BSS News

Botanical Society of Scotland

ISSUE NO. 124 | **MARCH 2025**

Painting plants from life

The BSS Student Thesis Prize Awards

More tips for your smartphone or digital camera

The flora of bus stops

Contents

Cover image: Cuckoo flower *Cardamine pratensis* with a male orange tipped butterfly *Anthocaris cardamine* © Susan White

Editorial

Jonathan Silvertown & Chris Jeffree

Here is the second issue of the all-new, full-colour *BSS News* and we hope that you like it!

We think that it nicely reflects the breadth of interest in plants and fungi in our Society and the many ways that you can enjoy them. We celebrate plants in paint and fungi in rhyme, and everything with photography and literature. We look at how to turn plants into baskets, find a social use for barley at the Plant Pub and even stumble upon plants while waiting for a bus. It's all here in these 40 tightly-packed pages.

Congratulations to the two winners and all the entrants in the annual BSS Student Thesis prize. Read what the botanists of tomorrow have been up to in the thesis abstracts reproduced in this issue.

We'd like to draw your attention to a new BSS initiative, the Plant Pub, a social event at the Wash Bar in Edinburgh held on the 2nd Thursday of most months. Check out the dates for this and all our events including lectures and field trips on the back cover. These are also advertised on our website at www.botsoc.scot and in emails to members.

Oh, did we mention that BSS is for enthusiasts? That being so, you will certainly want to share *BSS News* with your friends. Please do that and tell them that they can get their very own copy by joining the society. It's still only £20, or £5 for students and as easy as going to **www.botsoc.scot** and hitting the yellow button that says 'Join'.

We thank all the contributors to this issue of *BSS News*. It is written largely by and entirely for members, so why not contribute yourself?

If you would like to write or submit photographs for *BSS News*, please drop us a line at **BSS-contact@botsoc.scot** Anything of botanical interest will be considered. The deadline for copy for the September 2025 issue is July 15th.

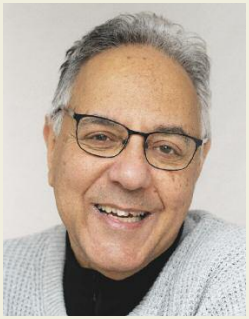
Society News

Notice of the Annual General Meeting 2025

The BSS Annual General Meeting will be held on Thursday 16th May 2025 at 7pm, immediately after the final spring lecture at the Edinburgh Royal Botanic Gardens (RBGE).

Further information about the AGM will be sent out by email by 4th May 2025. If you have an email address and are not currently receiving emails from the BSS then please log into WebCollect and update your details or contact the membership secretary at **BSS-Contact@botsoc.scot**.

At the AGM we will report on our activities over the last 12 months, present our draft financial accounts, elect members to our governing body (BSS Council) and answer your questions about the BSS. If you have any other business that you would like to add to the agenda, then please inform the BSS general secretary at **BSS-Contact@botsoc.scot**.



Help us run the BSS
An appeal from the President

BSS is run entirely by volunteers and has been since 1836. I'd like to thank all our members who help run the society and to welcome Fiona Maguire as our new Membership Secretary. Everyone has something to offer that can be useful to keep the society running, so whatever your interests or skills, botanical and otherwise, please have a chat with us if you would like to help. A little time and a dollop of interest is all that you need. We'd like to be in a position where every task has at least 2 people working on it, but we are not there yet.

Have a chat with me or another Council member at one of our events (see back page) or drop us an email at BSS-Contact@botsoc.scot

BSS Plant Pub
A new social event

The first Plant Pub in October 2024.
Photo © Jonathan Silvertown

There is nothing like a good chat with fellow enthusiasts for plants and fungi, is there? And we thought there needed to be more opportunity to do this, so in October 2024 we started the Plant Pub, which meets most 2nd Thursdays of the month (check Events on the back cover) upstairs at the Wash Bar on the Mound in Edinburgh. This is a joint initiative with the Institute of Plant Molecular Sciences at the University of Edinburgh. It's free and open to all and is proving very popular. The first night we had no idea whether anyone would show up, but 50 – 60 people dropped in during the evening. We botanists are naturally friendly, but this is the only place where you are likely to meet a Scottish potato breeder, a tropical ecologist from Brazil, a botanical artist and a plant pathologist all in the same room. Not that we can guarantee this precise mix of interests – Plant Pub is a social kaleidoscope – come along and give it a shake.

From Rich Wilson's Publicity Desk...

Social Media apps can be quite entertaining and informative The BSS is alive and well on many of these venues and offers a variety of information. If you haven't checked these out, please have a look! We have a convenient link to these on our website which is replicated on several pages. This is the link of links: **https://linktr.ee/botsocscotland**.

Information on several of these sites is replicated but not all sites have the same information. For example, our YouTube Channel has videos of BSS lectures and conference lectures posted should you like to see them again, or maybe just couldn't attend. Others have promotional videos (e.g. Join us and tell your friends) and announcements of upcoming events. As not all social media apps fit everyone's taste, we have a variety to choose from, such as LinkedIn, Facebook, Instagram, and an Instagram for our student members. We also are on X and BlueSkySocial.

Don't think you have to join all of these – the choice is yours. I have to, because I need to keep them updated! The Website, **https://botsoc.scot/** also has lots of interesting and informative content – like the Plant of the Week in the Blogs and Publications section (**https://botsoc.scot/blogs-and-publications/plant-of-the-week/**). That is so much more than just a pretty pic of the plant!

So be a social media butterfly and check them out – pick a favourite or two – stay informed and enjoy!

"Common urban flowers of Scotland and northern England"

BSS has entered into an agreement with the Field Studies Council to produce a fold-out ID guide based on the results of the Urban Flora of Scotland.

The Guide will feature 40 or so of the most common urban herbaceous species recorded by the project, illustrated by paintings by the wonderful **Lizzie Harper**. There will be some text about each species and the BSS logo and webpage will feature on the publication.

FSC currently publish 200 such guides that retail for about £4 each. FSC are paying all the costs of production and marketing.

A small royalty will be paid to the BSS if sales are good. Expect to see the guide in shops and visitor centres from June this year.

BSS itself will not be selling the guide, but we hope that it will be on sale in the shop at the Botanics.

Buddleja davidii, © Lizzie Harper

Botanical Society for Students

Katie Riccio, student rep on BSS Council reports

Hello students! Our group have already been hard at work planning some great events for the coming months, and we look forward to sharing these with you as soon as the details are finalised. If you have any ideas of your own for some events you'd like to see, anyone is welcome to get in touch and share suggestions – we'd love to hear your thoughts, and are happy to see what we can do to make things happen! You can read an account of one our previous trips written by Autumn Thomas on page 14.

For keeping up to date with everything the BSS is up to, there are lots of different ways to find out about what is going on. A great way is to follow us on social media – in addition to the existing BSS profiles, we also have our own Instagram profile **@botsocscot**, to highlight everything students will be especially keen to know about. We also have our own section on the society's website, where you can find all the news posts about different events and other opportunities. This includes a page where you can meet the team (me, James & Poppy) and find out more about us. **https://botsoc.scot/students/meet-the-team/**

Katie

James

Poppy

Anyone who has any questions or would like to find out more about the student group is always welcome to reach out, whether by email or a message on social media – we're always happy to hear from you! Making sure that students know they're welcome as part of the BSS as a whole is really important to us, and we hope to see lots of you at our upcoming events this semester!

How to get in touch

If you would like to learn more about the student group, we have our own section on the BSS website, at https://botsoc.scot/students/

We also have our own Instagram page at https://www.instagram.com/botsocscot/

You can contact us via the student email address at BSS-Students@botsoc.scot

Dundee Lecture Report

Matt Harding reports on the work of the BSBI Scotland Officer

On 26th November 2024, Dundee Naturalists' Society met Joint with the Botanical Society of Scotland at the University of Dundee. Matt Harding described the Work of the BSBI (Botanical Society of Scotland and Ireland) and his role as Scotland Officer. He has held this post for two years following on from Jim McIntosh, the first holder of this role.

The BSBI is responsible for recording the flora of Britain and Ireland and has now published three Atlases, the latest being the recent Atlas 2020. This is available as a large two volume printed version and also in a convenient on-line form.

The BSBI has increased its Scottish membership in recent years, now numbering 578 of whom 55 are volunteer Vice-County recorders who collate the botanical records from their area. As well as being the employed Scottish Officer, Matt is also a volunteer recorder for Stirlingshire.

The new botanical atlas has revealed some worrying trends, including a 47% decline in native species and a 66% decline in ancient introductions (archaeophytes). Two thirds of recent arrivals (neophytes) on the other hand, have increased.

There has been some movement north of plant species, probably related to climate change and a recent arrival in Scotland is Bee Orchid (*Ophrys apifera*), which has appeared in several places in southern Scotland in recent years. Some northern species have become more vulnerable.

