uk/roadvergecampaign/inspiring-stories> “2019 was a great year for the Road Verge Campaign. We had a fantastic response to the launch of our new management guidelines and have had positive conversations with many more councils including Hampshire, Surrey and Wrexham to name a few. And we were thrilled to see such enthusiasm for

verges; thousands more signatures on the petition, new verge volunteer groups spring up in several counties, and photos of flourishing verge wild flowers being shared in our verge Facebook group and on Twitter.” Red Hemp-nettle (*Galeopsis angustifolia*) ©Plantlife

**Shropshire and Telford and Wrekin might benefit too – we have some amazing verges and as our Flora tells us – these important margins are often where species are in decline – eg Crosswort *Cruciata laevipes*. We have never been a campaigning organisation – but our observations and data have been crucial to see the changes in our counties’ verges.**

## **2 The HS2 (High Speed 2) concerns citing ancient woodland as a major reason to reconsider the route (let alone the construction in the first place)**

According to the Woodland Trust, up to 108 areas of ancient woodland are likely to be affected should the entire HS2 route go ahead. While HS2 has said it will plant more trees and create four times more woodland than is taken for the railway, the charity says that England’s ancient woodlands constitute “highly complex ecological communities that have



© Frances Wilmot Cubbington Action against HS2.

developed over centuries” and cannot be moved or replaced. The Woodland Trust argues that many species of flora, fauna and fungi which rely on the sites for survival, including woodpeckers, bats, dormice, otters and hedgehogs, are threatened by the plans. A great success was the action of those involved in the Cubbington Pear *Pyrus communis*. This is a great example right on the planned route that has so far prevented progress with many local people protesting against HS2 development.

It is easy to see how Shropshire, Telford and Wrekin might be affected by major roadway construction – and we are aware of issues regarding the planned

route of the North West Relief road. Are there other areas of our counties at risk?

**3 The tree planting agenda** which has so many examples of misguided schemes where trees are planted on species rich grasslands and wetland, for example this recent one that hit the press last week: “Tree planting is important, but it must not destroy much rarer, valuable habitats. This wildflower-rich grassland in *Gateshaw Mill Farm*, Cumbria has been planted without thought to the Butterfly Orchids, Scabious, Restharrow, Harebell and associated biodiversity.” This is an international issue. Forest researchers recently found that 45% of recent tree plantings globally were monoculture plantations of fast growing trees, usually intended for harvest, holding little carbon, ecologically poor and even decreasing biodiversity.

Perhaps Shropshire landowners might fall victim to similar misguided good intentions. Much of our ‘marginal’ agriculture land has biodiversity interest – especially our wetlands, moorlands and wetlands. Is this something that we should be keeping an eye on to conserve our botany?



Mill Farm grassland ©Rob Dixon Gateshaw

## **Conclusion**

Nationally and locally, people are recognising that plants are important. Our small but important society has historically provided botanical data for planners, the wildlife trust, landowners and managers. I see that need growing and the need for a vibrant sustainable SBS to guide the future of Shropshire and Telford and Wrekin. Let’s work together to make it happen, support us, come to our meetings, spread the news and GET INVOLVED more if you can with your great botanical society and encourage others to join in as members or supporters.

# Botanical Recording in Shropshire

Alex Lockton

Recording in Shropshire has been very quiet the last few years, averaging just a few thousand records per year. A table showing the number of records each person has contributed in 2018 and 2019 is given below (the total is higher than the actual number of records because you can have multiple recorders at an event, although we limit it to three rather than listing everyone who attends). The recording period for the planned new Atlas is over, so it leaves us with a bit of a hiatus when it comes to projects.

