Spring

2025

Trifoliate

Field Reports

ID: Aquatic Plants

Common Juniper

Ferns on Walls

Networking field botanists across

Dunbartonshire, Lanarkshire and Renfrewshire

Contents

Editorial

In this issue there is an emphasis on identification and recording, which, after all, is not surprising for a publication focussing on field botany. Within the covers, Heather McHaffie provides an overview of fern species that we might commonly find on mortared walls, as well as one or two surprises. When it comes to aquatic plants many of us just 'sail on by' because we consider them to be difficult, however, once armed with the useful tips and internet resources shared enthusiastically by Peter Wiggins, we will all, I believe, be much more confident in our identification of water plants, increase our knowledge of this under-appreciateded flora and, perhaps, even dip our toes into actively recording aquatics. Those of us who tramp the hills will doubtless acknowledge that common juniper is becoming ever more scarce. James Baker & Daisy Goodwin set out the challenges of climate change and novel pathogens that now face the species as well as, importantly, the practical conservation steps, based on their research, to address these issues. We wish them well in this important work.

Spring is on the horizon and as we awake from our botanical slumber I commend the fun challenges of our Primrose Hunt, the search for dandelion microspecies and the suggested sites for solo-recording. And our programme of field meetings will shortly begin. As Liz McTeague (see Profile) so rightly confirms, "*The field meetings are hugely enjoyable - spending a day looking at plants, in great company, all learning from each other, getting to places* [we] *wouldn't otherwise have visited - what's not to like.*" If you haven't yet joined us at a field meeting then do make a resolution to do so this year – you'll be made most welcome.

There is, of course, much more to discover in this issue….I do hope that you enjoy it, please let me know.

Frazer Henderson

Network News

Dandelions: hiding in plain sight

In the UK most dandelions reproduce asexually. They reproduce by seeds, but the seeds develop without fertilisation, so the genes of the offspring plants are identical to those of the mother plant. This process is known as apomixis. Dandelions are therefore apomictic like brambles.

As a consequence of apomixis there are over 230 'microspecies' of dandelions, many looking superficially similar but on closer inspection there are differences.

This year the Network is embarking on a simple, fun project to locate more dandelion 'microspecies' across our area – it's really easy to participate and who knows you may find a new 'microspecies' in your locality.

More details and instructions on how to participate can be found at page 29.

Trifoliate

Supporting the growing network of field botanists, of all abilities, across

Dunbartonshire, Lanarkshire and Renfrewshire

by sharing information, knowledge and experiences.

Primrose Hunt 2025

If you go down to the woods … then please record Primroses, as we are making a concerted push to see how many monads across our area hold populations of this sunny harbinger of Spring.

There's a simple illustrated guide enclosed on page 10, drawn from information on our BSBI VC77 photographic library, to help you with your identification. See how many you can find.

Botany by Bus

Many of us are retired, or don't work every day of the week, or don't have a car, so I'm wondering if anyone is interested in some mid-week botanical days-out using public transport?
If so, please contact me (Liza Downie) via the Network WhatsApp group (see page 34) or at: lizadownie@protonmail.com

Training Packs

Based on common plants found in Lanarkshire, these PDF publications each contain photos and simple descriptions of 50 common plants. There's also a voluntary 'Test' (self-assessed!) to help embed knowledge, together with a sheet giving the correct answers. These training packs (#2 has just been produced) are really valuable for beginners or for people who want to remind themselves that they know more than they think! Contact Michael Philip at botany@opus44.co.uk

Posters

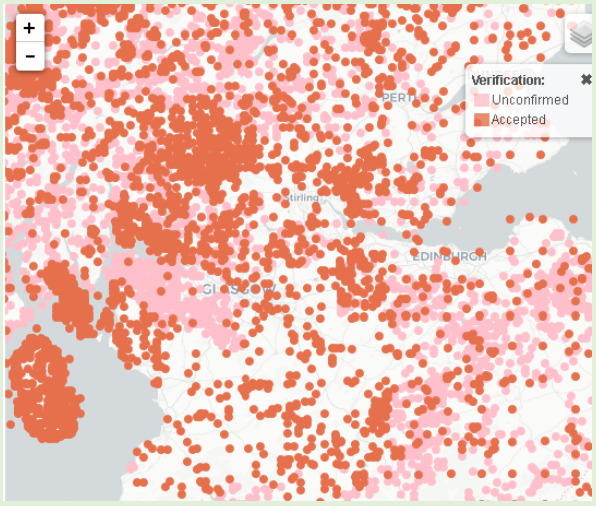
At the Scottish Botanists Conference at the RBG Edinburgh in November 2024 Michael Philip presented two posters: Malcolm Macneill - Glasgow urban botanist extraordinaire!

West Central Scotland Botany Network activities in 2024.

Volunteering

Interested in helping your local VCR team? In keeping with a growing trend across the country, we are looking to develop a team approach to share the different tasks of the Vice-county Recorder role. This is an excellent development opportunity, and you may have just the skills to play a part. Please speak to one of the VCRs for more information on a 'no-obligation' basis.

Cover plant: *Blechnum spicant*



Distribution of *Blechnum spicant* across the central belt of Scotland. NBN Atlas (2025)

Known colloquially as Hard Fern, Deer Fern or the Fishbone Fern, this hardy, evergreen native is a relatively common plant in moist, acidic woodlands as well as on the moors and open hillsides of our region, particularly near burns and streams (see the distribution map opposite).

Blechnum spicant is dimorphic which means it has two types of frond – sterile and fertile. The sterile fronds are single-pinnate, dark green and taper both at the tip and the bottom of the rachis (stem). The fronds tend to arch outwards and generally grow about 30-40cm (though there are specimens over 50cm). The fertile fronds are longer, narrower and upright. They generally grow in the centre of the plant with their pinnae spaced further apart from each other, and the outer edges rolled inwards on the undersides. Each pinnae has two linear sori which grow either side of the midrib. The spores tend to be shed from the end of July through to early November.

***Blechnum spicant* BSBI VC77 photo-library (2025). Cover picture** (Frazer Henderson)

Due to its hardy status and persistent fronds the species can be seen easily throughout the year in suitable habitats. According to Page (1982), in natural woodland *Blechnum spicant* associates with Bilberry, *Vaccinium myrtillus*, Broad Buckler fern, *Dryopteris dilatata*, and Lady Fern, *Athyrium filix-femina*. On steep river-banks it can be found with Great Wood-rush, *Luzula sylvatica*, and in more exposed locations such as moorland, especially streamsides and near steep ditches, it finds companionship with Heather, *Calluna vulgaris*, Bell-heather, *Erica cinerea*, and Cross-leaved Heath, *E. tetralix*. As can be seen from the cover photograph the species is truly hardy and can provide a useful subject for an arresting winter image.

Profile: Liz McTeague

Liz McTeague in the field near Neilston, Renfrewshire
(Liz McTeague)

On an Orkney Field Club trip to Hoy, with Elaine Bullard (centre, in white jacket).

Elaine was the former Orkney Vice-county botanical recorder, an inspiring person who made a huge contribution to Orcadian botany over many decades.
(Liz McTeague)

Liz, how did your interest in natural history or more particularly plants arise?

Growing up in the city I was always interested in nature and the countryside but could probably have only named a handful of common plants.

I really started to learn plants when employed on habitat mapping for several years. This included surveys of the South Ayrshire uplands for the Scottish Wildlife Trust and then the mid-Strathclyde peatlands along with Keith Watson, who taught me a lot.

Later on, working in Orkney and then Argyll, I came across very different habitats including wonderful maritime heath and machair, all with their own plant specialities.

I eventually moved back to Glasgow and got involved with BSBI locally, upon which my huge knowledge gap for common urban and wayside plants became apparent and I've been on a steep learning curve for those ever since.

What for you is the attraction of field botany?

It's hard to pin down, I love the sheer variety of plants, and also the challenge of getting to grips with identification. And it's satisfying to know that our local recording efforts are all feeding into the bigger picture at various levels.

What advice would you impart to any aspiring field botanists?

Given that everyone learns in different ways, it's hard to be specific. I tend to find it best to focus on a few things at a time till they sink in, rather than getting overwhelmed by trying to take in too much at once.

I've always found it helps to take home plant material to examine more closely and spend time working through the keys. (This BSBI leaflet has handy guidance about collecting plants.) I also recommend this entertaining article about the ups and downs of getting to grips with plant identification. Although it's focused on lichens (which I know very little about) much of the advice could just as easily apply to any other area of botany.

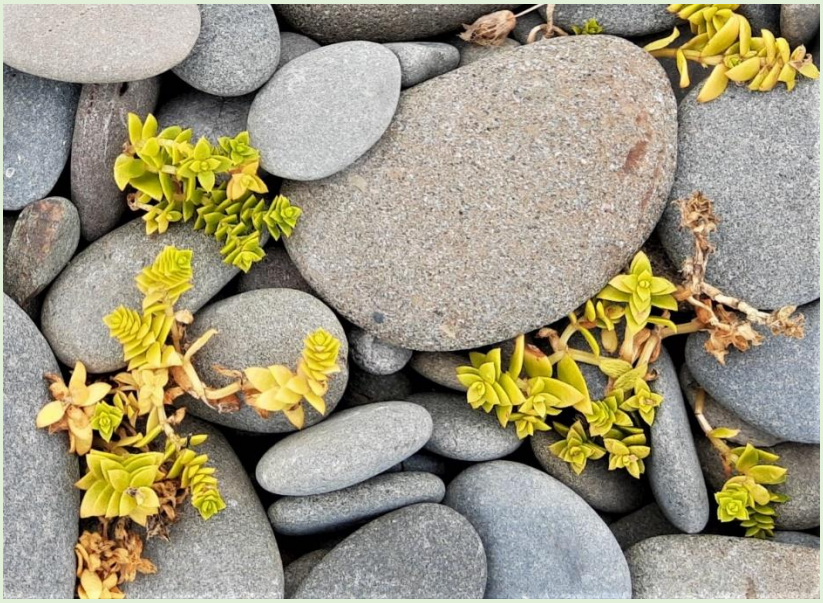
What habitats do you enjoy most and why?