The BSBI organises a series of plant identification workshops and runs a full programme of field meetings across Scotland. There have been recent field meetings studying *Alchemilla* (Lady's Mantles) and *Hieracium* (Hawkweeds). The Annual Botanical Conference in Edinburgh is coordinated by Matt and this year attracted around 220 attenders.

Left: **Fly orchid, *Ophrys insectifera*.** Left: **alpine lady's mantle, *Alchemilla alpina*. Photos © Chris Jeffree**

Matt described some special Scottish plants, including the rare Small Restharrow (*Ononis reclinata*) on the Mull of Galloway and the rare Alpine Catchfly (*Silene suecica* or *Lychnis alpina*) on Meikle Kilrannoch. Recent survey work on the Sticky Catchfly (*Silene* or *Lychnis viscaria*) at Dumyat in Stirlingshire has mapped a very large population of this rare plant.

Urban Flora, Progress Report

By October 2024 our Urban Flora Project had over 100,000 records of plants recorded in towns and cities all over Scotland. Many thanks to all of you who helped with this recording effort over nearly ten years. If you are one of those recorders, please continue adding to the database using iRecord. We are making the data available on-line to anyone wishing to use it, and already (January 2025) we have had enquiries. Before mounting the Excel spreadsheet on-line, we are checking and cleaning the data, but a first-release is available for researchers who may have an immediate need.

We are currently writing the book, based on the botanical records up to October 2024. It will contain many background chapters about such things as urbanisation, climate change and alien species as well as descriptions of the species.

You may recall the Urban Flora Conference held at the Royal Society of Edinburgh in September 2023. The proceedings will appear in a special Issue of our journal *Plant Ecology and Diversity* soon.

John Grace

Presentation to the Chamberlains for long service to the society

At the December lecture meeting, Jonathan Silvertown presented Maria and David Chamberlain with flowers and our thanks on the occasion of Maria's 60th year as a member of the Society. David has also now been a member for 58 years. Between them, they have been the mainstay of the society for three generations, Maria as Programme Secretary and David as Treasurer.

Field Excursion Reports
Autumn/Winter 2024

Meeting Secretary Maria Chamberlain reports

Saltmarsh species and communities at Tyninghame and St Baldred's Cradle, East Lothian, 24th July 2024, led by Chris Jeffree

About 10 people participated in a fascinating walk, as Chris pointed out the features of the site, explained how salt marshes form and helped us to identify its significant plants. This is how he explained it.

Salt marshes form on gently sloping shores, where fine silt or mud carried by the sea can be deposited. They are often in the mouths of estuaries or in the shelter of offshore spits and promontories where wave action is gentle and constructive, fine sediment accumulate as mud.

All parts of salt marshes are flooded by the sea from time to time during an annual cycle. The lower, seaward parts are flooded daily, whereas the highest levels are only reached by the high water of the highest spring tides in the winter months. Soils at the seaward margin are unstable, salty and anaerobic while the landward edge, only infrequently submerged in seawater and for shorter periods, is irrigated with rain and freshwater runoff, resulting in less salty soils.

These differences result in strong gradients and zones of plant species composition, but the overall gentle gradient is interrupted by deep, sinuous drainage channels. The seaward edge of the salt-marsh is often colonized by green algae, cord grass *Spartina anglica* and *Salicornia europaea*.

A view of Tyninghame saltmarsh looking north from the southern seaward end. In the foreground a dark green patch of *Spartina anglica* surrounded by a bright green zone of *Salicornia europaea* and filamentous green algae. Further zones of vegetation follow the contours the slope to the right. © Chris Jeffree

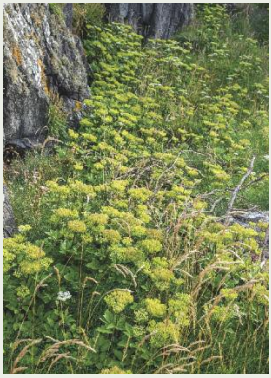
Field Excursion Reports

Higher up the marsh, are communities of specialized saltmarsh species that are progressively less tolerant of salt and submergence. Subtle differences in altitude, often of only a few cm, result in with drier or wetter patches, exposed to sea water for different durations and with different frequency by the tides, with saltier or less salty soils, and this is reflected in surprisingly complex plant mosaics in with each species exercises its preferences.

***Bolboschoenus maritimus*, sea club-rush, is prominent at the head of the marsh**

Perennial species such as *Spartina anglica*, *Plantago maritima* and the saltmarsh grass *Puccinellia maritima* capture and stabilise the mud and can thus build higher soil levels. Others, including Salicornia and the Atriplexes are annuals, with opportunistic life styles, quickly occupying bare sites and exerting a less permanent effect on the marsh structure.

In the north of the site, salt-marsh vegetation gives way to mixed woodland in which we encountered rough chervil, *Chaerophyllum temulum*, and the yellow figwort, *Scrophularia vernalis*, a woodland species which is colonising several coastal sites in East Lothian. A short distance north is a species rich rocky promontory called St Baldred's Cradle which is exposed enough to be a habitat for *Arctostaphylos uva-ursi.* Its western flank has a spectacular colony of Scot's Lovage, *Ligusticum scoticum*.



Returning to the carpark through the woodland the group found woodruff, *Galium odoratum*, Three-nerved sandwort, *Moehringia trinervia* and a large colony of the yellow flowered small balsam, *Impatiens parviflora*, a neophyte that is scarce in the north, but present in a number of sites in the Lothians. 38 species of plants were listed in the salt marsh area and 34 more by St Baldred's Cradle.

Full species list at www.tinyurl.com/SppLists

Close-up Photography Workshop (using mobile phone cameras), Royal Botanic Garden, Edinburgh, 10th August 2024, led by Richard Wilson

About 12 participants assembled round the large wooden table by the Botanic Cottage on a summery, but blowy day. Richie set out a fascinating programme of interactive 'shooting' exercises to broaden our close-up photography skills. He provided each of us with card of different colours to act as background and showed us how to hold the camera and the subject steady (a particularly challenging task on a blowy day).

Each assignment was designed to discover, enhance or improve our photographic skills and produce the images we desire. Of course, when photographing botanical subjects, it helps to know which part of the plant serves as its distinguishing feature. Having just written an article on *Geum macrophyllum* (*BSS News*, 123, Summer 2024), I practised my skills on photographing its strongly reflexed calyx. Thank you, Richie. I improved, though my images still did not match those of Chris Jeffree, our very own photo guru. We also looked at subjects with different textures, fluffy leaves (like lamb's ear), rough bark or a sharp thorn. Then my eye caught sight of a plant I had never seen before, growing beside the Cottage. Using my newly honed skills I photographed it and sent the image to PlantNet to ID. It turned out to be Motherwort (*Leonurus cardiaca*), with only three records in the Edinburgh area. I immediately sent excited emails to my Urban Flora colleagues, but my find turned out not to be such an unexpected one. James Douglass of the RBGE, another participant at the course, calmly pointed it out growing in the herbology bed, a mere 20m away. It will be interesting to see whether it will spread further.

Thank you to Richie for a very interesting morning.

Left: **Participants at the Photography workshop;** right: **Motherwort, *Leonurus cardiaca***

Fungal Foray (joint with Edinburgh and Lothian Fungal Enthusiasts), 1st September 2024, John Muir Country Park, led by Cameron Diekonigin

About 10 of us gathered in Linkfield car park to see what fungal treasures could be found on the Park's grasslands, pine woodland and sandy beaches. At the beginning of September the fungal season should have been in full swing, but for fungi the conditions were disappointingly dry. Despite this we did list at least 40 species.

The most special find of the day was a truffle that grows on toad rush. It is not difficult to recognize the common toad rush, *Juncus bufonius*, and Cameron did explain that it sometimes harboured a truffle, but it was Carolyn Hargest, a keen ELFE member, who found it. The truffle is a representative of the *Phylum Entorrhizomycota*, a new phylum hardly ever collected on forays. The species, *Entorrhiza aschersoniana*, has been found only a dozen times in the UK, and never in the Edinburgh area. Nestling among the roots of the toad rush Carolyn showed us a few oblong to globose truffles, which she took to examine microscopically.

For me it is always exciting to see the campion smut *Microbotryum violaceum* (recently renamed *Microbotryum lychnidis-dioicae)*, which this time, ironically, was growing on white campion, Silene latifolia. It is a clever fungus that fills the anthers of male plants with its own spores so that pollinating insects can carry it from flower to flower. It also changes the sex of female flowers, suppressing their female structures and persuading them to grow appendages called staminodes which develop into stamen-like structures that produce the fungal spores. It is a species that never fails to impress me with its chutzpah.