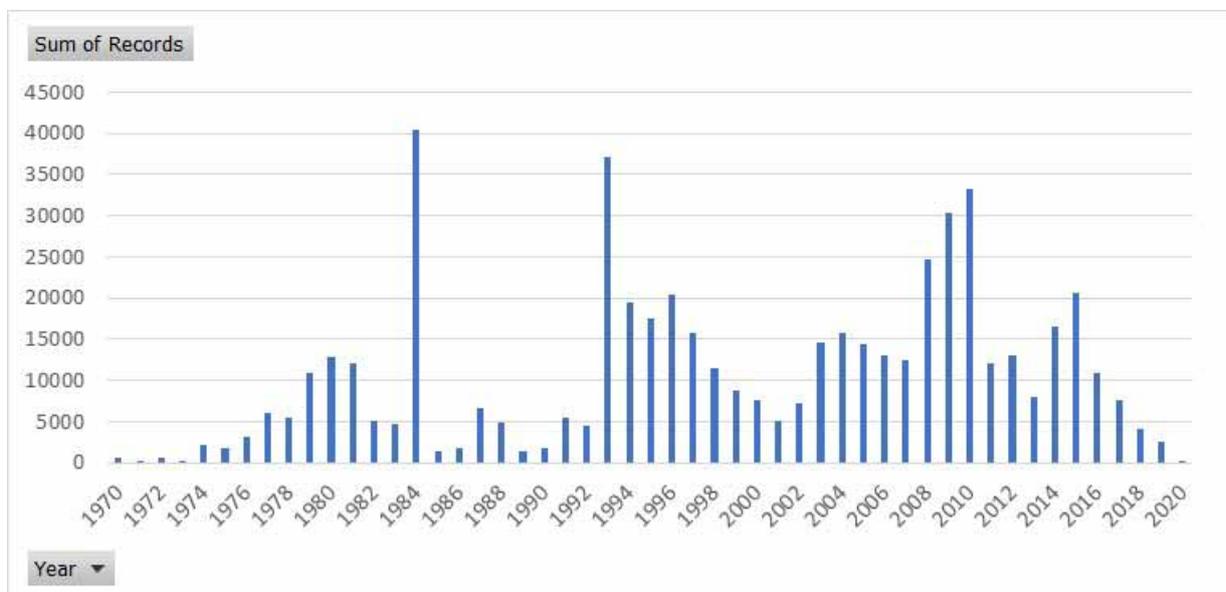
We should not be too complacent about our botanical knowledge, however. Things keep changing on the ground, and new species are constantly arriving. We also need to be able to keep a record of how rare species are faring, and how well nature reserves are performing. In reality, however, we are waiting for new enthusiastic recorders to turn up, with projects of their own to run. At the moment all we can do is maintain our database and keep things ticking over.

What can the average society member do to contribute? My most practical suggest is that they should adopt a 1km square, or a site, to record as thoroughly as they can. This is a great challenge for anyone to test their botanical knowledge of species they often ignore. It is also fun to be able to compare what is there now with what used to occur in the past, and to speculate on why the changes have occurred.

If there are any new recorders wanting to submit records, the key thing is to get advice and support from someone more experienced. One good record, backed up by a photograph or a voucher specimen, is better than a hundred wild guesses. Anyone who manages to contribute a good record should have the pleasure of knowing that they have contributed towards an important venture, and their name goes down in history (seriously, it does – we keep a list of recorders and what they have done). Many thanks to everyone who has taken the time to send in their observations.

## Active recorders over the last two years

Aspey, Mr N.	20	Godfrey, Mr M.F.	390	Kay, Mr G.M.	3	Mitchell, Mrs M.	105	Thompson, Mr I.S.	1
Bell, Mr K.K.	1	Golding, Mr P.	5	Kitchener, Mr G.	1	Mowat, Ms C.	26	Thorne, Dr A.K.	525
Bickerstaffe, Ms C.	18	Gomersall, Mrs F.J.	2	Knight, Mr T.	1	O'Donnell, Dr S.	2	Thorne, Dr W.I.J.	44
Clark, R.	1	Goodwin, Mr H.	240	Law, Mr A.	2	O'Donnell, Mr S.	2	Thorne, Mr R.G.	595
Clayfield, Mr J.	558	Gordon-Lee, Mr D.	1	Leach, Mr M.	4	Parker, Mrs P.	93	Townsend, Mrs S.	380
Cousins, Mrs M.	1201	Gulliver, Mr R.	2	Lewis, Mr S.	4	Penney, Mr A.	1	Vernon, Ms J.	103
Davies, Miss E.	21	Handley, Mr J.	957	Lewis, Ms L.	1	Perry, Mr A.	24	Walker, Mr C.	119
Dawes, Mrs R.A.	2	Hicks, Mr J.	21	Liebscher, Mr K.	19	Pickering, Mr R.	1	Wall, Ms C.	1
Dawson, Dr M.	1	Howden, Ms V.	1	Lyden, Mr J.	432	Rich, Dr T.C.G.	2	Wallace, Mr I.D.	1
Duffell, Mr M.S.	258	Hughes, Mr L.	1	Markland, Mrs M.	60	Shanklin, Dr J.D.	905	Wallace, Mrs H.	5
Duffell, Mrs J.	255	Hume, Ms A.	1	Martin, Mr J.	89	Shanklin, Mrs E.	51	Whild, Dr S.J.	5
Edwards, Ms R.	1	Ing, Mrs J.	153	Maskew, Mr R.	5	Shotton, Ms T.	1	Whitford, Mrs J.	1
Edwards, Ms S.	1	Ison, Mr J.J.	177	McCullagh, Mrs F.	3	Stokes Mr R.M.	288	Whitlock, Mr R.	2
Ffoulkes-Jones, Mr N.	1	Jefferson, Mr R.	3	Mileto, Mr R.	13	Styles, Mr J.	88	Wrench, Mr D.H.	1505
Fussell, Mr R.	82	Jones, Mr N.P.	1	Mitchell, Mr P.	3	Swindells, Mrs S.	4	Wysome, Mrs P.	248