All of them really, though especially uplands and peatlands. And when I occasionally have the opportunity to botanise at the coast it makes a nice change, especially where there are interesting saltmarsh and dune habitats.

Dunwan Dam, Whitelee, a favourite moorland/bog habitat. (Liz McTeague)

What are some of your most interesting finds?

Thinking back to last year, there were a few highlights for me: two plants I'd never yet managed to see – Moschatel, *Adoxa moschatellina*, and Alternate-leaved Golden Saxifrage, *Chrysosplenium alternifolium*, - and they both turned up on the same day, actually growing side by side, on the outing to Morgan's Glen. And I was delighted when we spotted Tall Bog-sedge, *Carex magellanica*, on one of the Whitelee outings, a very attractive peatland sedge that I hadn't seen for years.



Sea sandwort, ***Honckenya peploides*, at Ballantrae Beach, Ayrshire.** (Liz McTeague)

And going a lot further back…. during the Ayrshire surveys it was really interesting to come upon very unusual types of species-rich grassland, flush and fen vegetation in the hills around Lendalfoot; this turned out to be a reflection of the unusual geology of that corner of Ayrshire (particularly the ultra-basic serpentinite) and the special interest of these habitats was later recognised through SSSIs and SAC designations.

What is it about the Network that you enjoy?

The field meetings are hugely enjoyable - spending a day looking at plants, in great company, all learning from each other, getting to places I wouldn't otherwise have visited - what's not to like. And the Network is really valuable in allowing local botanists to connect with each other and share information and ideas in a variety of ways, in addition to the field meetings.

Out & About: Field Reports

Corbet Hill, near Howwood VC76 (NS3961). 8 Sept 2024

Jim Blackwood

The mist hung low in the sky between Lochwinnoch and Howwood, as I drove the short distance to greet our team at Howwood Village Hall. But the forecast was good, and the mist soon cleared exposing a glorious warm sunny day for some fine botanising.

For safe parking we met in the adjacent monad NS3960. Malcolm Macneill had already found American Speedwell, *Veronica peregrina*, in a bare patch of verge by Howwood Station. This is a really good record of a plant with few previous Renfrewshire records, but which seems to be quietly spreading. I had never seen it before. To my eye it has the jizz of something between Wall Speedwell, *Veronica arvensis*, and Thyme-leaved Speedwell, *V. serpyllifolia*. For that reason I reckon I would have missed it without Malcolm's expertise. It's an unassuming wee plant, worth looking out for. (The following day I returned to photograph it and found several plants of Scarlet Pimpernel, *Anagallis arvensis*, in a nearby weedy shrubbery. That's another plant we don't often find in VC76.)

The route to and in our target monad NS3961 took us along the disused railway line, now a cycle track, in the direction of Kilbarchan. I had recorded there in the contiguous monad a season or two ago, refinding an old record of Hairy St John's-wort, *Hypericum hirsutum*. But I had been defeated trying to key out other St John's-worts which did not clearly conform to keys in Stace and Rose. So I was keen to see what our experienced and knowledgeable team would conclude. It turned into a very good Hypericum day. We found lots along most of the track. Our careful keying out teamwork determined that they can indeed be tricky, that some Hypericums haven't read the books(!), and that *H x desetangsii*, Des Etangs' St John's-wort, can be markedly variable. My puzzle had been solved. Most of the plants we found, despite having different jizzes, were *H x desetangsii*. Pleasingly, if predictably, we added Hairy St John's-wort to the target monad, as well as recording Tall Tutsan, *H x inodorum*, and Square-stalked St. John's-wort, *H tetrapterum*. The best was yet to come.

Trailing St. John's-wort, *Hypericum humifusum* (Peter Wiggins)

As we headed off the cycle track up the farm track towards Corbet Hill the setting was attractively autumnal. Rowan berries, rose hips and cotoneaster berries punctuated the hedges red, and hay making was in full swing, taking advantage of the good weather. We noticed a section of the verge which the farmer had kept mown. It seemed odd. Then bingo! We found a good population of Trailing St. John's-wort, *Hypericum humifusum*, growing precisely where it enjoys growing, where the mown verge meets the track, where there is some disturbance but not too much. This is another species rarely recorded in VC76, and a new site for it.

Botanists in action, checking out the Wild Radish (Peter Wiggins)

Wild Radish, *Raphanus raphanistrum* subsp. *raphanistrum.* (Jim Blackwood)

Can you see it? See what? What's where? (Kirsty Menzies)

Another interesting aspect of this out of the way rural neuk was some arable - a few fields of barley. Most farmland around here is now pasture. Growing at the edge were a few plants of Wild Radish, *Raphanus raphanistrum subsp. raphanistrum.* Yet another species we don't come across often, in contrast to Sea Radish which can be abundant by the Clyde coast.

An annual herb, found as a casual or persistent weed in cultivated fields and on disturbed track edges, roadsides and waste ground. Occasionally also planted in game cover crops. Wild Radish can be a problematic weed on cultivated land, but is easily controlled by selective herbicides and is now much less common than in the past in many areas. Cessation of cultivation across large areas of western Scotland and elsewhere might also be a major factor in its decline. BSBI

Wall Lettuce, *Mycelis muralis*, and Common Mugwort, *Artemisia vulgaris*, in the farmyard added to the list of less usual finds for this rural part of the county. Back home from photos I keyed out the bramble *Rubus errabundus* which was confirmed by Angus Hannah (BSBI referee).

Thank you to everyone for their contributions to a very healthy total, and especially to Peter Wiggins for compiling the list of species using his app, saving me writing it up later!

Carmichael VC77 (NS9238). 15 Sept 2024

Janey Floyd

Ranunculus omiophyllus,
Round-leaved Water Crowfoot.
(Peter Wiggins}

Another successful outing on a fresh but dry autumnal day, led by the intrepid Peter Wiggins, assisted by three regular volunteers and one new recruit. A short road walk, then a boggy lane in a largely deciduous wood where we found *Glyceria notata*, Plicate Sweet-grass. Then up a drier slope in the wood and into a field with a marshy puddle which yielded the find of the day, *Ranunculus omiophyllus*, Round-leaved Water Crowfoot.

Down the road again and along a stretch of a small burn, where a clump of *Eryanthe guttata* x *lutea =E x robertsii,* Hybrid Monkeyflower, lurked by the water. By the road, clambering up to form a rather unusual hedge, a splendid display of *Nasturtium officinale x microphyllum = N x sterile*, Hybrid Watercress; small bunches of it found its way home with us for dinner! Finally, ending up in a peaceful, stone-walled (but rather too well-mown) churchyard where we found the tiny *Aira praecox*, Early Hair Grass.

Overall, a selection of grasses (a lovely *Bromus hordaceous*,Soft Brome), flowering plants with a few still in bloom including *Silene flos-cucula*, Ragged Robin, *Spergula arvensis* , Corn Spurrey, *Spergulia marina*, Lesser Sea Spurrey, *Claytonia sibirica,* Pink Purslane, and two sedges, *Carex flacca* and *C. nigra*, a rush or two but hardly any ferns.

Hedge of Hybrid Watercress. (Peter Wiggins)

***N x sterile,* Hybrid Watercress**.

A perennial herb associated with mildly acidic to basic waters and particularly frequent in highly calcareous waters. It grows with or in the absence of its parents on wet ground or in shallow water, often alongside ditches, streams and rivers but also in damp depressions and by standing waters. Few well-formed seeds are produced, and effective reproduction is almost entirely vegetative.

It is a spontaneous hybrid (native × native). ***BSBI***

Our plant species total for the day was 131, the previous total for the monad was….zero! It was also a good day for fungi but sadly the chanterelles were past their best so no foraging possible!

If you attend any field trips, please don't forget to take some photos and consider writing down your experiences to include in future issues of Trifoliate.

The Network Gathering 2024

About 30 of us assembled on 10 November 2024 in Old Kirkpartick for the annual Network gathering to review the past year. Michael Philip kicked off proceedings with an illustrated review of the year's field outings. It was fascinating to note the variety of habitats that collectively we've explored - woodland, mountain, estuary, lochs, ponds, riverbanks, moorland, grassland, urban, canals, marsh, bogs, arable, scrub and brownfields – and review the wonderful array of floral finds. The major focus of the trips was clearly fun – fun in fellowship and fun in learning about plants. We noted that the records collected during field trips constitute less than 10% of the total collated in any given year, which means that 90% are due to the efforts of folk on their own or in informal groups.

After a short intermission (providing an excuse for more cake consumption) Michael conducted a public conversation with Gillian Neil, Biodiversity Officer, West Dunbartonshire Council (and who is also an active participant within the Network). We noted that Gillian had been in her current role for the past three years having previously been a Countryside Ranger with Glasgow City Council, then with Loch Lomond National Park Authority and more recently with West Dunbartonshire Council undertaking practical land-management activities. Like many of us her interest in natural history developed during childhood – pre-mobile 'phone, as she said, 'when distractions were few' – being very much focussed on being outdoors and exploring her local environment. A generous uncle, from Shetland, reinforced her interest by sending her each year a book focussed on a different aspect of wildlife. Whilst still a youngster she started a local group for like-minded, local children to search out interesting creatures, especially creepy-crawlers. She recalled David Attenborough's television series Life on Earth and stated that it was instrumental in confirming her future career direction. (*Ed. I wonder how many of us have been influenced by at least one of the many informative and thought-provoking programmes fronted by Sir David Attenborough over the past seven decades ?)*

Gillian Neil

Gillian advised that though her current role meant less time for hands-on practical activities – which she had always enjoyed – she now had a greater ability to influence change through her active management of various biodiversity budgets to address, for example, pond restoration, meadow creation or invasive plant management. Additionally, her role involves the assessment of planning applications, which though it makes her unpopular, she said, with developers who fail to appreciate the benefits of conserving the natural environment, provides her with a lot of personal satisfaction as she represents the interests of biodiversity and the concerns of many within the local community.