Another parasite that I like to find is *Claviceps purpurea*, the common ergot, which conjures up stories of St Anthony's fire and the Salem witch hunts. This time we saw it on a spikes of several grass species: *Dactylis glomerata, Holcus lanatus, Ammophila arenaria, Lolium perenne*. It would be interesting to carry out molecular studies on the sclerotia. Are they the same on different grass species, or has there been some adaptation to their different hosts?

Another notable find of the day was a small group of orange discs, about 5mm in diameter (see photo on next page). They were growing over a small area of mossy soil by the edge of the path. Cursory examination failed to show up tiny pale hairs around the edge of the disc. Microscopic examination by ELFE member, Moira Bruce, revealed it to be a little known eyelash fungus, *Scutellinia crucipila*, which is often referred to as *Cheilymenia crucipila.*

Other memorable finds included the cheery orange peel fungus (*Aleuria aurantia*), the orange moss navel *(Rickenella fibula*) and *Gymnopilus penetrans*. I am afraid that I never did find out the common name of this last one, as Google blanked me with a stern warning of adult content transgression. (Common rustgill, ed.).

Left: **Truffle of *Entorrhiza aschersoniana* on roots of *Juncus bufonius*** Middle: ***Scutellinia crucipila***
Right: ***Rickenella fibula.*** **Thank you Carolyn Hargest for the photos.**

The grounds of Craigmillar Castle, Edinburgh on a pale, frosty December morning, 7 December 2024

Autumn Thomas writes:

EQUIPMENT: Hand lens; penknife; polythene bags; a nice pair of thick woollen gloves.

SCHEDULE: A gentle walk through the woods and fields; investigating and collecting mosses and liverworts from trees, rocks and walls; hot soup and tea by the fire in a warm café.

In December I had the great pleasure of exploring the park around Craigmillar Castle with Dr. David Chamberlain and a few fellow botany-minded students. Craigmillar is a beautifully well-preserved medieval castle, where Mary Queen of Scots may once have plotted to kill her husband Henry Stuart. Today it looks over a well-loved and scraggly public park. It may not win any awards for biodiversity. But as any bryophyte enthusiast will know, it's only when you look closely that you see the bigger picture.

It was a delightful excursion. Dr. Chamberlain is an excellent teacher – he filled the day with facts and a few scintillating stories. It was thrilling to see the moss and liverwort samples we found and collected through the eyes of a devotee and expert; it put even the most common specimens into a new light. I was already a bryophytes lover before today, but even so I'm going to see the mosses around me differently going forward.

I found the diversity of forms extraordinary: the variety of leaves, spongy, layered, branching, thick and thin, threadlike and curly; the sporophyte capsules, pointed, round, stalked or unstalked, lidded or unlidded; the great variety of colours, from deepest green to palest silver to gold. And don't get me started on the liverworts! (I have a soft spot for liverworts.)

The gem of Craigmillar Park is a man-made, shaded quarry not far from the castle, where rough walls hewn from old sandstone shelter rich carpets of thick, vibrant mosses. Dozens of species – some excitingly rare – can be found here, and the place is all the more interesting for its artificial origins. The stone, quarried hundreds of years ago to build the castle and its surrounding walls, is now so weathered it almost looks natural – and yet it is the artificial nature of the quarry which makes it such a perfect place for bryophyte growth. The presence of rich, basic rock exposed to the elements provides a high-pH environment where moisture can accumulate.

What I found fascinating about Craigmillar was this interplay between plants and ecology and the human impact on the environment. It's poetic: forests of moss that grow upon the scars of ancient industry. It's also a reminder of humans' unwitting (and often uncaring) impact on the natural world. Craigmillar Park has remained a park because of its historical value: but how many other places around Edinburgh housed similarly rare and vibrant plants in the past? How many of those still survive?

Many thanks to David Chamberlain for this wonderful excursion.

David Chamberlain adds:

This excursion was organised following an approach made at the BSS Lecture held in November 2024, aiming to build on an enthusiasm expressed by three first year Edinburgh Students for bryophytes. Craigmillar Castle Park, Edinburgh offers a manageable assortment of both mosses and liverworts, on a site that demonstrates strong anthropogenic alteration.

A few meters along our route we stopped at an unpromising derelict area on gravelly hard standing, on the periphery of the park. *Didymodon insulanus, Streblotrichum commutatum*, with its wavy leaves, and *Bryum dichotomum*, with pendulous capsules, were among the expected ruderals. Close investigation, at the 1 sq. cm scale, brought to light the contrasting, upright, cleistocarpous capsules of the totally unexpected *Protobryum bryoides*, a very rare moss in Scotland, mainly restricted to the South-East. *Lunularia cruciata*, a complex thalloid liverwort with its crescent moon-shaped gemmae cups lined a woodland track. Close to the Castle, walls supported *Hypnum lacunosum*, with its characteristically curved leaves lacking midribs and *Homalothecium sericeum* with the typically plicate (ridged) leaves.

Rough grass below one of the walls brought to light *Rhytidiadelphus squarrosus*, the bane of fastidious lawn managers, *Dicranum scoparium* and the frondose *Thuidium tamariscinum*.

Dropping down below the Castle we entered the abandoned quarries that had in the past provided sandstone for building facings, now sheltered by trees. There, we admired the large-scale monocultures that could be measured at the 1 sq. m scale of *Anomodo viticulosus*, and the liverworts *Plagiochila porelloides* and the layered, frondose *Porella platyphylla*, on the base-rich quarry faces. As we left the park, we spotted the rounded leaves of *Syntrichia latifolia*, in tarmac close to Bridgend Farm. The species mentioned above were some the 26 or so that we recorded, representing roughly one third of those known from this site.

Autumn's piece on page 14 gives me hope that there is still enthusiasm for natural history. It was a real pleasure to share my 65-year long obsession with bryophytes with these keen-eyed students on behalf of the Botanical Society of Scotland.

Left: ***Didymodon insulanus*** **Waste ground on the periphery of Craigmillar Castle Park, 07/12/2024. Photo © Autumn Thomas**

Right: **Protobryum bryoides Waste ground on the periphery of Craigmillar Castle Park, Macrophotography Photo © Chris Jeffree**

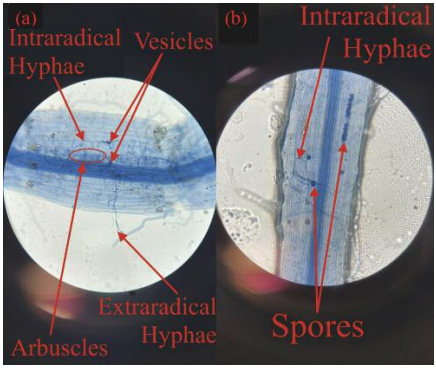
Full species list at www.tinyurl.com/SppLists

The BSS Student Thesis Prize

The quality of the 7 submissions received this year was so good that we awarded 2 prizes. Congratulations to all the students, and thanks to their supervisors and to the two anonymous members of BSS who judged this competition. The winners received a prize of £200 each and a certificate. For the rules of the competition and how to enter, please see our website at https://botsoc.scot/members/awards/student-prize/

Winner: ***A farm-scale investigation into the effects of till intensity, cover crops, and mixed farming on crop root colonisation by arbuscular mycorrhizal fungi and soil health*** **by Alexander Cumming, School of Biology, University of St Andrews.**

Global food security faces a crisis. The population is growing rapidly, and food demand is rising exponentially. However, current food production is heavily reliant on the use of non-renewable and environmentally damaging inputs, which have degraded soil and ecosystem health. There is a growing movement to re-adopt 'regenerative' farming practices, which rely on ecosystem services provided by soil biota including arbuscular mycorrhizal fungi (AMF) to maintain crop yields and reduce dependence on unsustainable inputs. Glasshouse and field plot-based studies have shown that practices such as no-till drilling and the use of cover crops can benefit the crop-AMF symbiosis and improve soil health, although less is known about the impact mixed farming may have. This study aimed to quantify how these soil management practices affected AMF crop root colonisation and soil health at the farm scale to test the results published in the literature under more variable, between-field conditions.



The arbuscular mycorrhizal structures that were recorded and used to calculate root colonisation
© Alexander Cummings 2024

A methodology was also developed that can guide future studies comparing AMF abundance across fields. Heavy tilling was confirmed as detrimental to the crop-AMF symbiosis, with higher rates of AMF colonisation observed under reduced till management. Cover crops appeared to negatively affect the crop-AMF symbiosis; although, this was likely due to the presence of non-AMF host brassicas present in the cover crop mix and use of AMF-inhibiting herbicide. The limited sample size of the mixed farming treatment made it difficult to conclude whether it significantly affected AMF abundance and soil health. Few differences were observed in soil phosphorus availability and organic matter between soil management practices, which likely reflected the recent conversion of the farm to regenerative management in 2016, and the long recovery of soil health.