Recent visitors to Preston Montford Field Centre, might have noticed a few changes, particularly around the reception area, hopefully the first of many planned. As part of a review of the grounds and their management, the FSC education and grounds team and various interested individuals, including myself, have identified areas that may benefit from enhancement.

We have been looking at ways to improve and enhance the biodiversity on the site, in my case increasing the variety of plant life and habitats present. These changes will also help educate students, staff and visitors to the centres on the importance of these habitats and their associated flora and fauna.

Our first project was to develop a living collection of plant materials that could be used as a resource by FSC staff, and other tutors for teaching. Any project chosen had to meet a series of long term management and sustainability criteria (e.g. harvesting of rainwater over mains water usage).

Following a successful grant application from the FSC Greenfund, we have completed the construction stage of the first of several Greenwalls (this wall is opposite the reception on the end of the Wenlock classroom building).

This wall will highlight the species contained in our acid lowland heathlands, reminiscent of the nearby Stiperstones or Long Mynd habitats. Planting is to be dominated by a variety of Ericoid shrubs, Ling *Calluna vulgaris*, Crowberry *Empetrum nigrum*, Bell Heather *Erica cinerea*, Cross-leaved Heath *Erica tetralix*, Bilberry *Vaccinium myrtillus* and Cowberry *V. vitis-idaea*. Heathland grasses, sedges and rushes are not ignored with species such as Green-ribbed Sedge *Carex binervis*, Heath Grass *Danthonia decumbens*, Wavy Hair-grass *Avenella (Deschampsia) flexuosa*, Sheep's Fescue *Festuca ovina*, Heath Rush *Juncus squarrosus*, Hairy Woodrush *Luzula pilosa*, Purple-moor Grass *Molinia caerulea* and Mat Grass *Nardus stricta*. Other heathland representatives include Hard Fern *Blechnum spicant*, Mouse-ear Hawkweed *Pilosella officinarum*, Tormentil *Potentilla erecta*, Devil's-bit Scabious *Succisa pratensis* and Heath Speedwell *Veronica officinalis*. Oddities such as Stag's-horn Clubmoss *Lycopodium clavatum* have also been sourced and will be interesting to see how well it takes to cultivation. Likewise various *Sphagnum* have been sourced and will make a useful teaching resource.

A variety of Greenwall systems were considered, with the Wonderwall System [www.wonderwall.direct](http://www.wonderwall.direct) being

chosen for its flexibility, allowing for plants to be readily removed (e.g. to bring specimens into classrooms for teaching) and for replacement/change of display. Made from recycled plastics, the Wonderwall system is a commercial unit that has only recently being offered to amateur gardeners.

A bespoke irrigation system has been designed, utilising a solar powered controller, pumping rainwater harvested from adjacent rooves, and stored in a recycled water tank. The system is flexible enough that lower pots can be more heavily irrigated to enable species with higher moisture requirements to flourish, allowing us to show examples of wet and dry heathland plants, for example with Bell Heather in the upper drier containers and Cross-leaved Heath in wetter containers.

This system with its flexibility and sustainability is significantly cheaper than that quoted for a 'commercial' system by a factor of around ten times; even without considering the savings made by using volunteer labour and a considerable reduction in the price of the planters offered by Wonderwall Direct.

All plants will be firstly sourced from specialist native plant nurseries, and/or amateur growers, with further collections made from wild material only if the species is unavailable and with landowners permissions. Planting of this wall will start around the beginning of March, as plants become available.

Since our first successful grant application, two more grants have been awarded, one each from the Hardy Plant Society and the British Pteridological Society, which will go towards further greenwalls. Those planned include other habitat walls (Calcareous grassland, Woodland species), groups e.g. Ferns and an 'Incredible Edible' food wall).

We would like to take this opportunity to thank the FSC Greenfund, Hardy Plant Society, British Pteridological Society for their sizeable donations, as well as Wonderwall Direct and Irrigatia for significant reductions in the cost of their products.

If you wish to be involved in future greenwalls or other projects at Preston Montford, either by offering your time and expertise or perhaps making donations of money or materials (including plants) then please contact [grounds.pm@field-studies-council.org](mailto:grounds.pm@field-studies-council.org) or write to Preston Montford Field Centre, Montford Bridge, Shrewsbury SY4 1DX,



BEFORE: Reception end of Wenlock building looking west.