As a self-confessed 'serial organiser' Gillian recently established the Dunbartonshire Biodiversity Network, engaging statutory and community-interest groups and for which she has high hopes. Away from work her interests, in addition to plant and wildlife recording, include playing the flugelhorn and guitar and, following that theme, leading, as Musical Director, the Helensburgh Sounds Good Community Choir.

After a thoroughly engaging conversation between Gillian and Michael we broke for yet more cake and lashing of tea before Michael, and Peter Wiggins, steered a discussion on proposals for 2025 in terms of the Network, its field trips and its priorities.

If you've not been to a Gathering I do recommend it: plenty of opportunity to meet fellow botanists, chat and consume cake! (*Ed. I can vouch for the quality and quantity of cakes!*) As well as stimulating presentations and engaging conversations, you might also pick up an interesting publication from the many books, pamphlets and guides that folk had brought to exchange, sell or recycle.

The Primula Hunt 2025

An Identification Guide

Primrose, *Primula vulgaris.*

Leaves of Primrose, *P. vulgaris.*

Primula vulgaris, Primrose. Each lemon-yellow flower is borne singly on a stem with a darker yellow or soft-orange eye. Flowers may have a long prominent style in so-called pin-eye flowers or the style may be shorter and the stamens most prominent when the flowers are known as thrum-eyes. Shaggy long hairs are to be found on the flower stalk which arises from the leaf rosette consisting of large, crinkly, gradually tapering leaves. The species favours woodland, hedgerows, damp grassland and heavy soils.

Inflorescence, Cowslip, *P. veris*.

Distinctive leaf shape, Cowslip, *P. veris.*

Primula veris, Cowslip. The flowers which are borne in umbels are yellow with prominent internal orange markings (though very occasionally orange-hued flowers are seen). The flower stalk has short straight hairs. The leaves are shorter and more rounded than *Primula vulgaris* and abruptly contract into the leaf stalk. The calyx is uniformly green.

The species can be found in similar habitats to Primrose but favours more open aspects indeed its common name is a corruption of 'cow-slop' (i.e. cowpat), in reference to its preference for meadows.

Primula x polyantha – False Oxlip or Polyanthus. This is the natural hybrid of *Primula veris x vulgaris* which may occur where species grow in close proximity. The hybrid is intermediate, morphologically, between the two parents. If there is more than one flower on any stem and/or the flowers are not facing up (and are paler yellow rather than orange-yellow) then it is likely to be False Oxlip. If the plant has different coloured flowers i.e. not lemon yellow, then the specimen is likely to be a garden escapee of the cultivated hybrid primula which is often sold as 'Polyanthus'.

Primula elatior – Oxlip. This plant is not native to Scotland and so, if found, is likely to have been deliberately planted. The multiple flowers on each flower stalk all face the same way unlike the umbel of Cowslip which has deeper yellow flowers with orange flecks. The calyx is green but with dark green midribs unlike *P. veris.*

Wall ferns in Scotland

Heather McHaffie

Scotland does not have very extensive areas of limestone, but because we have so many mortared walls, ferns that like lime have a very generous amount of habitat. Some large ferns that prefer to grow on the ground might start off on a wall but usually succumb to a dry season in the end so most wall ferns are smaller, send their roots deep into the cracks and are nearly all evergreen.

There are several very common ferns that are Spleenworts, or Asplenium, named for their herbal properties for the spleen. In lowland areas on damp walls, often near the base, is *Asplenium scolopendrium*, Hart's-tongue fern. This has the simplest kind of frond with a flat, tapering blade. While this is not the commonest fern in the wild, it is very frequently grown in ordinary soil in gardens and has many varieties with forked-tip fronds and undulating margins. It illustrates very well that Asplenium all have a linear arrangement for their spore cases (sporangia) which are found on the back of the frond. Spores develop inside the tiny little round spore cases, and these are clustered together in groups. Each group is called a sorus (one sorus lots of sori). All Asplenium have a linear flap, an indusium, that covers the sorus as they develop, and this species actually has two indusia, one of each side of the sorus. Well grown plants can be 60cm tall.

Asplenium scolopendrium. (photos Heather McHaffie)

***Asplenium scolopendrium* sori.**

Asplenium trichomanes, the Maidenhair Asplenium, is so called because it has a shiny, brown stem like the true Maidenhair. This species is very common. Like all these small ferns, rarely more than 15cm high and the shiny, brown stem has little leaflets, or pinnae, along its length. The tiny sori on the back of each pinna have a herringbone arrangement. There are other subspecies and varieties similar to this one, but they are not so common.

Asplenium trichomanes.

***Asplenium trichomanes* sori.**

The Wall Rue, *Asplenium ruta-muraria,* has irregularly branched fronds terminating in rather diamond-shaped pinnae a little like rue, *Ruta graveolens*. It is very dark green, and the plants are often concentrated towards the top of a wall, perhaps where more moisture is retained under the coping stones. The same herringbone-like arrangement of the linear sori is seen on immature fronds. As in all ferns, once the spores are mature the indusium flap shrivels back and the spore cases (sporangia) open and present a fuzzy, brown appearance covering the underside of the frond.

Asplenium ruta-muraria.

***Asplenium ruta-muraria* sori.**

Less common is the Black Spleenwork, *Asplenium adiantum-nigrum*. This a shiny green fern with well-divided triangular fronds that are dark towards the base. Like all these wall ferns, if the wall is repointed the ferns can often reappear after an interval, either bursting through thin mortar or from spores. Contrary to what one might expect these small ferns do little damage, growing in cracks and crevices with most of the fern crown outside the crevice, unlike tree roots which could prise stones apart.

***Asplenium adiantum-nigrum* sori.**

Asplenium adiantum-nigrum.

A final Asplenium, more common in the south and west of the UK, is found in Scotland in a few places sometimes on walls near houses although also in wild populations. *Asplenium ceterach* is called the Rusty-back Fern because the back of each frond is densely covered with scales so that the sori are not so easily seen. During dry periods the whole plant curls in on itself leaving only the scaley side exposed. But when it rains, the fronds open out again.

Asplenium ceterach.

***Asplenium ceterach* sori and 'rusty' underside.**

A common species on mortared walls that is not an Asplenium is the Western or Intermediate Polypody, *Polypodium interjectum*. This has a simple frond with linear leaflets or pinnae. This differs from all the previous Aspleniums in having an oval group of sporangia, the sorus, with no covering at all. The spores are orange and when the spore cases are ripe the sporangia look like lots of tiny, orange balls. If the wall is built of acid rock and is not mortared, the sorus should look more circular (rather than oval) and the species is probably *P. vulgare*, the Common Polypody. This latter species is more common on trees and on the ground in acid woodland.

Polypodium interjectum.

Finally, on damp walls, the Brittle Bladder Fern, *Cystopteris fragilis*, might be found. Another small fern with a delicate frond divided into many leaflets this might look like a young version of a larger fern. But when the back of the frond is inspected, immature sori look like little balloons, or bladders, with a ragged top. Once the spores are ripe the indusium will split to show the black spore cases containing the dark spores. Nearly all ferns have species-specific spores and for this fern the microscopic spores have lots of spines.

Cystopteris fragilis.

***Cystopteris fragilis* sori.**

Young Bracken *Pteridium aquilinum* growing in an urban setting.

Wall ferns can be found almost anywhere and add interest to walking around built-up areas. It is also possible to find non-native species that have escaped from cultivation.

Young Bracken, *Pteridium aquilinum,* makes a surprise appearance as it can tolerate lime in the juvenile phase, when it looks very different from the familiar plant of open hillsides.

The British Pteridological Society (BPS) has web resources which are publicly available to those wishing to know more about ferns.

The identification pages are especially informative with a useful key to common species as well as a helpful glossary.

There is a Scottish branch of the BPS which organises meetings, lectures and field trips. Details of their events are available here. Members of BSBI are welcome to join these events but please advise the BPS event organiser in advance.

Other accessible fern identification resources are available on this dedicated BSBI webpage.

And finally, if you are inspired by Heather's article to search out ferns on walls within our area then do please share your records with the Vice-county Recorder. All records will be gratefully received.

The Conservation of Juniper

James Baker and Daisy Crowson

Introduction

The common juniper, *Juniperus communis*, is a small, coniferous evergreen in the cypress family (*Cupressaceae*). As one of only three conifers native to the UK, it serves important ecological roles: it is a keystone species in many of the habitats in which it occurs and hosts a large number of other species among its branches, including many invertebrates, lichens and bryophytes. Juniper also acts as a "nursery species" for other trees, aiding their regeneration by protecting vulnerable seedlings from grazing (Figure 2).