The BSS Student Thesis Prize

Winner: ***A Possible Natural Scenario for Mountain Woodland Vegetation in the Western Highlands*, Scotland by Innes Manders, School of Geography and Sustainable Development, University of St Andrews**

Mountain woodland is among the rarest habitats in Scotland: few remnants of the natural treeline remain. In contrast, mountain woodland is a ubiquitous component of Western Norway's biogeography; this difference has been ascribed to higher grazing pressure in the Scottish Highlands. This dissertation develops a formal comparison of Norwegian and Scottish mountain woodland by collecting new field data from Vestland, Norway, creating a rule-based model of vegetation distribution, and then applying this model to a climatically analogous area, the Corrour Estate in Scotland.

Field layer plot in Kjerringafjellet, Norway with *Phyllodoce caerulea, Salix lanata, Betula pubescens* and stunted *Picea abies* (background). © Manders 2024

This analysis suggests that climate does not limit the current extent of mountain woodland in the Western Highlands: mountain woodland could be much more extensive in a low-browsing scenario, with a potential upper timberline of c. 545 m for *Pinus sylvestris* and c. 870 m for krummholz *Betula pubescens* at Corrour Estate. By analogy with the Norwegian field site, mountain woodland could be more diverse than is suggested by surviving remnants in Scotland, with open pine woodland, widespread krummholz forms and extensive shrubs gradually grading into alpine vegetation with stunted trees. Rule-based GIS modelling drawing on climatic analogues provides an innovative approach to addressing evidence deficits in conservation projects seeking to restore relict habitats.

How good are apps for plant identification now? An update.

Lyn Jones tries out some smartphone apps on the Australian flora.

For some years I have been interested in evaluating the accuracy of image recognition plant ID apps. I took the opportunity presented by a recent visit to Australia (mostly around Sydney, Canberra and Kangaroo Island in South Australia) to test the performance of some of the best apps for UK flora when studying the rather diverse and different flora of SE Australia (including a few aliens and species introduced from other parts of Australia).

When I first studied the performance of ID apps on wild UK species (AoB Plants 2020), the apps studied achieved what then seemed amazing results with several of the apps approaching 50% accuracy to species. When I reanalysed the same images in 2023 (Plant Ecology and Diversity in press), their accuracy had improved spectacularly, with the best apps identifying 80–90% of samples correct to species. The best apps in these later tests were those that had been developed specifically for plant identification by European research groups (PlantNet and Flora Incognita) rather than the more generic apps such as Google Lens or iNaturalist.

The Australian flora is incredibly diverse, with several genera having many hundreds of similar species. For example, there are nearly 1,000 species of Acacia and more than 2,200 species in the Myrtaceae, with over 600 eucalypts alone. It is notable that there are many superficially very similar species in several of the most characteristic families and genera.

Two very similar Bottle-brush (Melaleuca -ex. Callistemon) species: *Melaleuca brachyandra* left (5 apps gave the correct genus) and *Melaleuca rugulosa* right (somewhat surprisingly, 3 apps were correct to species and 2 to genus).

The fact that many species are very rare or local with a high degree of local endemism, presents particular challenges for id apps. The magnitude of the difficulties posed by this diversity is illustrated by our visit to Kangaroo Island where in just three random stops on a drive across the island I found four species that are endemic to the island, together with some other rarities!

For this study I tested five of the best apps from studies in Europe (Flora Incognita, PlantNet, iNaturalist, Google Lens and Picture This) using just one photograph for each of 148 species (from 41 families) taken in the field (ideally showing flowers and leaves). Two of the apps (PlantNet and Flora Incognita) provide a % confidence level for each ID given, while iNaturalist provides a genus first if it has confidence that it is correct, otherwise it just gives some suggested species. The other two apps used do not give any indication of confidence in their results. A particularly useful feature of iNaturalist, PlantNet and Google Lens is that they give a range of alternative suggestions which can be helpful when the initial answer is uncertain or clearly wrong.

The results of the present tests are summarised and compared with the 2023 study on UK species in Table 1. Some samples of images used in this study are shown in Figures 1–4.

Two uncommon 'pungent' (spiny) Acacia species from S. Australia: left *Acacia verticillata* (1 app correct to species, 3 to genus) and right *Acacia rupicola* (3 apps correct to species and two to genus)

Unsurprisingly, the percentage of initial IDs that were correct to species was generally lower than for the UK samples, though a surprising proportion were still correct, especially when using Flora Incognita and or iNaturalist and especially for more distinctive species from smaller genera. Google Lens and Picture This were the poorest performing apps. About three quarters of IDs at least gave a species in the correct genus. Interestingly, those apps that gave a measure of confidence in their IDs, were found to be more reliable if only IDs with a high level of associated confidence were counted (final columns in Table 1).

Two species of Spyridium: left *Spyridium filicoides* (a sparsely distributed species of coast in SW South Australia: 1 app correct to species and 1 to genus) and right *Spyridium halmaturinum* (a Kangaroo Island endemic: none correct).

In conclusion I remain astounded at the performance of plant ID apps, especially given the challenges of the Australian flora, though there is still a long way to go to reach perfection. Although the best apps can achieve very close to 100% accuracy for the European flora (Razanny et al. 2024), a significant problem here is that quite a few of the rarer Australian species have not yet been included in the identifiable species lists of the specialist botanical id apps. Although Google lens can be useful, for me those apps that give a measure of confidence in their ID (Flora Incognita, iNaturalist and PlantNet) are much more useful. Whatever app or combination of apps that one uses, it cannot be emphasised enough that one needs to validate results obtained by use of alternative resources (floras, internet searches, etc.). In many critical genera it may not be possible to be certain of the correct species as the distinguishing characters may not be visible in photographs.

An example where two genera are rather similar and difficult to distinguish (the key diagnostic being the shape of the calyx which is hard to see in most photos): left *Prostanthera williamsii* (4 apps correct to genus, 1 gave Westringia) and right *Westringia eremicola* (4 apps correct to genus). No apps identified either species correctly.

Table 1. The success rate of five apps at identifying samples correct to species or to genus, either for in a study on UK species, or on 152 Australian plants. Raw data refer to % of all attempts, while %where "confident" refers to percentage of ids where the app was >70% confident (Flora Incognita and PlantNet) or where the app was confident of the genus (iNaturalist). In many cases the "correct" ID was obtained from labels in botanic gardens; for other samples I checked IDs using local floras and local plant distribution lists.

	UK 2023 – raw		Australia 2024 – raw		% where "confident"	
	species	genus	species	genus	species	genus
Flora Incognita	82%	84%	62%	85%	81%	98%
iNaturalist	61%	71%	63%	89%	71%	96%
PlantNet	87%	90%	41%	76%	86%	100%
Google	50%	66%	30%	72%	-	-
Picture This	-	-	24%	52%	-	-

References:
H G Jones (2020) AoB Plants, doi:10.1093/aobpla/plaa052
H G Jones (2024) Plant Ecology and Diversity in press
M Razanny et al. (2024) People and Nature, doi: 10.1002/pan3.10676

Atlantic cedars at home

Rachel Thomas visits our most frequently planted cedar in its mountain home

Photo 1: **Fir and cedar tower over berberis and maple**

Chilly and damp is not what comes to mind when you think about Morocco, even in late October, but the western end of the Rif Mountains running parallel to Morocco's Mediterranean coast certainly catch the rain from the nearby Atlantic.

Immediately north-east of Chefchaouen, the Talassemtane National Park (to c2,000m) contains most of the remaining Moroccan fir (*Abies. pinsapo* var. *marocana*) and Atlantic cedar (*Cedrus atlantica*) in North Africa (both IUCN Endangered). This is what I had come to see and was delighted by a reference in the Lonely Planet Morocco Guide (Gilbert *et al*, 2023, p244) to the International Conifer Conservation Programme run through Royal Botanic Gardens Edinburgh. Sadly however, it includes both species which are now restricted to isolated mountain slopes.

Our trip up the dolomitic limestone slopes of Jebel Tissouka took us in 4x4 vehicles through the changing forest belts to culminate in the Moroccan fir/Atlantic cedar stands at about 1700m. Around Chefchaouen and up to 1300m, much of the lower cork oak (*Quercus suber*) belt has been cleared for agriculture and plantation forestry set within a wider landscape dominated by cannabis cash crops. The cannabis brings a welcome cash boost to the local economy. Production is due to be taxed by the Moroccan government, but cultivation demands significant irrigation and may be one of the causes of the soil erosion washing the roads downhill and filling the reservoirs with silt. As we looked, we considered the pros and cons but were not offered and did not consume.