AFTER: Construction mostly complete (boxing in of sump to be finished), now awaiting planting (three Male Ferns testing out the Des-Res)

# DNA and field recording: kicking and screaming towards a new era

John Handley

Discussion amongst some contributors to the Newsletter recently has been around when we should adopt the latest iteration of botanical nomenclature provided by Clive Stace, the Emeritus Professor of Plant Taxonomy at the University of Leicester. This is the fourth edition of the New Flora of the British Isles, and in an article entitled “Changing names: can we or the books keep up?” (Stace 2018), the author states the case for the fourth edition following so quickly on the heels of the third edition. The availability in the last two decades of molecular evidence, mainly base-sequences of certain regions of DNA, is revolutionising the way that plants are classified. But where does that leave the field botanist?

In 1999 the Severn Gorge Countryside Trust commissioned Dr George Peterken, renowned woodland ecologist, to carry out an ecological assessment of four groups of woods managed by SGCT under a 999 year lease from Telford Development Corporation. This evaluation identified that Large-leaved Lime, *Tilia platyphyllos*, was regenerating from seed in Benthall Edge Wood.

Benthall Edge, a SSSI designated in 1985, is an extensive area of ancient native mixed deciduous woodland on north and west facing scarp slopes overlooking the Severn Gorge. Most of this woodland lies on soils derived from Wenlock Limestone and Wenlock Shale of the Silurian Period, but an area at the eastern end of Benthall Edge wood is underlain by the clays and sandstones of the Coal Measures.

Russell Rowley, the Chief Executive of SGCT, a woodland specialist, decided to set up a research project in partnership with Kew Wakehurst Place, to test whether the *Tilia* were all Large-Leaved or part hybrid. The second objective was to test if, by checking against a European DNA database, they were the trees which may have been native to the site and remnants of the original ‘wildwood’. Benthall Edge has a long industrial history providing limestone, coal and clay as well as to provide charcoal for the iron industry; so

determining this for certain would be very difficult.

The principal features of nature conservation interest appear to be:

- Large tract of semi-natural woodland, contiguous with Tick Wood.
- Wide range of woodland types, including strongly acid, alkaline and wet woodland.
- Includes substantial and regenerating population of *Tilia platyphyllos*, one of the rarest native trees (Pigott 1981).
- Diversified by quarries, which include small patches of limestone grassland.
- Mature structure, which includes large trees. A group of old beech is arranged along the scarp edge west of Patten’s quarry.
- Several local vascular plant species have been recorded including, Pyramidal Orchid, *Anacamptis pyramidalis*, Green-flowered Helleborine, *Epipactis phyllanthes*, Autumn Gentian, *Gentianella amarella*, Wood Barley, *Hordelymus europaeus*, Bird’s-nest Orchid, *Neottia nidus-avis*, Greater Butterfly-orchid, *Platanthera chlorantha*, as well as sixty axiophytes recorded since the 1980’s.

*Tilia cordata* and *T. platyphyllos* are used as indicators of Ancient Woodland (Whild 2003). Accurate identification and recording of *Tilia* species is important before effective conservation measures can take place, and it is recognised that they are difficult to accurately identify and record (Pigott 1969; 1998).

Pigott (1998), Wicksell and Christensen (1999), Poland and Clement (2009) have all defined characters of the foliage to enable accurate identification. However, the recommendation is to examine leaves from the canopy of the tree which presents a significant challenge (table 1).

As part of ongoing work that Severn Gorge Countryside Trust has been undertaking with the Royal Botanic Gardens, Kew and Kew Wakehurst Place, Ian Willey the Fieldwork Officer for the

Characters	<i>T. cordata</i>	<i>T. x europeaus</i>	<i>T. platyphyllos</i>
Length of leaf including basal lobe	45-106mm	49-120mm	53-144mm
Length of leaf excluding basal lobe	40-91mm	44-110mm	48-135mm
Width of lamina	40-82mm	40-99mm	40-113mm
Width of apex	2-9mm	3-12mm	3-15mm
Number of teeth per cm on the broadest part of the blade	3-7	3-6	3-5
Number of lateral veins of 1 <sup>st</sup> order	4-6.5	5-8	6-10
Presence of hairs on upper and lower surface of leaf	Few scattered hairs	Scattered hairs	Pubescent
Types of hairs	Stellate	Simple	Simple
Colour of hairs	Reddish-brown	White-buff	White
Colour of abaxial surface of leaf blade	Glaucous	Dull green	Green
Lateral veins of 2 <sup>nd</sup> and 3 <sup>rd</sup> order on ab-axial surface	Not raised	Slightly raised	Raised
Diameter of petiole	<1.2mm	1.2-1.5mm	>1.5mm
Presence of hairs on petiole	Glabrous	Sparsely hairy or hair-less	Pubescent
Presence of hairs on twig	Glabrous	Usually hairless	Pubescent
Inflorescence	Obliquely erect	Pendulous	Pendulous

**Table 1.** Morphological characters to distinguish *Tilia* sp. (after Pigott 1969; 1998; Wicksell and Christensen 1999; Poland and Clement 2009).