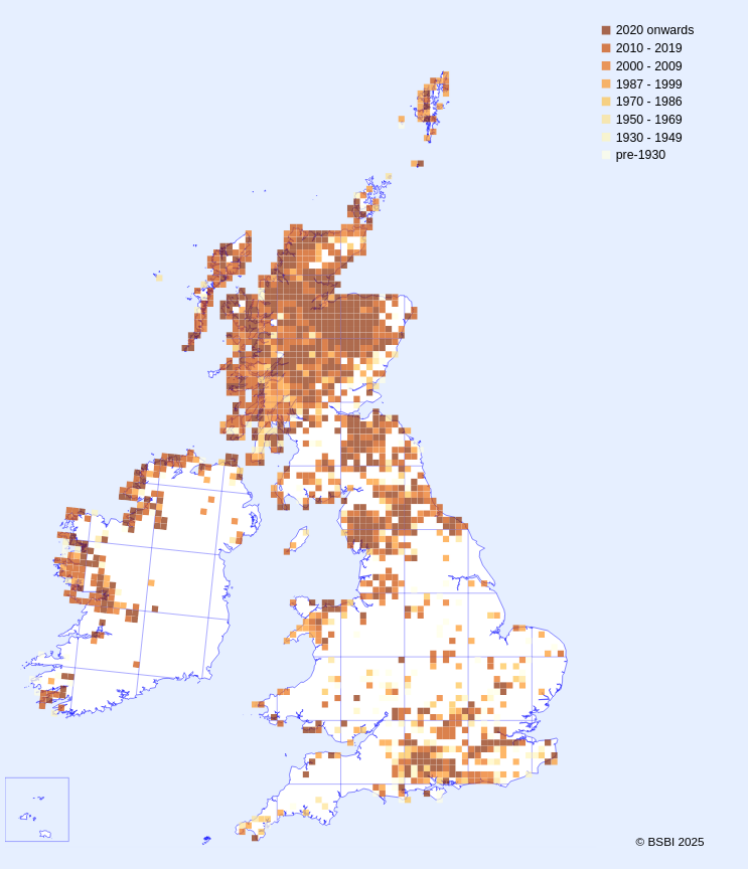


Figure 1 BSBI species distribution map for *J. communis* for all records. Grid square colours represent the year period from the most recent database entry for each hectad.

Juniper trees have small needle-like leaves, grey-brown bark that peels as the tree matures, and are dioecious, meaning that individual trees have either male or female reproductive structures (strobili and fleshy cones, or "berries"). Although they may be easily confused with gorse at a distance, juniper trees can be distinguished by the characteristic streaks of grey-to-blue-green that run along the middle of their needles and the distinctive dark-purple berries produced by female plants (Figure 3). They have very diverse growth habits that reflect their environments, growing as upright mid-story trees, sprawling shrubs, or prostrate, ground-hugging stems (Figure 5). This phenotypic diversity generally supports the idea that juniper is a pioneer species that will happily colonize areas after natural disturbances. However, junipers are also very particular about the conditions they require for natural regeneration – for example, too much or too little grazing, soil moisture or soil nitrogen may hinder their seedling growth – so mimicking natural disturbances alone may not be sufficient to encourage seedling growth.

Figure 2 Bare juniper branches often act as scaffolding for lichens and bryophytes (left) or as "nursery trees" for other tree species (right): with arrows pointing to protective "nursery" junipers which other species of trees have grown.

In addition to its great ecological value, juniper also has significant economic, cultural and historical importance in the UK. There are written records dating as far back as 1500 BCE that describe the use of juniper extracts to treat everything from tapeworms to arthritis, while folklore claims that juniper wood was preferred to fuel illicit whisky stills during the Highland Clearances because it produces a smokeless flame. Indeed, a notable number of extant populations can be found near the remains of habitation across the Highlands. Today, juniper is probably best known for its role in gin production where its berries and stems are used to instil their characteristic flavours. However, many UK distilleries have become reliant on imports of these traditional ingredients due to the precipitous decline of UK juniper populations.

Figure 3: Distinctive, mature juniper "berries," which are technically "galbulus" fleshy cones. Immature, green berries are also visible near the tip of the left branch.

Conservation status of UK juniper

Juniper populations in the UK have been in decline for at least the past century (Figure 1) due to several factors, including land-use change, habitat fragmentation, overgrazing, and reproductive senescence. As a result, remaining populations are very small, with over half of all surveyed populations in Scotland containing as few as 10 individuals, according to a 2003 NatureScot survey. Furthermore, many of the remaining UK populations are largely composed of older individuals with some stands failing to reproduce entirely, despite intensive conservation efforts. This decline has led to juniper's listing as a Biodiversity Action Plan Priority Species, and juniper scrub habitat's listing as a habitat of European Community interest.

Since the early 2000's, juniper has also come under serious threat from the invasive pathogen *Phytophthora austrocedri*, which is causing extensive mortality in juniper populations across the UK, particularly northern England and Scotland. *P. austrocedri*, which spreads through soil or water, invades the roots and lower stems of juniper trees, forming necrotic lesions that eventually girdle and kill the tree (Figure 4). Most juniper individuals appear to be highly susceptible to *P. austrocedri*, and the threat to UK juniper posed by this invasive pathogen is therefore significant.

Figure 4: Left: even, plant-wide bronzing of needles that is typically symptomatic of *P. austrocedri.* Right: hillside of juniper "skeletons" that are left after *P. austrocedri* infections kill juniper trees. Some healthy trees are also visible.

Conservation managers and researchers are also concerned with how fragmentation and reproductive senescence are affecting the genetic biodiversity of populations. Genetic diversity underpins a population's capacity to adapt to changing conditions and respond to new threats, such as *P. austrocedri*. Therefore, understanding the patterns and degree of genetic diversity among populations can help conservation managers elucidate if, and to what extent, juniper populations can adapt through natural selection.

The genetic diversity, population genetics and degree of adaptive potential of juniper populations in the UK is generally poorly understood. For example, are junipers similar to Scots pine, in that they are capable of long-distance gene dispersal, or are juniper populations more akin to yew, being more susceptible to the genetic effects of habitat fragmentation? Is the variation in growth forms among juniper populations an example of long-term local adaptations, or of phenotypic plasticity? Does juniper have appropriately diverse and distributed genetic variation that will allow it to develop natural resistance to *P. austrocedri*, or are all individuals highly susceptible to this pathogen? These are some of the gaps in knowledge that our research aims to investigate!

Figure 5: Juniper trees can assume a diversity of growth habits, such as prostrate stems (top left), dense shrubs (top right), upright trees (bottom left) or intermediary forms (bottom right).

Ongoing research

Our research is investigating these questions by evaluating the genetics of remnant UK juniper stands using neutral genetic markers and common garden trials, in addition to evaluating host-pathogen dynamics through *P. austrocedri* inoculation trials. Population genetics, or the evaluation of neutral, non-coding, genetic markers, can inform researchers about historic demographic processes, such as migration, fragmentation and population bottlenecks. Preliminary findings of the population genetics among UK juniper stands have found different levels and patterns of gene flow among juniper stands across the UK. For example, populations in Oxfordshire are genetically distinct from each other, despite being separated by only a few kilometres, whereas those in the Lake District are genetically indistinguishable. Stands in Scotland seem to be capable of a relatively intermediate level of gene flow: they may be

able to exchange limited amounts of genetic material between populations, but not enough to prevent notable genetic differences from arising between populations. These patterns in genetic markers indicate that juniper is susceptible to the genetic isolation that is a consequence of habitat fragmentation, but that it is not solely a question of distance between populations.

In contrast, quantitative genetics, or comparisons of trait measurements, can provide information about which traits are genetic, local adaptions, and therefore important for the long-term fitness of populations — or alternatively, which traits are phenotypically plastic, and capable of more rapid adaptations. This information, in turn, helps us to infer the degree of adaptive potential among populations. Using common garden trials to evaluate quantitative genetics of trees from UK juniper stands has indicated the importance of local adaptations for juniper's fitness. Different populations were found to have significant differences in about half (6 of 11) of the measured traits. In other words, populations are highly genetically adapted to their local environments, and these adaptations persist in offspring grown in a greenhouse setting.

The common garden trial also found evidence for regional adaptations: plants from southern England had significantly longer and narrower needles than plants from either Scotland or the Lake District, and furthermore, southern English plants had a distinctive, upright growth habit. Although the adaptive functions of these traits are unclear, summer drought has been found to be an important selective factor across Europe, and it likely plays a role in the UK as well.

Lastly, we have also been carrying out a series of pathogen inoculation trials to investigate whether juniper populations show genetic variation in the degree to which they are susceptible or resistant to *P. austrocedri*. These trials have demonstrated that a small proportion of individuals within many juniper populations exhibit both qualitative and quantitative genetic resistance to *P. austrocedri*. Although the frequency of more resistant individuals is fairly low, their presence in most populations studied and the fact that the resistance has a heritable genetic basis are positive signs for juniper's potential to respond and adapt to this new threat.

Conclusions

Juniper trees come in a beautiful array of shapes, sizes and colours (Figure 5). They are one of only three native conifers in the UK and support a massive diversity of other species. Their cultural significance extends far beyond gin, and the extinction of junipers in the UK would be an irreplaceable biological and cultural loss.

Our work on the population and quantitative genetics of UK juniper stands has two main findings: that juniper populations are likely sensitive to habitat fragmentation, and that junipers have become highly adapted to their local environments. The inoculation trial's key finding is the existence of individuals among native UK stands with a natural resistance to *P. austrocedri*.

The introduction of *P. austrocedri* poses unique challenges for juniper conservation. The pathogen has been shown to spread through the movement of plant material, potentially implicating planting efforts as a source of infection to previously uninfected stands. For this reason, Forest Research strongly discourages any planting within a 2km radius of existing populations. However, promoting natural regeneration is essential. In doing so, we allow juniper to continue to adapt through natural selection. Therefore, conservation managers must find the balance between facilitating natural selection and the risk of introducing *P. austrocedri* to naive populations.

If populations are failing to regenerate naturally, seedlings can be grown and planted in satellite populations outside the recommended 2km radius. This should ideally help to prevent the spread of *P. austrocedi* infections while maintaining adequate proximity for gene flow. We are currently conducting a germination provenance trial that will provide specific guidance on how best to grow juniper from seed. Finally, consideration of local adaptations is important for planting efforts. As the saying goes among foresters: plant the right tree in the right place. Seedlings will be adapted to similar environments as their parents, so conscientious seed sourcing will be vital for conservationists.

Protecting junipers will require intensive management and a combination of approaches. It is an unfortunate possibility that saving every stand is not feasible. However, through thoughtful research, careful planning, and the persistence of dedicated conservationists we can protect native juniper stands and enable their adaptation to a changing environment and novel pathogens.