Photos 2 & 3: **Lower slopes of Rif Mountains above Chefchaouen. Former cannabis field in foreground (Photo 2) and showing the irrigation necessary (Photo 3).**

Photos 4 & 5: **Scrubby woodland including holm and other oaks, juniper and open, heavily grazed, areas with *Colchicum filifolium***

Entering the lower slopes of the Talassemtane National Park into the upper band of cork oak the landscape changed to open, heavily grazed areas (Photo 5) with dense carpets of pink *Colchicum filifolium* (Photo 6, below), scattered shrubs (Photo 4) including holm oak (*Quercus ilex*) and *Juniperus oxycedrus* and then at the higher elevations, and where free from grazing (some probably unauthorised), denser woodland with large moss-covered tree trunks and boulders with a superficial similarity to Scotland's Rainforest. Species here included holm oak, Portuguese oak (*Q. faginae*), Algerian oak (*Q. canariensis*), holly (our own *Ilex aquifolium* which got our Italian guide quite excited), Spanish maple (*Acer granatense*) still with green leaves at this elevation, the gorse *Ulex parviflorus africanus*, peony (*Paeonia coriacea*) and ferns I knew from home including rusty back (*Asplenium ceterach*) and maidenhair spleenwort (*A. trichomanes*).

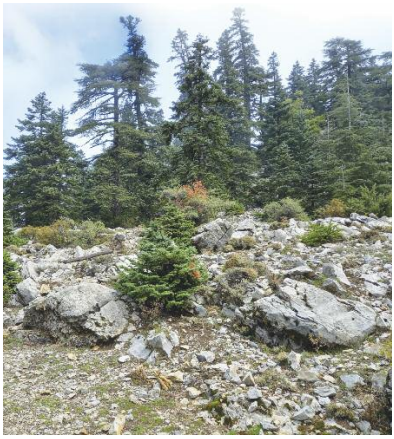


Photo 6: ***Colchicum filifolium*** **among** ***Carlina racemosa*** **and** Photo 7: **Fir/Cedar forest on exposed slopes with more shrubby growth**

Leaving the open areas below us, we eventually reached the Atlantic cedar/ Moroccan fir forest. It was cold, but so atmospheric with the cloud rolling around the mountain tops. The shrubs amongst and below the canopy species included the hawthorn *Crataegus laciniata*, a large goat willow-like Salix, juniper and abundant *Acer granatense* which here at the higher elevation, were changing to their autumn colours creating a wonderful golden light. The lower shrub layer included *Berberis hispanica, Daphne laureola*, a gooseberry *Ribes sp.* and a *Rubus sp.* There was a clear structural contrast either side of the mountain too – shrubby growth with more hawthorn, juniper and open areas on the exposed slopes (Photo 7) and a much more developed woodland structure with a shrub understorey on the more sheltered sides (Photo 1). Fir and cedar over berberis and maple was definitely not a combination I knew from home. Barbary macaques occur in these forests too and although we didn't see them here, we did spot them elsewhere.

Atlantic cedar with its blue horticultural variants may be a commonly planted garden tree in the UK but even majestic specimens do not evoke the atmosphere and landscape of its native land. It was so hard to come away realising that the tree population has declined by 75% since the 1940s.

Acknowledgements:
Greentours and especially our guide Stefano Doglio for logistics and considerable ecological and local knowledge.

References:

Gilbert, S, Kirby S, Ranger, H, Sinclair, M and Stevens, T 2023. Lonely planet Morocco. Lonely Planet Global Ltd
RBGE Threatened Conifers of the World https://threatenedconifers.rbge.org.uk/

Painting plants from life

Artist Susan White reveals how she paints flowers from nature.

My family are from Durham, and although I have lived in Scotland since 1985, I still feel a real connection with the North East. After I studied a Foundation course at Newcastle Art College from 1968–69, I trained as a textile designer at Leicester Polytechnic from 1970–1973. I have always painted and drawn, using various media, and I can admit that art and gardening are my dual passions. After a very long gap, where I somehow got married and had four children, I returned to college to study horticulture and then Garden and Greenspace design, achieving HNC Horticulture and HND Garden and Greenspace Design.

Above *Sparmannia Africana* from the glasshouses at Saughton Park, Edinburgh. © *Susan M. White*

When painting I am drawn towards plants as a subject, and in 2019 joined an online course "Identiplant", a course organised by BSBI, which is aimed at serious amateur botanists. I had a lovely tutor, Liz Lavery (until recently Hon. Sec of BSS), who was very encouraging throughout the course.

In the past I would only paint a plant, whereas now I make notes on the surrounding habitat, photograph, sketch, measure and dissect. It is great fun. I keep all my findings in my botanical journals, and they are the basis for my finished watercolours.

I am now a member of the fabulous Scottish Society of Botanical Artists, and we meet regularly at Saughton Park in Edinburgh. With their encouragement and guidance, I have taken my botanical paintings up a notch and I am now producing some very large and detailed work.

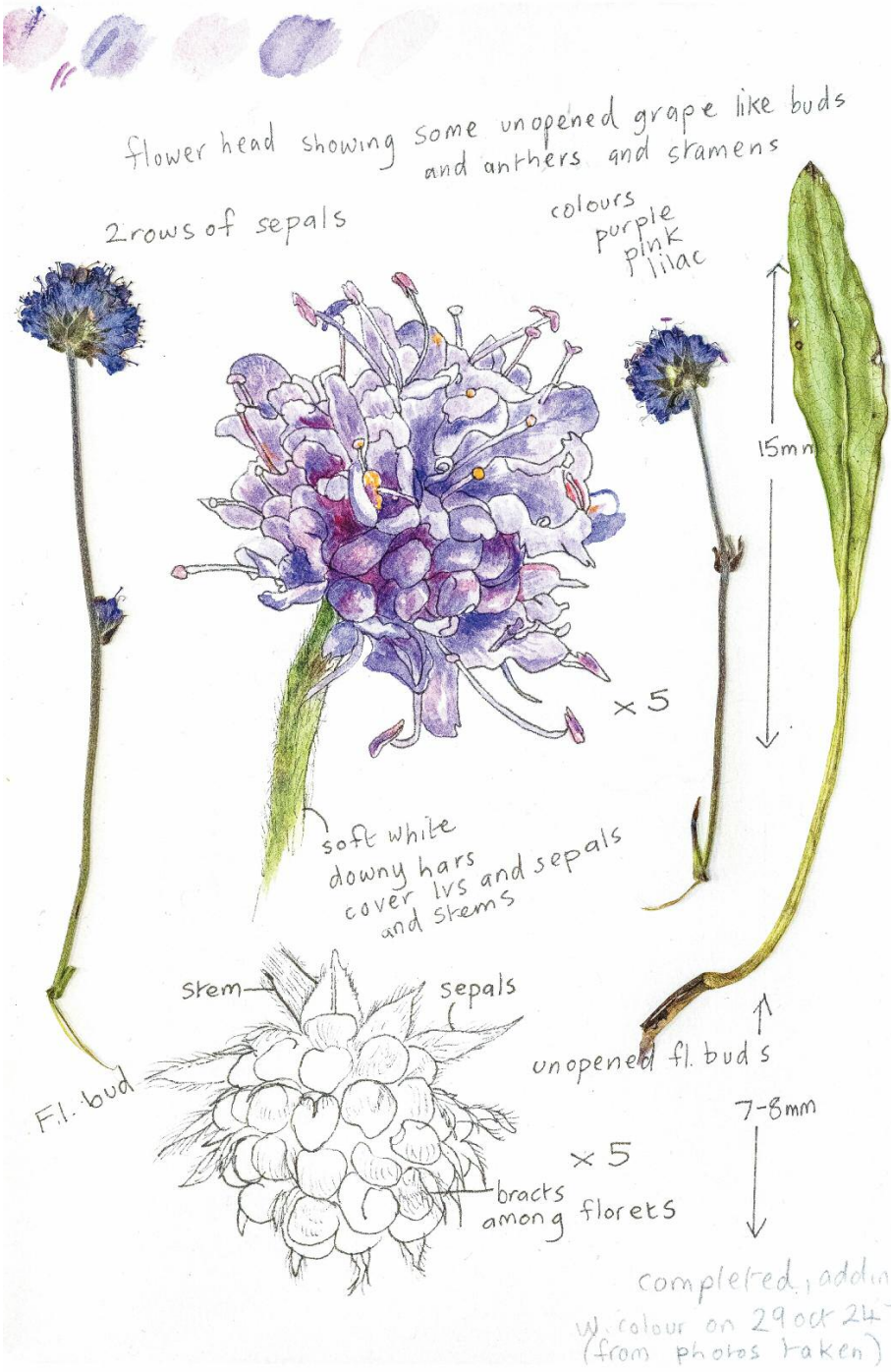
A tufted red seaweed, *Pterothamnion plumula*, Featherweed. © Susan White

The example on the cover of this issue is cuckoo flower *Cardamine pratensis* with a male orange tipped butterfly *Anthocaris cardamine*. Only the male has the orange wingtips, but both sexes have a vibrant citrine mottled underwing. I bought a specimen of the orange tip butterfly so I could study and paint it, before deciding on a final composition.