UK National Tree Seed Project based at Kew's Millennium Seed Bank (see previous article by Ruth Dawes on *Galeopsis angustifolia*, Red Hemp-nettle) discussed the opportunity to collect seed from the *Tilia platyphyllos* in Benthall Edge woods. Once consent had been obtained from Natural England, it was agreed that it would be helpful to obtain confirmation that they were actually *T. platyphyllos*. This is done by morphological analysis and the use of DNA data. Unfortunately RBG Kew didn't possess the necessary molecular markers but Ian was aware that Newcastle University might be able to help (Phuekvilai, P., & Wolff, K. 2013). Through correspondence with Dr Kirsten Wolff and Dr Samuel Logan of Newcastle University it was discovered that they had both the expertise (Logan SA, Phuekvilai P, Wolff K. 2015) and that they would be willing to undertake the genetic analysis. Dr Wolff and Dr Logan have been investigating the genetic variation in Lime trees, *Tilia cordata* and *T. platyphyllos* and their hybrid as part of a larger study into the genetic structure and diversity, gene flow, and reproduction methods of Britain's ancient lime woods and assessing how these differ to their European counterparts.

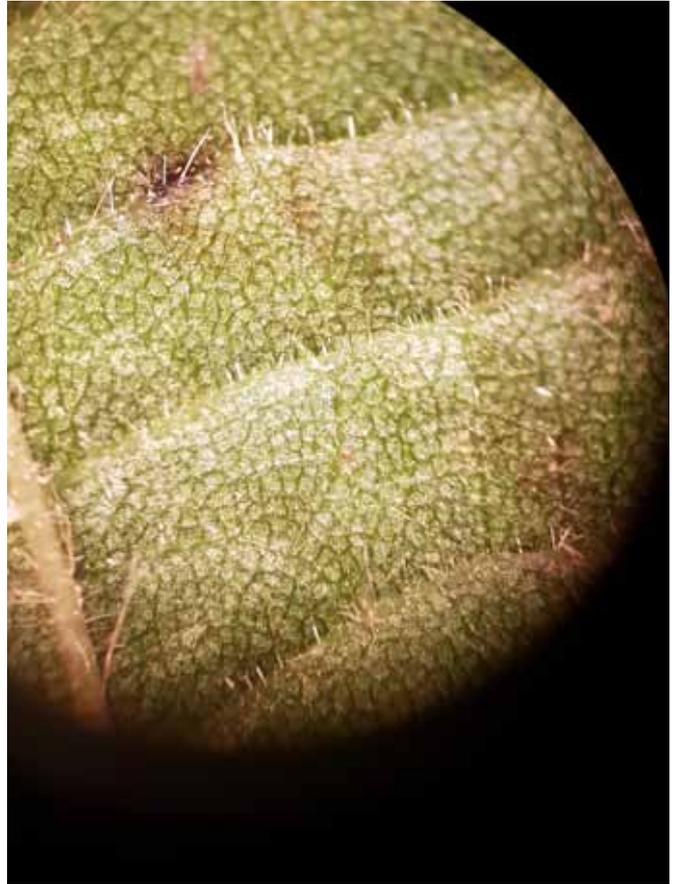
On the 3<sup>rd</sup> of September 2019, Russell Rowley from Severn Gorge Countryside Trust, met with Ian Willey, Fieldwork Officer for the National

Tree Seed Project at Kew Wakehurst Place, with their team, to collect leaf samples from 18 trees, originally mapped as *Tilia platyphyllos* by Dr Peterken. These were carefully stored in bags of silica, ready to send up to Newcastle University for DNA analysis. Seed was collected from each tree canopy wherever possible using a high pruner to determine viability, on which basis it was decided there was sufficient to arrange for a Kew arborist team to come to collect seed for their Millennium Seed Bank.