Aquatic Plants

Peter Wiggins

I like aquatic plants and have been studying them in detail over the last couple of years. In this short article I want to share some identification tips I have learnt as well as providing details of the resources available to discover more about this most interesting group of plants.

Why Aquatics?

Aquatic plants are under-recorded, and though we believe they are declining there are insufficient data. Significantly, water plants are more sensitive to the environment than their land-based relatives so it would be good to know more about their status and how environmental change is affecting them. There are also concerns about the impact of new, invasive aquatic plants, indeed in my local garden centre I was looking at the water in which some aquatic plant pots were sitting and there were some really odd-looking duckweeds. Conceivably, these aliens might well be appearing in a pond soon and perhaps to the detriment of the native flora.

How to find aquatic plants

Fig. 1 Waterwort, *Elatine* sp..

(All photographs by Peter Wiggins unless indicated.)

Obviously, the answer is with care! They are in or beside rivers, ponds, lochs and canals all of which can be potentially dangerous environments. Suffice it to say, don't take risks: litter pickers and walking poles are useful for accessing plants around the water's edge and I don't walk into any water without a pole for stability and to prod ahead for safe, shallow footings. I do use a grapnel, less than I did and in a more targeted way, in the areas I think might be fruitful.

It is difficult in water courses to know what plants are present as many will be below the surface and out of view. Binoculars can help by enabling you to have a closer look at things from a safe place. Most binoculars now have polarised lenses which reduce the glare from the water's surface and allow you to see some distance under the surface.

Note the prevailing wind and look at any detritus blown to the water's edge where you can often see a sample of the plants that reside in the water.

Look also in the mud and gravel at the water's edge. You might see plants you don't recognise: I was looking at what looked like seedlings in a few centimetres of water but they were actually fully-grown Waterworts, *Elatine sp*, flowering in their understated aquatic way. (Fig 1)

Identifying aquatic plants

You have to approach the identification of aquatics differently from the standard approach taken to land-based plants because most aquatics lack showy flowers. Fortunately, flowers on aquatic plants are generally not that important in identification. Many aquatics plants are in their own aquatic plant families. Some may look very similar but are from completely different families.

Fig 2. Water Lobelia, *Lobelia dortmanna* (left) and Awlwort, *Subularia aquatica (right).*

Fig 3. Water-plantain, *Alisma plantago-aquatica.*

Fig 4. Pillwort, *Pilularia globulifera* (a fern).

Fig 5. Shoreweed, *Littorella uniflora.*

There is a simple way, however, to become quite good at identifying aquatic plants (see box below).

Nick Stewart is an aquatic plant expert. For the last five years he has been leading the Aquatic Plant Project across Ireland. He has produced a series of excellent webinars on the BSBI YouTube channel. He takes an absolute beginner through many plant forms (Feathery-leaved aquatics, Stringy-leaved aquatics, Spiky-rosette aquatics etc.) to family level and then in a series of videos on those families down to species. Working through the videos and with a bit of practice, you can readily identify aquatics to family and most to species level. He has also prepared a number of short simple written keys. The videos, keys and lots more are available at Aquatic Plant Project .

Notes on some aquatics

These notes assume that you are in VC76, 77 or 99 and consequentially the information may not be true elsewhere, especially in southern England.

Water-starworts *Callitriche spp*

Many botanists don't go beyond the genus level, but here are some tips to do better and be more precise:

- *Callitriche* have opposite pairs of leaves with a notch at the end of the leaf or, at least, are truncate, with parallel veins and a green, round stem.
    - If clearly pointed, opposite leaves joined across the stem: consider *Crassula helmsii*,New Zealand Pigmyweed.
    - If red stem, different flowers, rounded tip to the leaves and oval stem: consider *Lythrum portula,* Water Purslane.
    - If square stem, opposite leaves: consider *Stellaria alsine,* Bog Stitchwort.

- There are two leaf types: underwater leaves and the rosette leaves on the surface.

- You need fruits and possibly flowers to get to species despite what some books say about leaf dimensions and shape. The microscopic appearance of the scales mentioned in the BSBI Handbook is now considered unreliable.

- Fruits are produced from flowers, then the plant grows on and up, so look down the bottom of the stem for the most mature fruits. They are about 1mm wide and look like two circular, very small beanbags squished together at the top of the base of the leaves, next to the stem. Look at the style which can come out the top and go up (Fig 6) or come out the side and then go down (Fig 7).

Fig 6. Note style at the top of the fruit.

Fig 7. Style indicated at side of the fruit.

- In acid and upland areas Pedunculate Water-starwort, *Callitriche brutia,* is the commonest of the genus and its style comes out at the side and goes down. The plant has long, parallel-sided, underwater leaves and if there are any rosette leaves, they are thinner than the other species.

- All Water-starworts can grow on mud beside water in a terrestrial form. (Fig 8). If you think you have Pedunculate Water-starwort, *Callitriche brutia*, growing on mud, then carefully dig up a bit of the stem including the soil underneath and wash it off. The terrestrial form of one of the two sub-species (sub-species *brutia*) buries the fruit in the mud on 2-12mm stalks, hence its common name. If you pull it up from the soil, then the fruits are left buried, and you cannot confirm the sub-species. I now find it more often since I learnt this! You can identify Pedunculate Water-starwort by thin leaves, even the rosette leaves, and the downward style on the fruit.

Fig 8. *Callitriche brutia*

- If the style goes up, then you have one of three Water-starwort species (*CC. stagnalis, platycarpa, obtusangula*) or maybe, a fourth, *C. palustris*.

- *C. stagnalis* and *C. platycarpa* are much more common than *C. obtusangula*; *C. palustris* is found around Loch Lomond.

- *C. stagnalis* and *C. platycarpa* can only reliably be told apart by examining the pollen under a x100 microscope. Identification using a microscope is easy, but it requires a flower, which is just a single anther on a filament. To find one, I usually check a patch of Water-starwort with binoculars looking for the white or yellow dot on a rosette: that is a flower (Fig 9).

- I'm happy to identify whether a specimen is *C. stagnalis* or *C. platycarpa* from its pollen: just pop a specimen in a bag and post it to me.

- If you can't find a flower, simply record the plant as *C. stagnalis agg*. with an 8 figure reference and send your record forward in the usual way.

Fig 9. Flowers of Common Water-starwort, *C. stagnalis,* which can be seen easily in the upper rosette.

- Including *C. hermaphroditica*, an unusual species I haven't mentioned, we probably only have six species in our area (one of which has two sub-species), which is not a lot. So, have a look at the video and give *Callitriche* identification a go!

Pondweeds *Potamogetons*

We have twice as many pondweed species in our area than Water-starworts. The commonest are Broad-leaved Pondweed, *P. natans,* and Bog Pondweed, *P. polygonifolius*. They are not hard to tell apart:

- Broad-leaved Pondweed, *P. natans,* is normally swimming with its leaves on the surface. If you lift one out and hold the stem horizontally, the leaf blade will droop vertically down and swing back and forth on its hinge. This is a short section of the stalk, just as it enters the blade, 5mm or so long and usually a slightly lighter colour. In a living leaf, the veins are almost translucent and the cross veins are not obvious. It doesn't have recognisable submerged leaves.

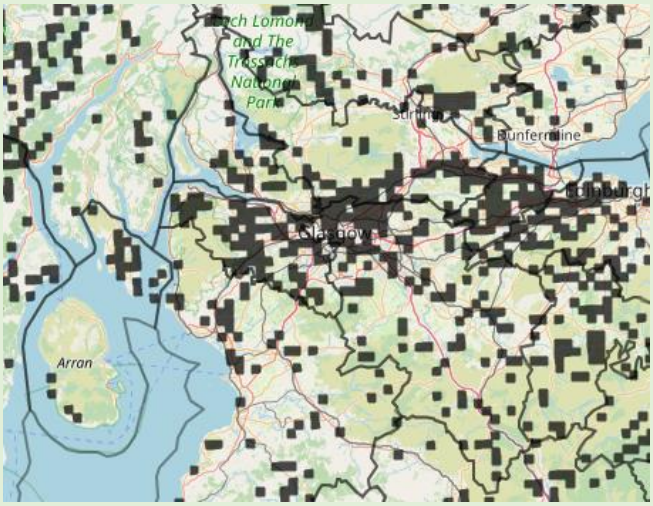


Fig 10. Distribution of Broad-leaved Pondweed, *P. natans.*

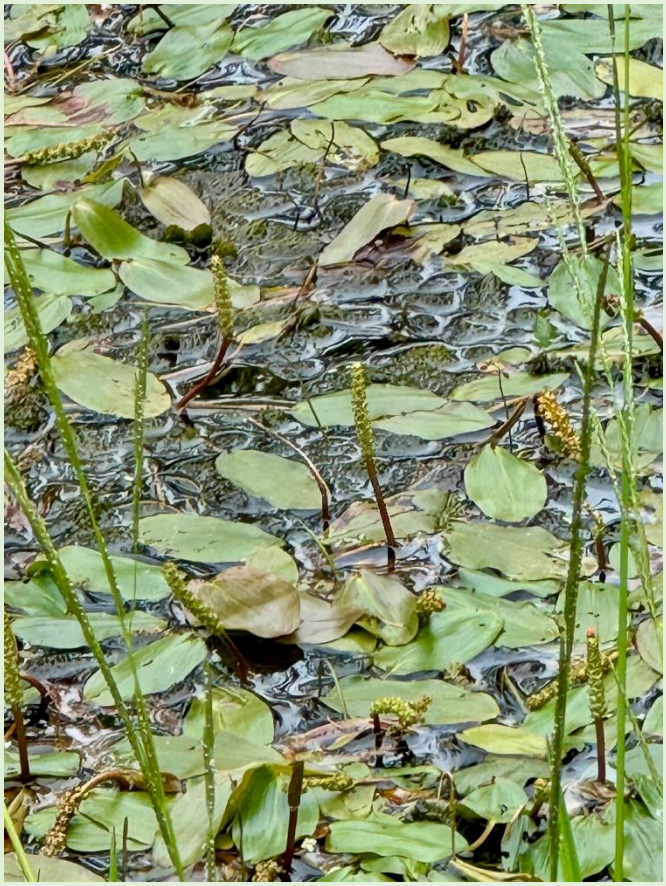


Fig 11. Inflorescence of Broad-leaved Pondweed, *P.natans.*

Fig 12. Note translucent veins and lack of visible cross-veins.