I have always loved this small butterfly and after researching which plants it prefers to feed on, I discovered how inextricably linked it is to the cuckoo flower. They are frequently found together in damp meadows, although 100 yrs ago the Orange Tip was absent from Scotland. The female lays a single egg on a leaf stalk. On emerging two weeks later, the caterpillar feeds mainly on young seedheads, moulting its skin many times in the process. The butterfly overwinters as a pupa, to finally emerge in May, when the cuckoo flower is one of its main sources of nectar. The Orange Tip benefits from the plant at all stages in its development, and the Cuckoo flower is pollinated in return. They are perfect partners, and exquisite subjects to study and paint.

Leaves lanceolate, opposite, 7cms long including stem. Soft white downy hairs cover stems, leaves and sepals. Flowers have long wiry, slender stems. Individual flowers 7mm, 4 petals partially fused in a calyx tube. Colours purple, lilac and pink. There are dozens of flowers forming a ball, displaying both unopened and opened buds. The prominent stamens and visible spiky ends of bracts give the involucre a pin cushion appearance.

Facing page: *Succisa pratensis*, devil's bit scabious. Dipsacaceae. Specimen found at Arisaig bay (N 56.903, W 5.849), 27 September 2024. On shoreline, at tidal limit, among rocky outcrops, with seaweed deposits. Ground very boggy, with reeds, also growing amongst grasses. © Susan M. White


flower head showing some unopened grape like buds and anthers and stamens
2 rows of sepals
colours purple pink lilac
15mm
× 5
soft white downy hars cover lvs and sepals and stems
stem
sepals
Fl. bud
unopened fl. buds
7-8mm
× 5
bracts among florets
completed, adding W. colour on 29 oct 24 (from photos taken)

The flora of bus stops

Brian Ballinger never lets an opportunity to record slip by, but how many busses has he missed?

Many of us spend some time at bus stops, sometimes waiting far longer than we had expected when that bus never seems to come. Plants are enterprising organisms and usually find a place to make their home and bus stops are no exception. I am not aware of much interest being shown in this aspect of the Scottish flora in the past.

Bus stop (c) Brian Ballinger. *Asplenium trichomanes* © Chris Jeffree

Method:

20 urban bus stops in western Dundee were visited on two occasions and all vascular plants within 10 meters of the stop were recorded. Some could only be identified to genus level. Similarly, 16 urban bus stops in small Easter Ross towns and villages were recorded in the same way. These sites included Invergordon, Alness, Balintore, Kildary and Edderton.

Results:

In Dundee a mean of 7.5 species was recorded per site (range 7–17). Taking all the sites together, 40 vascular plant species were seen, including eight neophytes (aliens). The commonest were *Epilobium* (Willowherb) species (17 stops), *Poa annua* (Annual Meadow Grass) (15). *Taraxacum* (Dandelion) (15), and *Senecio vulgaris* (Groundsel) (9). It was interesting to see *Asplenium ruta-muraria* (Wall-rue) on four walls and *Asplenium trichomanes* (Maidenhair Spleenwort) on two walls by bus stops.

There was evidence of herbicide use and the number of plants often changed considerably after "treatment". One bus stop in Dundee had a nearby patch of *Cochlearia danica* (Danish Scurvygrass), consistent with recent salt exposure. *Parietaria judaica* (Pellitory-of-the-wall) was just outside the 10-meter range – this species is relatively scarce in the northern part of Scotland.

In Easter Ross there was a mean of 12 species per bus stop (range 6–24). 66 species were recorded in all, including three neophytes (aliens). The commonest species were *Poa annua* (16), *Taraxacum* (16), *Bellis perennis* (Daisy) (10) and *Trifolium repens* (White Clover) (7). Compared to Dundee there was less evidence of herbicide use and more green vegetation. Open land was often relatively close by. There were no rarities, but it was interesting to see *Succisa pratensis* (Devil’s-bit-scabious) at Invergordon and *Cirsium palustre* (Marsh Thistle) at Kildary in urban settings.

Comment:

This study shows that wild plants manage to make a home in less likely places. The bus stop plants in Dundee are similar to those on nearby pavements, as they are really part of the pavement flora. Plants in this setting either need to grow quickly or possess some resistance to herbicides, Salt treatment is often extended from roads to also treat pavements – a welcome practice for some older pedestrians like the author of this report. If anything, pavement treatment seemed to be more energetic around bus stops.

There was more diversity in the Easter Ross towns, probably reflecting less management and the proximity of wild land.

Once again it would be helpful if councils could limit herbicide use in favour of some other form of control. There is also the need to persuade the public of the value of wild plants in urban settings.

Salix science

From Traditional Wicker Crafts to Biodiversity's Critical Taxonomy

Les Tucker makes baskets not just from willow, but from some other surprising plants

Willows are traditionally used for basket making, but Les Tucker combines them with some other surprising plants, from which he selects stems with the different properties required for traditional wickerwork, strong and stiff for the main frames, tough and flexible for binding. He selects stems with different colours and textures for decorative weaving. Other natural materials are selected to make pins and pegs, ropes, palings and wattles

A popular item in his repertoire is his adaptation of the *'Vannerie Sauvage'* type of foraging basket from the French Pyrenees, where the design is used as the logo on signs and posters for country markets.

MARCHÉS DE PAYS

HAUTES-PYRENEES

Hazel (*Corylus avellana*) yearling coppice rods twined together may form the circular handle and oval rim of the basket, lashed together with bark stripped from mature sticks to form the cross eye.

Shoots of coppiced garden privet (*Ligustrum ovalifolium*) or silver birch (*Betula pendula*) can be used for the ribs of the frame, while strips of northern and wood docken (*Rumex longifolius* & *R. sanguineus*) flowering stalks are woven to form the body cover or the decorative cross 'eye' lashing. Other components are made from sharp-flowered rush (*Juncus acutiflorus*) stalks twisted into rope, or cortical bast fibres of stinging nettle (*Urtica dioica*) forming cord for tying

The method of construction begins with strong, but flexible rods twined together to form a circular handle and an oval outer rim that is cross-lashed to the handle with 'scallops' of outer skin and cambium layer lifted from a thicker pole. Lateral ribs of some spindly but springy shoots are then inserted and bent to form the body shape, all held securely in place with some semi-circular twining of more pliable thinner shoots. Finally the framework is over-woven with broader, body-covering strips of flexible material.

Sometimes the frames must wait for suitable materials to become available, and Les will experiment by using stalks of tall herbs as weavers, often split and scraped flat. At the BSS AGM in the summer, Les displayed some colourful examples made the previous winter from opportunistically gathered coppice shoots of wild 'Black Sally' (*Salix × ambigua*) and locally-cultivated 'Yellow Osier' (*S. alba var. vitellina*).

Jonathan Silvertown asked what sorts of willow were incorporated in one example, and on learning that there were none, dubbed it the 'No Willow' Basket.

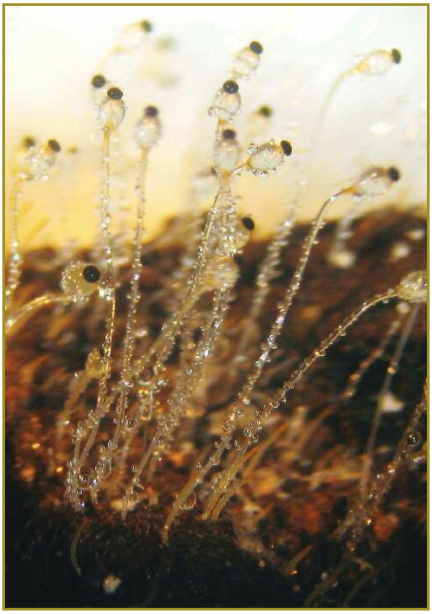
Left: **The body is covered with split flowering stems of northern dock, *Rumex longifolius*** *(centre)*

Pilobolus and WB Grove

Mike Richardson

I rediscovered the following verse whilst downsizing in readiness for a move of house, brought about by old age and decrepitude.

William Bywater Grove, 1848–1938 (we just missed each other!) was a well-known mycologist, especially for his books *British Rust Fungi* (1913), and *British Stem- and Leaf- Fungi (Coelomycetes)* (1935–37). I was sent hand-written copies of the verse below by Dr Arthur Sledge (University of Leeds) about 40 years ago, when Willis Bramley's *A Fungus Flora of Yorkshire* (1985) was being prepared.



Pilobolus sporangiophores **growing from dung. Photo by Mike Richardson.**

Pilobolus spp. are beautifully adapted for their life style as coprophilous (dung loving) fungi. Their spores really need to pass through an herbivorous animal's digestive system before they will germinate. The best way to ensure that happens is for them to be eaten. Dispersal of spores away from the dung is preferable; animals rarely graze close to where they have defecated. High speed spore dispersal towards the sun at midday ensures that they are more likely to get into the airstream and be wafted away; with a sticky side, the sporangia, containing thousands of spores, stick to any vegetation they land on, and remain there until they are eaten. Passage through the gut initiates spore germination, and growth has already started when the dung is deposited.