On the 7<sup>th</sup> October 2019 Ian Willey arrived with Kew arborists Russell Croft, Katie Thorpe and Harriet Fermor and, along with Nathan Morris, Head of Countryside and Emily Holmes, Apprentice Countryside Officer of the Severn Gorge Countryside Trust, we made our way up the steep slope laden with climbing equipment in the hope of collecting seeds, and a further subset of 8 sample leaves to add to the 18 already collected. The seed collection took place over two days and it was astounding to see how accomplished the arborists were at getting to the very tips of the branches within the canopy to collect the seeds. In full harnesses, both Russell and Katie strode out onto branches that were scarcely thicker than my arm. Some twigs, complete with leaves and seeds were collected and pressed on site and leaves were



*T. platyphyllos*



Many simple hairs *T. platyphyllos*



Pubescent petiole *T. platyphyllos*



Stellate hairs *T. × europeae*

collected from eight trees over two days that were used for DNA analysis. A green leaf, one from each tree, gathered from the top of the canopy was placed into a porous envelope and labelled. These envelopes were then placed in sealable bags along with drying silica and kept in the Millennium Seed Bank drying room until such time that they could be analysed by Dr Logan. Altogether, 24 Large-leaved Lime tissue samples were collected and analysed.

I examined 2 samples of leaves and seeds from four of the trees that were collected on the first day (table 2):

The characters appeared to indicate that the first tree, BEW\_02\_01, was a hybrid whilst the other specimens were *T. platyphyllos*. Ian later confirmed that two other specimens that were collected the subsequent day appeared to display some

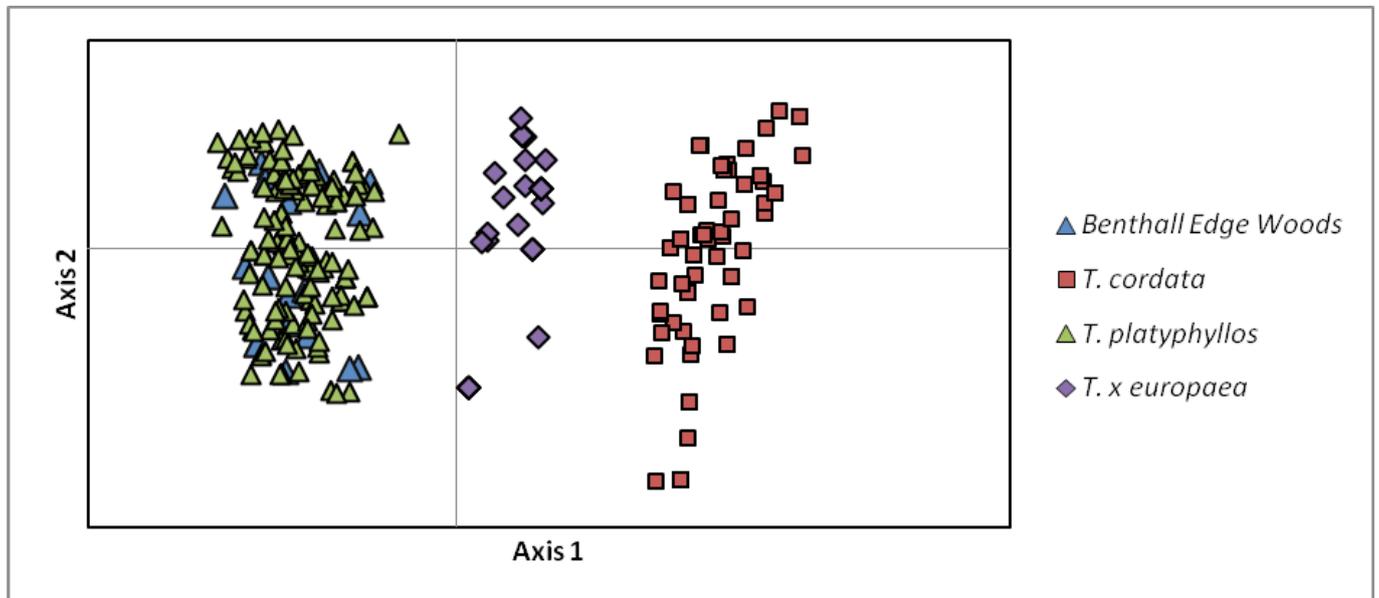
characteristics of *T. cordata* Small-leaved Lime. So it was with nervous anticipation that we awaited DNA confirmation of the morphological analysis.

Newcastle University have confirmed that all of the samples they analysed are *T. platyphyllos*, which makes the venture a tremendous success: Ian estimates that 29,000 “good quality” seeds were collected, the largest UK, and most northerly collection, for *T. platyphyllos* within the seedbank – the quality is determined by x-raying a sub-sample of seeds from each of the trees, although viability is yet to be assessed through germination tests.