Fig 13.Hinges and discolouration indicated. (F Henderson)

- Bog Pondweed, *P. polygonifolius,* is normally found in shallow pools or on wet mud. It can also be in deeper water and does have thin submerged leaves. Unlike *P. natans*, the floating leaves of *P. polygonifolius* don't have the hinge, the veins are darker and the cross-veins prominent.

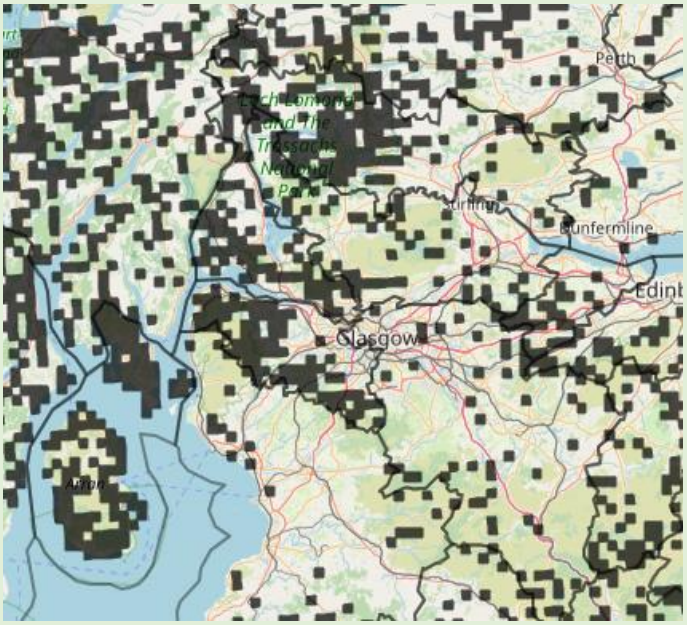


Fig 14. Distribution of Bog Pondweed, *P. polygonifolius.* BSBI

Fig 15. Bog Pondweed, *P. polygonifolius.*

Of course, water levels vary, and it is easier with more mature leaves to see the difference between species. Once you are more familiar the "flowers" or inflorescences of Broad-leaved Pondweed, *P. natans,* stand out and they are the largest of any species we have in the UK.

There are 12 species plus hybrids in the UK, including one hybrid, *Potamogeton x bennettii* (if it still exists in the Forth and Clyde Canal) that is not found anywhere else in the world.

If you have tried identifying Pondweeds before you may be thinking what about the stipules, which are used in keys in other books, but not in Nick Stewart's keys where the stipules are only used to split Lesser Pondweed, *P. pusillus,* and Small Pondweed, *P. berchtoldii*. His keys mainly rely on the shape of the end and base of the leaves, and whether they are stalked or toothed.

Using Nick Stewart's keys I have been able to identify to species level with only a hand lens all of the species I have found for the past couple of seasons. I have sent a number to the genus referee as well but my identifications have, so far, proved correct. Do take a look at Nick's videos on broad-leaved and narrow leaved pondweeds and his keys. I do urge you to give them a go!

Waterweeds *Elodea*

These 'weeds' live up to their name! They are the creeping buttercup of many waterways, in that they can dominate and choke the shallows of canals and lochs. I have a theory that waterfowl prefer Pondweeds to Waterweeds: I have seen swans munching Pondweeds when I really wish they would clear the Waterweeds. We only have female plants of the two species in the UK and their flowers are quite pretty (when seen under a hand lens). The species are *Elodea canadensis* and *E. nuttallii* and telling them apart is not hard. Figure 16 shows a section of stem from each, on the left, *E. canadensis* and, on the right, *E. nuttallii*.

The Canadian Waterweed, *E. canadensis,* has mainly paired leaves with broad, blunt tips (Fig 17) whereas Nuttall's Waterweed, *E. nuttallii,* has whorls of three to four recurved leaves which are thinner, longer and taper to an acute point (Fig 18).

Both species are introductions from North America and can now be found widely across our area (Figs 19 & 20).

The plants reproduce readily by asexual fragmentation, and many populations probably consist entirely of individuals of the same sex, having originated from a single, introduced, plant fragment. While both species have thin and wiry roots that can anchor the plants into mud, they can grow equally well floating in static or slow moving water.

Fig 16. *E. canadensis* (left), *E. nuttallii* (right).

Fig 17. Canadian Waterweed, *E. canadensis.*

Fig 18. Nuttall's Waterweed, *E. nuttallii.*

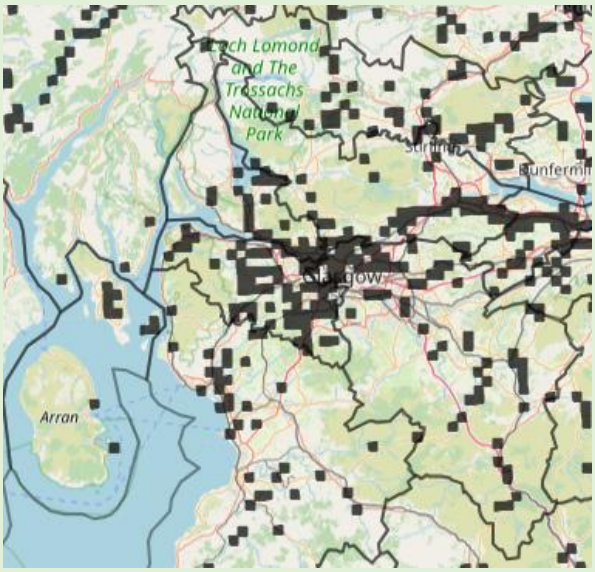


Fig 19. Distribution *E. canadensis,* central Scotland. BSBI

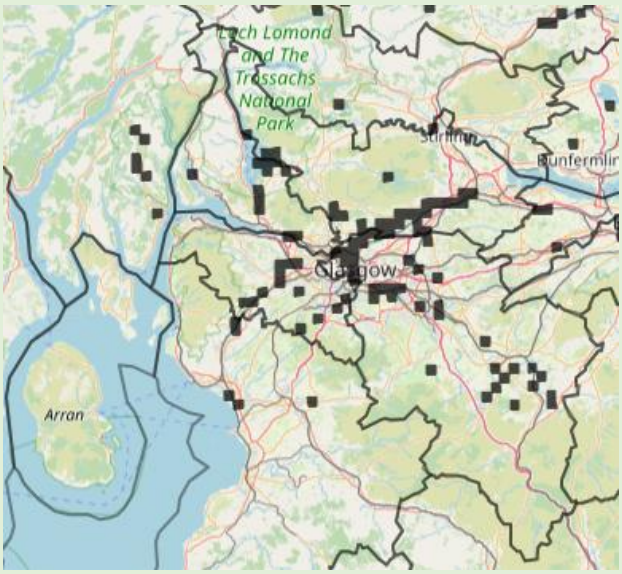


Fig 20. Distribution *E. nuttallii,* central Scotland. BSBI

Duckweeds *Lemna, Spirodela* and *Wolffia*

These are simple, until they are not! Let me explain.

Wolffia is not present in Scotland… yet. They are tiny plants and don't have any roots. In the UK they have been recorded in Kent, London, Somerset and south Wales and appear to be spreading west- and northwards.

Fig 21. Distribution of Greater Duckweed in West Lothian, Midlothian and Lanarkshire VCs. BSBI

We hardly have any Greater Duckweed, *Spirodela polyrhiza*, records.

These plants are noticeably bigger with many more roots than the Duckweeds (*Lemna spp*) we are used to and so are easy to identify.

The number of records is increasing, and I believe we can expect to be recording the species more within our area.

S. polyrhiza grows in base-rich water in ponds, ditches, canals and slowly flowing rivers. It is particularly frequent in grazing marshes. It tolerates high nutrient levels and in cultivation it flourishes when grown on diluted cattle slurry. Flowers have only been reported once in the UK (in 1906) and reproduction is by vegetative budding. BSBI

We have four *Lemna* species of Duckweeds.

- Ivy-leaved Duckweed, *Lemna trisulca*, is common. It's easy to identify as the plant is all joined up (Fig 22). It is often found just under the water's surface, on mud or on top of Waterweeds, *Elodea*.

- Least Duckweed, *Lemna minuta,* is, as the name suggests, the smallest *Lemna* (bigger than the really tiny *Wolffia*) (Fig 23). However, it is a paler grey-green and remains so, whereas our next two species *LL minor* and *gibba,* though obviously small at some point, are a brighter green and grow larger. *L. minuta* is over-recorded for small *L. minor*.

- Determining Common Duckweed, *Lemna minor* (Fig 24), and Fat Duckweed, *L. gibba,* identification is where it suddenly gets hard. Fat Duckweed is so called because later in the season, it becomes thickened and possibly red and then is obvious (Fig 25). Common Duckweed doesn't do this, but earlier in the season before *L. gibba* inflates *L. minor* can apparently be distinguished by the width of the air pockets underneath the leaves, being less than 0.3mm, whereas Fat Duckweed, before it swells up, has air pockets 0.3-0.7mm wide. I find this hard. Other botanists say these two duckweeds actually have a different shape which is even harder. There is a thought that there is a third form – a hybrid between the two!

- As a consequence of the issues raised above, I now record *LL. trisculca* and *minuta* to species level and *LL. minor* and *gibba* as *Lemna spp.*with an 8 figure reference just in case I learn how to identify them more clearly in the future and can return: by then, of course the garden centre aliens may be on the loose!