New sporangiophores are produced daily, emerging each morning from the surface of the dung as clear hyphae. Simple at first but, as they elongate, a swelling develops at the tip, and a black sporangium is formed on top (Figures 1 and 2). A sporangiophore has two orange photoreceptors, one at its base, and one where it begins to swell out at the tip. The swollen, fluid-filled, tip acts as a lens, and the sporangiophore reacts by bending towards the source of light so that light is received by both photoreceptors.

The result is that the sporangium is pointing towards the light. Pressure builds up in the swollen part of the sporangiophore and, as spores mature, it bursts and launches the sporangium towards the sun (or brightest light source), at a relatively high speed and acceleration e.g., <20 kph, with an acceleration of <180,000 g, to a distance of 2.5 m in still air, but much further in moving air (Yafetto et al., 2008).

Ainsworth, G.C. 1988. British Mycologists: 6. W B Grove (1848–1938). Mycologist 2(4). 168-169.

Yafetto, L. et al. 2008. *The Fastest Flights in Nature: High-Speed Spore Discharge Mechanisms among Fungi*. PLoS One 3(9): e3237.

Pilobolus sporangia, with orange photoreceptors at the base of each sporangiophore swelling. Photo by Mike Richardson.

Pilobolus

Lines written in dejection [Sept. 1935] after not seeing a Pilobolus for three dry seasons [1933-4-5], **W.B. Grove M.A., M.Sc.**, North Western Naturalist, 1936, pp.101-102.

Pilobolus! My chiefest joy!
You've left me sunk in sorrow.
With meat & drink I only toy,
Nor hope for ease tomorrow.

For when the fields I ramble o'er
No eyes like your discerning,
Those sparkling eyes I did adore
Ah! Then I'm filled with yearning.

Your graceful form so crystal clear
Its ebon cap displaying,
[Like black-haired fuses, when the deer
With Stephen goes swaying.]

Your head of gold, your strings of pearl,
My weary vision
Sure never King or Duke or Earl
Such glorious splendour vaunteth!

You eye the droughts alone to blame;
Your habitats are cakey
You like 'em soft & hue to name,
Not hard & dry & flakey.

Alas! No hue. The rain soaked sod
You gemmed with many a jewel
Becomes a mere base earthen clod.
Why, why, is fate so cruel?

Always I'll feel the loss of that
In which my soul delighted,
The world grows dark, my days are flat.
Bereft, bedimmed, benighted.

But soft, what this? Here comes the rain
On this your wealth depended.
In breaks it pours down again,
Thank heaven! The drought is ended.

Roger West

An appreciation

John Grace commemorates a faithful friend of the BSS

Roger passed away on 15th November 2024, after a long period of illness. For the last few years, he was unable to join us on field excursions and lectures – both of which he loved.

He was an unusual and lively character – known for his botanical poems (self-published as Beware the Fierce Taraxacum), his endless supply of crossword puzzles for the BSS Newsletter and his incisive contributions to discussions at our evening lectures. He would ask very searching questions, and he could hold forth on almost any scientific topic, from evolution to plasma physics. He served on the BSS Council, and he became the co-editor of the Newsletter.

I have been advised by his niece that there is much botanical verse saved on his computer. He joked that his poems were 'doggerel' written by his dog. Readers may like this verse about date palms:

Phoenix

Here stands Phoenix, tall and straight
Boy says to girl "Let's make a date".
Girl says to boy "I've thought of mating,
Which almost always leads to dating.

"Oh, let's be married very soon
and fly off on our honeymoon".
So it's arranged. They soon are wed
And rise up from their Palm House bed.
Phoenix-like they soar and fly
Towards the north Saharan sky,
Then land at Tunis, make a tour
and visit cousin Deglet Nour.

Kindrogan Memories

Liz Lavery

European Field Teachers Conference, spring 1989

Kindrogan is a complex group of buildings, typical of a small Highland estate. When the oldest part of Kindrogan House was built is not known for sure, but probably about 1750. Much of the main house and the outbuildings were added in the 1850s with various extensions and modifications made over the years since then. The Scottish Field Studies Association (SFSA), a small Scottish charity established in 1948 dedicated to the promotion of field studies in Scotland, bought Kindrogan in 1964 and moved there from its previous base with the Scottish Youth Hostel Association at Garth Youth Hostel.

Our little family moved to Kindrogan in October 1985 when my husband Alastair became director of the Field Centre. We lived in the small bungalow behind the field centre for nine years and during this time two more babies were added to our family. It was a wonderful place to bring up four small children who could roam wild without coming to much harm. My first impressions were not entirely positive. Coming from mild, wet Argyllshire winters, I had never experienced such cold temperatures as in our first winter, -18°C on one November evening when walking to a neighbours for dinner. The winter starry nights beyond the bright light of the moth trap by our front gate were amazing. Our oldest daughter saw nothing special in seeing the northern lights every week when being driven home across the Moulin Moor from band practice. The quietness was wonderful, being over a kilometre from the nearest public road, only disturbed by the husky barking of rutting fallow deer on a cold October night. For me the winters at Kindrogan were most memorable.

At 255 metres above sea level surrounded by hills, frosts were possible in every month of the year. The centre is, to use the Scot's term, back lying, it loses sunshine from about mid-October to March. The kilometre long driveway was often a sheet of ice for most of its length making getting to the main road the most difficult part of travelling anywhere during the winter. One Christmas Eve I had ventured to Perth for some essential secret shopping and followed the snow plough home from Blairgowrie to Kirkmichael only just making it home in 25 centimetres of snow along the drive. We unloaded the car onto sledges to move to our bungalow; there had been no snow between Perth and Blairgowrie.

During our time there, there were many changes, and the centre became a very busy place with 80 to 100 people visiting every week during spring, summer and autumn months, even opening for groups of skiers in February in the good snow years of the early nineties.

It was an ideal place to teach field studies, situated at the heart of Highland Perthshire, with many teaching sites within walking distance: forest, river, pond, meadow and moorland.

Kindrogan is within easy travelling distance of many iconic natural history Scottish sites. Nearby are the well-known hills around Glenshee and Blair Atholl; Glas Maol, The Cairnwell, Caenlochan and Beinn a' Ghlo. The remoter hills of Loch Loch and Fealar are even closer to Kindrogan, and it is only a few miles from the River Tummel shingles, Loch Tay, Loch Tummel and the Black Wood of Rannoch. The botanical gems of Ben Lawers, Ben Vrackie and the Cairngorms are not far and even the Angus coast is less than 50 miles away. The geology of the area is very varied with the base rich Straloch moraines on the doorstep.

Courses ranged from Highland history, birds and mammals, art, geology and general botany. Specialist botanical courses were run on difficult plant groups such as Eyebrights, Willows, and Dandelions, Fungi, Lichens and Bryophytes. Courses were all tutored by experts in their field. Other visiting groups varied from primary and secondary school children, university student courses, families and many different adult groups, both for pleasure and professional development. Many thousands of naturalists and environmentalists have happy memories of visiting this beautiful place over the last 50 plus years. Even Queen Victoria enjoyed the beauties of Kindrogan on several visits; a plaque on the riverside path beside the River Ardle commemorates the day that 'The Queen rested here and partook of tea on her Majesty's way from Balmoral by the Spittal of Glenshee to Dunkeld, 1st OctR 1866'.

With a few ups and downs the Field Centre continued to flourish, but by 2002 it became clear that its survival as a lone charitable enterprise was increasingly precarious. The SFSA invited the Field Studies Council (FSC) to run the centre on a partnership basis. It remained a busy place until the late 2010s, when it became a struggle for FSC to operate both Kindrogan and their new field centre at Millport on Cumbrae, opened in 2014. It was taken over for a short while as a residential school, but this failed to thrive, in part because of Covid restrictions in place from 2020.