So where does that leave the field botanist? It is clear that genetic analysis will continue to determine the way that plants are classified and as techniques become more cost-effective we can expect to see it being utilised within the field. At a recent conference I enquired when cost-effective,

	BEW_02_01		BEW_02_02		BEW_02_03		BEW_02_04	
Characters	1	2	1	2	1	2	1	2
Length of leaf including basal lobe (mm)	51-94	54-91	48-66	47-85	56-69	50-86	41-97	52-102
Length of leaf excluding basal lobe (mm)	42-55	43-81	42-81	42-73	39-71	50-63	35-89	45-90
Width of lamina (mm)	41-87	53-91	39-71	40-78	45-63	41-80	47-82	44-87
Number of teeth per cm on the broadest part of the blade	4.5	5	4.5	5	4-5	4-5	4-5	4-5
Number of lateral veins of 1 <sup>st</sup> order	7	7	7	7	7	7	7	7
Presence of hairs on upper and lower surface of leaf	Few apart from gingery hairs in the leaf axils	Few apart from gingery hairs in the leaf axils	Adaxial surface: few simple hairs. Abaxial surface: pubescent white-buff simple hairs	Adaxial surface: few simple hairs. Abaxial surface: pubescent white-buff simple hairs	Adaxial surface: few simple hairs. Abaxial surface: pubescent white-buff simple hairs	Adaxial surface: few simple hairs. Abaxial surface: pubescent white-buff simple hairs	Adaxial surface: few simple hairs. Abaxial surface: pubescent white-buff simple hairs	Adaxial surface: few simple hairs. Abaxial surface: pubescent white-buff simple hairs
Colour of abaxial surface of leaf blade	green	green	green	green	green	green	green	green
Lateral veins of 2 <sup>nd</sup> and 3 <sup>rd</sup> order on abaxial surface	raised	raised	raised	raised	raised	raised	raised	raised
Diameter of petiole (mm)	>1.5	>1.5	>1.5	>1.5	>1.5	>1.5	>1.5	>1.5
Presence of hairs on petiole	glabrous	glabrous	pubescent	pubescent	pubescent	pubescent	pubescent	pubescent
Presence of hairs on twig	glabrous	glabrous	sparsely hairy					
Inflorescence	pendulous	pendulous	pendulous	pendulous	pendulous	pendulous	pendulous	pendulous

**Table 2.** The morphological characters recorded on two samples collected from four Lime trees at Benthall Edge.



Showing the Principle Coordinate Analysis plot of *T. platyphyllos* on Benthall Edge wood.

meaningful genetic testing might be available for use within the field and was informed that this is likely to occur within ten years. Environmental DNA (eDNA) testing was approved by Natural England in 2014 for the determination of Great Crested Newt presence or absence. The promotion of schemes to ensure that testing is undertaken to a particular standard will deliver increased confidence in the use of such techniques. Genetic analysis has been around for a while, though as a recording community we may have been a little reticent to engage. It is also a relatively new science with its own, developing terminology that can create a barrier to field biologists.

Collaborative projects such as this demonstrate that scientists from different disciplines working together, sharing knowledge and expertise can help improve our understanding of the natural world.

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# The Ferns – an Identification Guide:

## Part 2 *Asplenium trichomanes*

Martin Godfrey

For the first in our series of ID guides I have chosen a common and abundant species, *Asplenium trichomanes*, with a sting in its tail. This plant has 3 subspecies (plus a couple of hybrids) which are probably not all that well recorded and so will get you started on looking closely at plants and, who knows, you may even find a new VCR or two.

### The subspecies

The subspecies are *A. trichomanes* ssp *trichomanes*, *A. trichomanes* ssp *quadrivalens* and *A. trichomanes* ssp *pachyrachis*. Interestingly the most common form is not the nominate as one might suppose but ssp *quadrivalens*. Indeed this is the only subspecies recorded for Shropshire but ssp *trichomanes* is recorded for Staffordshire to the East and Radnorshire, Montgomeryshire and Denbighshire to the West so is worth looking for. The ssp *pachyrachis* is altogether a rarer plant but has been recorded from Denbighshire so may be worth looking for in Shropshire.

All three subspecies grow on rocky substrates, the plant form is tufted and the individual fronds grow from a hard, stiff, dark red-brown to almost blackish stipe and rachis (the latter having a thin “wing” down either side – use a lens to see this) and is once-pinnate. The pinnae have small linear sori on the underside.

*A. trichomanes* ssp *trichomanes* (Fig 1) is a calcifuge growing on hard rocks. That said it has



Fig 1. *Asplenium trichomanes* ssp *trichomanes*

been recorded from mortared walls in the wet far west of Britain (I have found it on Mull for example) so plants growing on this substrate are worth looking at. Its pinnae are rather rounded in shape, with a short stalk and tend to be widely spaced and alternately inserted on the rachis.