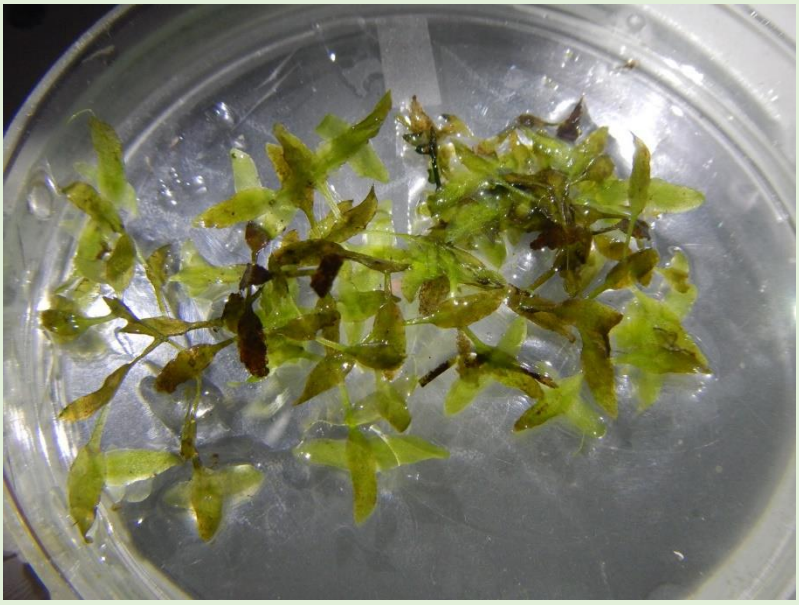


Fig 22 Ivy-leaved Duckweed, *Lemna trisulca.*

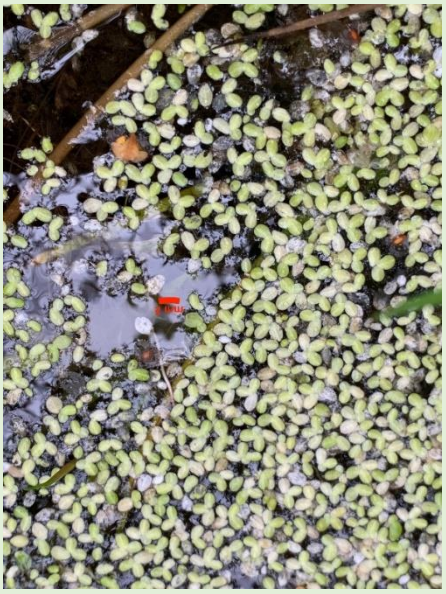


Fig 23. Least Duckweed, *Lemna minuta*.

Fig 24. Common Duckweed, *Lemna minor*.

Fig 25. Fat Duckweed, *Lemna gibba.*

Bur-reeds *Sparganium*

There are four species of this genus in our area. They are, in decreasing number of records, *SS. erectum, emersum, angustifolium* and *natans*. Despite what some books might advise, plants cannot reliably be identified to species without seeing their flowers or seeds, fortunately they do oblige in this respect from early summer to late autumn.

The important things to note are: whether the inflorescence branches; the width of the leaves; and whether the leaves are keeled towards the stem. Those three factors will take you to species level. However, if you have difficulty do not worry about recording specimens as *Sparganium sp*. with an 8-figure reference.

Fig 26. Unbranched Bur-reed, *Sparganium emerson*.

Fig 28. Branched Bur-reed, *Sparganium erectum*.
(Fiona MacFarlane)

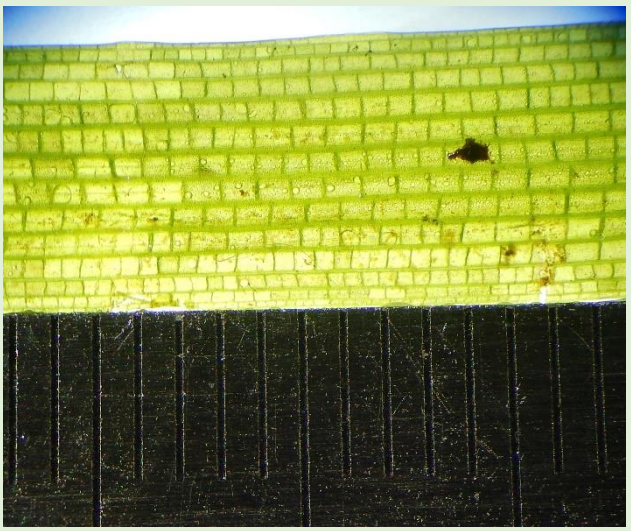


Fig 27. Distinctive leaf structure of Unbranched Bur-reed, *Sparganium emerson*.

I hope this brief overview of Aquatic plant identification has at least provided a stimulus for you to have a go at investigating and recording these often over-looked yet interesting plants.

Dandelions: photo-identification

Michael Philip

John Richards (BSBI Dandelion referee and author of the BSBI Dandelion Handbook) has kindly agreed to offer identification from photo-sets.

The 'window of opportunity' for Dandelion identification is very short, during the very first flowering period from early April to the second week in May. Working from photos is not an exact science, but we can reasonably expect something like a 70% hit rate.

If you'd like to have a go, we can suggest places near you with interesting species to re-find, or by all means just choose a handsome specimen anywhere!

ALL the formats shown below are to be included in your photo-set. You will need a pen-knife to cut the plant off below the basal rosette of leaves but above the tap-root. This will ensure the plant will regrow.

Please take your photos against a neutral background, such as a road, pavement, concrete - or using a large sheet of sacking or plain paper. Avoid taking photos in full sun and make sure that close-ups are perfectly in focus.

The following information should accompany your set of photos:
- Date
- Name of recorder
- Grid reference (preferably 8-figure)
- Location name
- Note of habitat

Please submit your photos and field notes in the first instance to: Michael Philip botany@opus44.co.uk

We cannot guarantee that every submission we receive will be forwarded to the referee, nor that everything submitted achieve an identification.

Thank you - and good luck!

An example of the required photographic format is provided below:

1. The whole plant in situ, showing its general habit, size and habitat.

2. The whole plant, cut off above the root, showing the length and colour of stems and leaves.

3 and 4 Whole leaves, front and back, showing midrib colouring and lobe shapes.

5. Unopened bud, if available.

6. Flower viewed obliquely across the top, showing colour of ligules and stigmas, and whether pollen is present.

7. Flower viewed obliquely from below, showing colour of ligule stripe and teeth, and disposition of bracts.

[The above photos were successfully identified by the referee as *Taraxacum procerisquameum*. This was a first vice-county record for Dunbartonshire.]

***T.procerisquameum* distribution. BSBI**

Taraxacum procerisquameum "Large-headed Dandelion"

Introduced. Fairly widely distributed through England and Wales, but missing from large parts of eastern England and with a handful of records from southern Scotland and Ireland (see distribution map opposite). Most records are from the twentieth century and it seems to have become much scarcer in recent years. It is found in waste places, road verges, gardens and walls.

A tall, robust dandelion with rather grey-green, shortly hairy leaves. Petioles white on outer leaves, pink on inners, rather short, winged. Leaf side-lobes 3-4, somewhat recurved, sigmoid on distal margin and often forming a hump close to the mid-rib. Interlobes parallel-sided. Leaf end-lobes heterophyllous, acute, longer on inner leaves, tending to be trilobate on outer leaves, and usually with a rounded subdivision (or two) unilaterally. Exterior bracts pale, recurved, very long (to 18 mm). Capitulum flattish when expanded, to 65 mm in diameter or more. Most likely to be confused with *T. rhamphodes* which is less hairy, has very pale grey exterior bracts and distal leaf-lobes which point forward. BSBI

Fancy some solo recording?

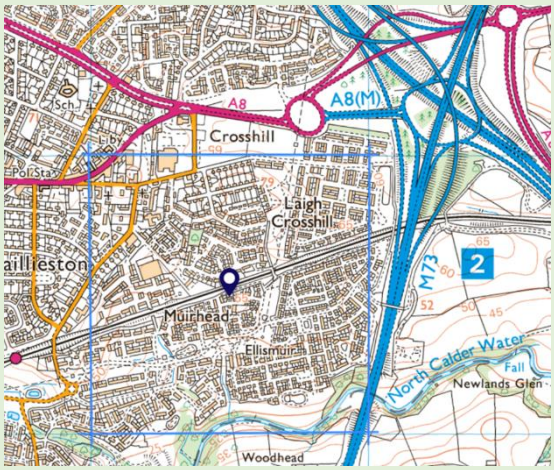
Peter Wiggins & Michael Philip

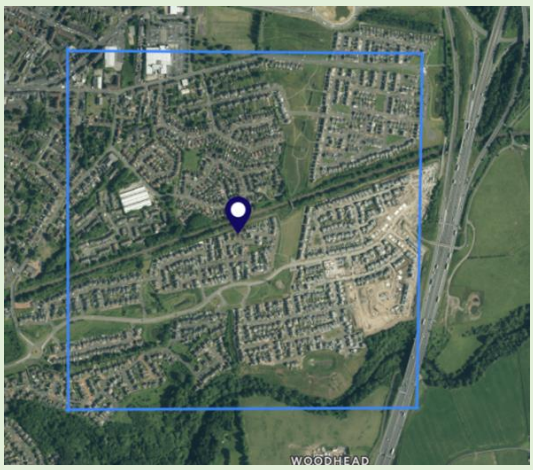
Here are details of some monads that need records. We would welcome any records from within these squares. Record within your confidence and if you are not sure of a plant, either “walk on by” or take a picture (or two) and send it to Michael or Peter.

There are many squares that need more records and here are a few chosen because they can be accessed by public transport. If you would like more target squares, contact Peter or Michael and we will be happy to suggest some other places.