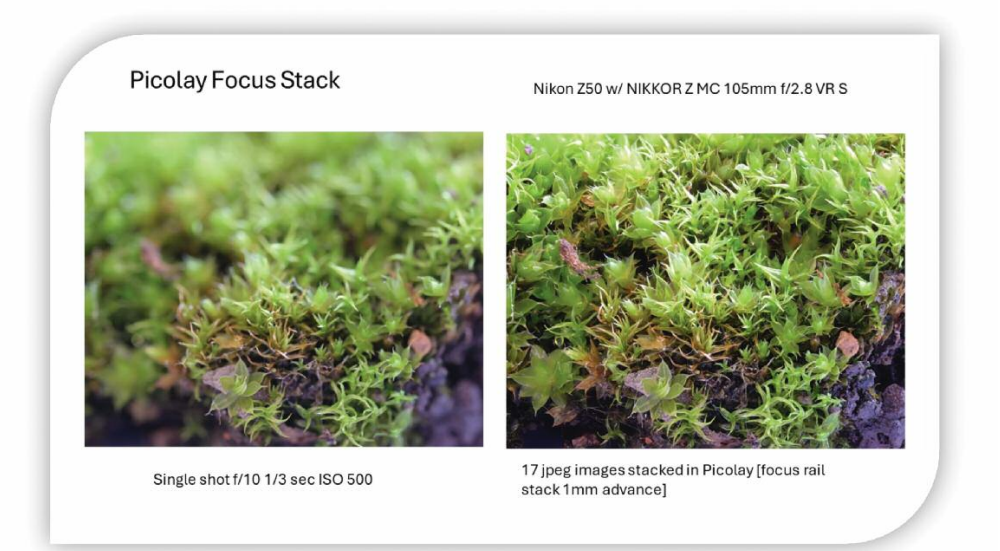
Sadly, FSC sold Kindrogan House and grounds in October 2024. It will be greatly missed by many of us in Scotland, its location, the laboratory facilities and natural history library were exceptional. I hope the next chapter in the life of this lovely house brings as much pleasure and happiness to future generations as it has done in the last 50 years.

More tips for your smartphone or digital camera

Rich Wilson reveals how to get amazing depth of field

Something relatively new in photography causing quite a buzz! It's Focus Bracketing and Stacking. Haven't heard about yet? Well, you probably have seen the results of this technique on the Web or in adverts or in Chris Jeffree's photographs in Plant of the Week, but you may not have known how it was done. This technique makes parts of an image – which normally would be out of focus – now very sharp. The technique increases the apparent depth of field (e.g. what appears sharp). When taking a closeup of flower, some of the stamens might be sharp – but not all of them. The traditional method to increase the depth of field would be to make the aperture smaller (a larger f/stop). This new technique uses several images at different focus points (focus bracketing) and an application to merge those images (stacking) into one image. That new merged photo retains the sharpness of each of the original images, resulting in an image that has a greater depth of field. The sample images will give you a visual instead of my rambling explanation.

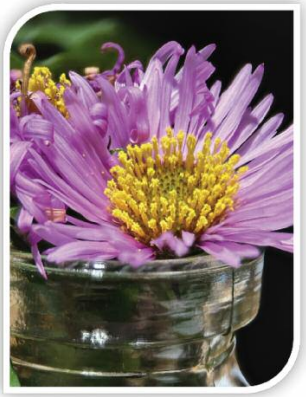
This roof moss was photographed with a digital camera and microlens. The left was a single image at F/10 – notice only the centre is sharp. The right side is a result of 17 focus-bracketed images being stacked via the Picolay application. The front-to-back depth of field on the right image was about 17mm.



The really great thing is you can do this technique yourself with your smartphone or digital camera. The smartphone apps will often take the focus bracketed images for you at different focus points. Then you load those images into an application that can stack them for you into one image. Some of the fancier digital cameras have focus bracketing built-in to the camera, but if not, you can do it manually – I did.

Focus-Bracketed Sequence from CameraPixels onIphone

Stacked Result from Affinity Photo 2



You may already have an app on your phone that does focus bracketing or on your computer that can do stacking. A couple of applications for smartphone are AuraHDR or CameraPixels, but there are several – have a look on your app store. Some examples of computer apps that do stacking (sometimes called merging) are Photoshop, Lightroom, and Affinity Photo to name a few. There are several apps specifically for stacking, notably Zerene, Helicon Focus, and Picolay, but there are more – have a search!

This is a great technique to get spectacular results and get you closer nature – very close!

BSS News is published by the Botanical Society of Scotland in March and September each year and is available exclusively to members.

The society welcomes all enthusiasts of plants and fungi.

- Join us at the society's website **www.botsoc.scot**
- Attend our free monthly lectures, held September – May – details overleaf and on our website
- Come along to field meetings, held June – September. see details on our website
- Enjoy an evening with fellow botanists and plant scientists at the Plant Pub. See Events overleaf for dates and venue.
- Volunteer to help us run the society via **BSS-Contact@botsoc.scot**
- View videos of past lectures on our YouTube channel (Search Botanical Society of Scotland)
- Connect with us on our socials. We are on FaceBook, LinkedIn, X and Instagram.
- Participate in student events – see **@botsocscot** on Instagram for the latest
- Contribute to BSS News – deadlines for copy are 15th January and 15th July.
- Contact us at **BSS-Contact@botsoc.scot**

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Botanical Society Of Scotland
Events March - July 2025

Last-minute changes sometimes occur for reasons beyond our control, so always check with our website before attending. Members receive updates via email with more details about each event. Please update your email if it changes by logging-in to the members area at **www.botsoc.scot**

Lectures are held jointly with the Royal Botanic Garden, Edinburgh. **They take place in the Lecture Theatre at 20A, Inverleith Row, Edinburgh EH3 5LR at 6pm**. Tea is available from 5.30pm. We endeavour to record the lectures and make them available on our YouTube channel soon after the live event.

Field Meetings: All are welcome. It is essential you check the details at **https://botsoc.scot/events-2/field-meetings/** and follow joining instructions there.

THURS 13th MARCH 2025, 6:30pm
Plant Pub. All botanists and plant scientists are invited to this free social event, upstairs at the Wash Bar, The Mound, Edinburgh EH1 2LP

THURS 20th MARCH 2025, 6pm
Lecture. Prof. Simon Hiscock, Oxford Botanic Garden
The Oxford Ragwort and the Bristol Whitebeam: tales of hybrid speciation

THURS 10th April 2025, 6:30pm
Plant Pub. All botanists and plant scientists are invited to this free social event, upstairs at the Wash Bar, The Mound, Edinburgh EH1 2LP

THURS 17th APRIL 2025, 6pm
Lecture. Dr Edwige Moyroud, University of Cambridge
Nature's palette: understanding how flowers pattern their petals

MONDAY (Bank Holiday) 5th MAY 2025, 10am
Field Meeting. FORAGING WALK AND TASTER PICNIC, CRAIGMILLAR PARK, EDINBURGH
Leader: Nenya Milne. Check details at **www.botsoc.scot**

THURS 8th MAY 2025, 6:30pm
Plant Pub. All botanists and plant scientists are invited to this free social event, upstairs at the Wash Bar, The Mound, Edinburgh EH1 2LP

THURS 15th MAY 2025, 6pm
Lecture. Nev Kilkenny, Field Mycologist
The role of fungi in carbon sequestration

AGM follows the 15th May Lecture, at 7pm

TUESDAY 20th MAY 2025, 7pm
Field Meeting. CARNOUSTIE GOLF COURSE
Joint with Dundee Naturalists Society
Leader: Anne Reid. Further information from Brian Ballinger **brian@garrickwood.org.uk**

THURSDAY 29th MAY 2025, 7pm – 9pm
Workshop. EVENING CRASH COURSE IN FLOWERING PLANT ID (not grasses) EDINBURGH
Leader: Richard Milne. Check details at **www.botsoc.scot**

SUNDAY 1st JUNE 2025, 11am
Field Meeting. WEST LOTHIAN BINGS
Joint with ELFE (Edinburgh and Lothians Fungus Enthusiasts). Leaders: Cameron Diekonigin and Richard Milne

THURS 12th June 2025, 6:30pm
Plant Pub. All botanists and plant scientists are invited to this free social event, upstairs at the Wash Bar, The Mound, Edinburgh EH1 2LP

SUNDAY 22nd JUNE, 10am – 4pm
Field Meeting. 'TOWARDS 900 PLANTS' HOLYROOD PARK, HOLYROOD PARK EDUCATION CENTRE
Leaders: BSS members and friends

SATURDAY, 28th JUNE 2025, 10am
Field Meeting. Field Meeting BEN CHONSIE (via Glen Turret)
BSS ALPINE FIELD MEETING Leader: John Holland

THURS 10th July 2025, 6:30pm
Plant Pub. All botanists and plant scientists are invited to this free social event, upstairs at the Wash Bar, The Mound, Edinburgh EH1 2LP

SATURDAY 12th JULY 2025, all day
Field Meeting. EVANTON, EASTER ROSS
Joint with Inverness Botany Group. Leader: Mary Dean

SATURDAY 12th JULY 2025, all day
Field Meeting. KINGHORN LOCH, FIFE
Bioblitz. Leaders: Robert Mill (higher plants), David Chamberlain and Liz Kungu (bryophytes)

SATURDAY 26th JULY, 11am
Field Meeting. CARSEHALL BOG (near LOCH LEVEN)/ or INVERKEITHING
Joint with the Fife Botany Walks Group.
Leaders: Alison Davies, Lyn Jones