This subspecies tends to be the smallest of the three, the other two being of similar size, but there is quite a bit of overlap so this isn't all that useful an ID feature. It is diploid, with  $2n=72$ .

The other two subspecies are calcicole and are tetraploid, with  $2n=144$ .

*A. trichomanes* ssp *quadrivalens* is very common and grows abundantly in large tufts on mortared walls as well as rock (Fig 2). Its pinnae are rather more rectangular in shape than in the other two subspecies, are more or less sessile and inserted opposite and crowded on the rachis.

*A. trichomanes* ssp *pachyrachis* is a rare species of steep, or even overhanging, calcareous limestone rock, preferring humid sites. Its main field ID feature is its toothed, even deeply lobed, pinnae (Fig 3).

### Identity confirmation

Although ssp *pachyrachis* has a pretty distinct ID feature, in the form of its pinnae, distinguishing ssp *trichomanes* and ssp *quadrivalens* can be a real problem. The way around this is by doing a bit of basic microscopy.



Fig 2. *Asplenium trichomanes* ssp *quadrivalens*



Fig 3. *Asplenium trichomanes* ssp *pachyrachis*

As mentioned above ssp. *trichomanes* is diploid whilst the other two are tetraploid. This tends to mean that some structural features, like spore size and stomatal guard cell length, tend to be larger in the tetraploid plants, so to distinguish tricky plants which could be either ssp. *trichomanes* or ssp. *quadrivalens* a bit of microscopy is in order.

Stace recommends measuring spore size to distinguish these plants:

	Spore size in microns
Ssp. <i>trichomanes</i>	(23) 29–36 (42)
Ssp. <i>quadrivalens</i>	(27) 34–43 (50)
(Ssp. <i>pachyrachis</i> not given in Stace but in Sell and Murrell 32–38)	

The problem with this is the need for ripe spores which are not always present. I favour measuring the stomatal guard cell length, the sizes of which are given in Jermy and Camus

	Guard cell length in microns
Ssp. <i>trichomanes</i>	32–40
Ssp. <i>quadrivalens</i>	40–48
Ssp. <i>pachyrachis</i>	40–49

### Microscopy

Spores – collect ripe spores by putting a few pinnae in a paper packet overnight then mount some of the shed spores in water with a bit of washing up liquid to prevent them sticking together; add a cover slip. Measure a number of spores (10–15) and take an average.

Stomatal guard cells – Stomata are on the underside of the pinnae. Mount 2–3 pinnae in water, add a cover slip and measure the guard cell length for a number of stomata. Fig 4.

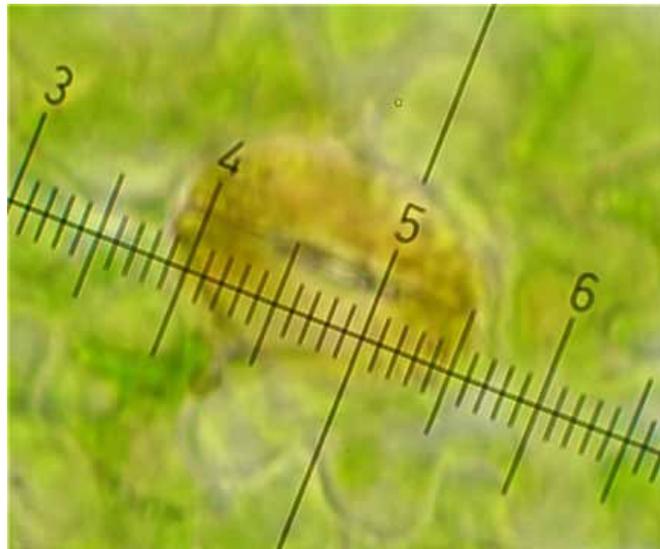


Fig 4. Stomatal guard cells

### Hybrids

There are two known hybrids between the subspecies:

Ssp *trichomanes* × ssp *quadrivalens* (= nothosubsp. *lusaticum*)

Ssp *quadrivalens* × ssp *pachyrachis* (= nothosubsp. *staufferi*)

Both are said to be morphologically intermediate between the parents, show hybrid vigour and have abortive spores. One for the referee I suspect.

### A potential confusion species

The fern *Asplenium viride* looks very similar to our plants and grows in base rich upland habitats, however it is quite a pale bright green and has a soft green, rather than wiry and dark, stipe and rachis. The rachis does not have the narrow wing found in *A. trichomanes*.

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