Baillieston NS6863

This is an urban area just southwest of the M73/M74 Baillieston Interchange. It has only seven recent records since 2017 and another seven records from the last century.

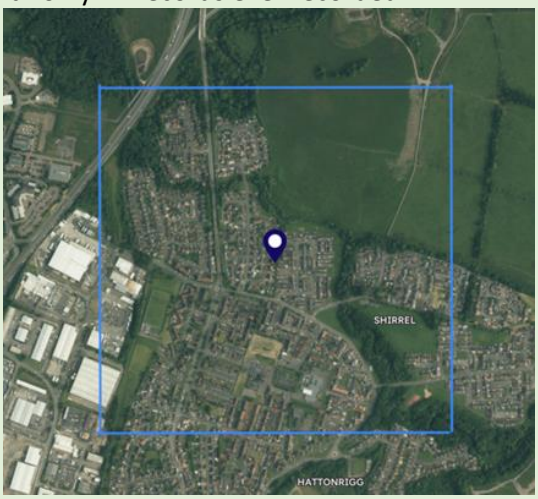




The monad is bisected by a railway line with a single footbridge. There are some grassland open spaces, urban streets and a river. The North Calder Water may not be accessible but just north of it is a pond / marsh area as part of a Sustainable Drainage Systems (SuDS) just north of the river beside the housing estate. So there are varied habitats. You can walk into the monad from the Baillieston Station and several bus routes from the centre of Glasgow.

Shirrel, Bellshill NS7361

This an urban area between Bellshill and Coatbridge with only 14 records ever recorded.

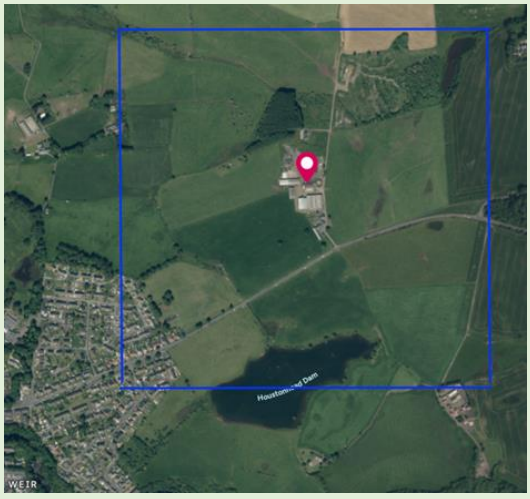


The area has housing, schools, industrial area, farmland and a country lane and is bisected by the Shirrel Burn which is wooded for some of its length. With these varied habitats there is likely to be a good botanical list. You can walk into the monad from Bellshill Station (about 1km walk).

Chapelton, south of East Kilbride NS6848
The small town of Chapelton sits in a monad with only 15 records.

The small town has urban streets and some green spaces and is surrounded by moorland and farm tracks. There is an hourly bus service to Strathaven which goes through Chapleton and there is the Chapelton Inn for a refreshment.

Between Houston and Bridge of Weir NS3966
This is a rural square between two towns in Renfrewshire. Although it has over 200 species from the last century there are none since then, so it is overdue a visit.



There is a pavement on the North side of Houston Road. The monad includes a small urban corner, but is mostly farmland, forest and heathland with two reservoirs. There are good bus services to both Bridge of Weir and Houston.

Houstonhead Dam

Near Houstonfield Dam

Sending in records

Peter Wiggins

A plant record needs four things:

1. Where it was found

2. The date

3. Who found it

4. And the plant name.

Obviously, you can specify the first three and then list the plants.

The plant name can be the scientific name, or the common name, either are fine - legibility is preferred (so says a retired GP!).

Where it was found is usually the monad – that is the 4-figure reference from an OS map to describe the one-kilometre square, e.g. NS5858. If you are recording from a defined area, like "Bluebell Wood", then specify this but if the wood spans two monads, then also specify in which monad the plant was found. It's helpful to give a location name: this is added to the database and is a check showing you wrote down the monad correctly. For any plant that is unusual or of special interest, give an 8-figure reference e.g. NS 5823 5837. An OS map reference is preferable to latitude/longitude figures which are more prone to transcription errors.

There are many free apps for your phone that will give your current map reference. My favourite is GridPoint GB which is only available on Apple. Grid Reference UK is similar and available on Android. OS Locate from Ordnance Survey is available on all phones. The BSBI website has a lot more information on records. There is also some useful information on knowing your location from the British Mountaineering Club.

I receive the records from three vice-counties for processing and adding to the BSBI database. They arrive mainly by email but also by post or in person. The various formats in which I have received records include:

- On a spreadsheet
- Typed document (usually Word)
- Official BSBI record card – one side listing 630 of the commoner species and the other side for the rest or records with an 8-figure reference
- Handwritten list – usually on plain paper (but also down the margins of The Metro and on the back of a curry menu)
- Pages ripped out of a notebook
- Photographs of pages from a notebook
- Series of photographs with suggested identifications added to a series of emails
- An audio recording from a walk
- And lately through BSBI recording App. (iRecord and iNaturalist are other recording apps, however they don't feed into the BSBI database quickly or reliably for the moment.)

All of the above are acceptable, but some are easier to deal with than others.

It is good to commit to an identification and note it down as it will improve your identification skills. If you are not sure, send a photograph or simply "walk on by".

Do not worry that you are missing plants: everyone does, and it is only by noticing and recording that we all improve.

Resources & Skills Development

The very best way to build skills is to spend time in the field with people who know a bit more than you do.

However, we also offer a range of other ways you can engage with learning and fieldwork:

Study Groups - Short Zoom group study courses are arranged from time to time by Peter Wiggins. Some are aimed at beginners, while others are for the more experienced. Please contact Peter for more information: pswiggins@gmail.com

Facebook - There is a Facebook Group called Clyde Wildflowers. This is where you can share news or photos and ask questions. This group is closed to the general public, but you are welcome to join. Just contact Peter for details.

WhatsApp - A WhatsApp Group has been formed. Its purpose is exclusively to make it easy for people to meet up more spontaneously to do recording. Again, Peter's the person to contact (pswiggins@gmail.com) if you would like access.

Photo website 'Flowers of Lanarkshire' is our website devoted to the county's flora. The photo galleries present a wide range of wild plants, and draw attention to some of their most helpful identification features.

Go to: https://www.vc77botany.org/

Training Pack - Again based on the Lanarkshire flora, these PDF publications cover 50 of the most common species. There are photos and jargon-free descriptions - and even an optional TEST to help embed knowledge! This is available from Michael Philip on request: botany@opus44.co.uk

Workshops - The Outings Programme (see Network web pages) includes (in grey italic) a wide range of plant identification workshops, both local and national, some charged and some free. There are many, many more Workshops, Training Field Meetings and Residential Courses offered by BSBI, the Field Studies Council and other organisations.

Courses - The BSBI offers two, more formal, training opportunities: **The Field Identification Skills Certificate** (FISC) is designed to give you an assessment of your current skill level, and to point you towards next steps. **Identiplant** is a one-year home-study course, supported by a personal Tutor. It is designed for those who want to go deeper into botany.

BSBI website - There is a mine of helpful learning material on the BSBI website: https://bsbi.org/. Please take time to explore this, including the dedicated YouTube channel which has many excellent videos on identifying species. There is also a dedicated page for each of our three vice-counties:

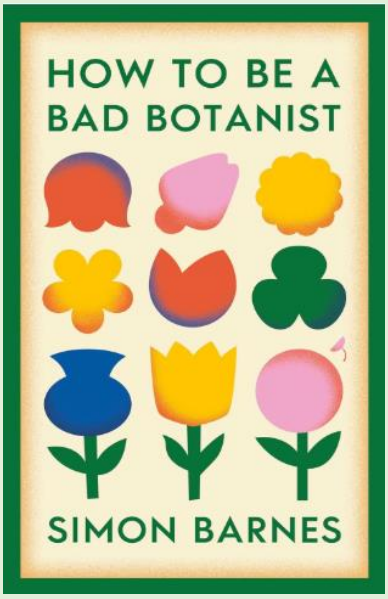
vc77 Lanarkshire https://bsbi.org/lanarkshire-v-c-77

vc76 Renfrewshire https://bsbi.org/renfrewshire

vc99 Dunbartonshire https://bsbi.org/dunbartonshire

There is also the West Central Scotland Botany Network – Botanical Society of Britain & Ireland which provides a background to the network, as well as accessing the Outings Programme for the Network and the current and past issues of Trifoliate. It's also a route to get back in touch if we ever lose track of each other.

Book Review



This is a delightful new book (2024) by a celebrated author and it chimes beautifully with the ethos and values of our local network.

Don't let the title fool you: he is not promoting bad botany! Rather, he encourages us to embrace the pathway of learning. A non-botanist starts to become curious and takes tentative steps to learn a plant or two. This book is for such a person. Aiming to get to the stage of being a Bad Botanist is a valuable stepping-stone to becoming a Better Botanist.

Packed with humour, surprising facts and delightful descriptions of plants, this is a celebration of the wonders of nature and the pleasure of learning.

Simon & Schuster UK; ISBN-13 978-1398518919; 288 pages.

It is available from all good bookshops.

Michael Philip

Contributions

Call for Contributions

Meeting notes, opinion pieces, book reviews, photographs, places to visit, identification keys and anything else connected with plants are all welcome. Feedback is also gladly received, so please share your thoughts and views on **TRIFOLIATE**.

If you would like to discuss or submit any material then please email the editor: Frazerhenderson1@hotmail.com and place **TRIFOLIATE** in the subject title.

Please note the views expressed by contributors are not necessarily those of the Network nor of BSBI.

Next Issue: July 2025
(receipt of copy no later than the end of **June**).

After a long day in the field, Bob had recorded 99 plants ..... only one more to find ..... but night was falling fast!

Cartoon: Liz McTeague