So you want to know your plants

A guide for future field botanists on...

- ▶ what to do
- ▶ where to go
- ▶ who to ask
- ▶ resources to use

Botanical Society of Britain & Ireland

Botanical Society of Britain & Ireland

The Botanical Society of Britain and Ireland is for everyone who is interested in the wild plants of Britain and Ireland. The society traces its origins back to 1836, when it was founded as the Botanical Society of London. From its earliest days it has welcomed both professional and amateur members, beginners and experts, and it remains the biggest and most active organisation devoted to the study of botany in Britain and Ireland.

The BSBI supports a wide range of botanical training initiatives, from field outings aimed at beginner botanists or focusing on particular species groups to training course leaders. We offer grants for attending identification courses and also run the popular Identiplant online course, aimed at near beginners wanting to take their identification skills to the next level. As you progress up the skills ladder, you will be able to test your botanical field skills by taking a FISC (Field Identification Skills Certificate) at centres across the country. Scientific research on British and Irish botany is supported through grants awarded by the Science & Research panel and through the work of the Science Team.

bsbi.org/training

The BSBI produces national Atlases and county Floras which describe the distribution of plants. It publishes a scientific journal British & Irish Botany and holds conferences, workshops and field meetings. Members are kept informed by online newsletters and our membership magazine BSBI News three times a year and are invited to make use of our network of County Recorders and national expert Referees who can help with plant identification.

bsbi.org

> “If we were a nation of botanists, all of us in love with plants… we would be better environmental citizens. More knowledgeable and caring about the green world, we could survive almost anything.”
>
> Donald Worster, natural historian

Are you passionate about plants and want to be able to identify them? Many of the world’s biggest modern day challenges are essentially plant-based, including food security and climate change. We need knowledge of how plants work, what they look like and where they grow, to be best placed to address these problems.

There is no better time than the present to begin to improve your knowledge of wild plants, and to pass on that knowledge and enthusiasm to others, whether professionally, academically, or simply as an amateur. We cannot value what we cannot name.

This booklet breaks down plant identification into seven levels, from beginner to expert, so you can understand your current abilities and discover the steps you can take to move through the levels. Plant identification takes time, commitment and dedication - just like mastering any skill - but the rewards can be huge. Beginner botanists can - and do! - make remarkable discoveries; and experienced botanists can change the course of our understanding about our natural world.

Why learn to identify plants?

- ► Enjoy a walk in the countryside, or your local park, being able to identify most of the wild plants you see
- ► Lead a wildflower walk
- ► Become a recorder
- ► Monitor plant populations and distributions
- ► Contribute to conservation and biodiversity projects
- ► Carry out a habitat survey, such as Phase 1 or a UK Habitat Classification
- ► Become employable as a field biologist
- ► Analyse a plant community by recording quadrats for the National Vegetation Classification (or the Irish Vegetation Classification if in the Republic of Ireland)
- ► Carry out a plant-based project or dissertation
- ► Become an expert

Whatever your motivation for wanting to learn to identify plants, there are useful stages to go through – and we can support you as you climb the Botanical Skills Ladder, found at the centre of this booklet.

You may already have some expertise but if you are starting from scratch, follow the colour-coded panels on each page that correspond to the levels of the Botanical Skills Ladder.

You can take a FISC at any point during your botanical training journey in order to find out what level you are at. For levels 1 and 2, the best place to start is with the online Identiplant course at **identiplant.bsbi.org**

Level 1

How many plants?

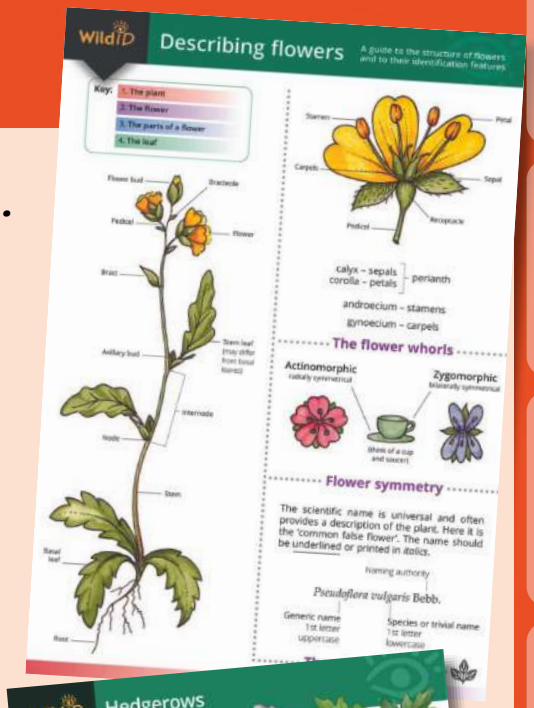
There are roughly 5,500 vascular plant species in the UK so the best way to approach the daunting task of identification is to take one small step at a time.

Learn some basic plant parts: what is a petal? What is a sepal? And what is a tepal?

Start off by learning the names of the basic parts of a 'regular' flower – the buttercup family is a useful family to start on. Then tackle the vegetative parts – petiole, leaf blade – and then familiarise yourself with some of the basic leaf shapes. WildID Guides are a useful resource for this.

Can you name the wild flowers in a lawn or local patch of grass (daisy, creeping buttercup, ribwort plantain) and some of the trees in your nearest wild hedgerow?

Have you got your own hand lens? This is a small device used to magnify what you are looking at.



There are also BSBI Field Meetings aimed specifically at Beginners, to which you would be very welcome.

Time to move on...

Level 2

At this stage you will probably want to have a good quality colour picture field identification guide such as Rose and O'Reilly's Wild Flower Key or Collins Flower guide. Make sure you choose one where the plants are ordered by family, not by season or colour (however tempting this might seem at the time, you will learn plant families more easily with a family arrangement).

Try using the BSBI online plant ID resources:
bsbi.org/plant-id-getting-started

Consider taking a short plant ID course or signing up for Identiplant, our online course, to move to the next level:
bsbi.org/training-courses-external
identiplant.bsbi.org

We offer grants to help you pay for courses:
bsbi.org/grants

The simple aim of plant identification is to get to a species name but one of the best ways of getting there is to learn the main plant families. Pick a plant family that you are reasonably familiar with – the buttercup family is Ranunculaceae (all vascular plant families end –aceae). What is it that makes a plant a member of this family? How are the petals arranged? Learn the names and arrangement of the reproductive parts of a plant. What are the ovary, carpels, style, stigma and anthers? What is the difference between a seed and a fruit?

You could also consider joining a local flora group and following activities such as #WildFlowerHour on social media.

Habitat based learning

Try the Field Studies Council's fold-out habitat guides. Take a walk in a woodland in Spring and try to learn ten woodland plants from different families – do you see these plants in other habitats or are they 'ancient woodland indicators'? Each time you find a plant and successfully identify it from the fold-out guide, learn the common name and the scientific name.

Buy a picture identification guide

There are plenty from which to choose, but pick one that is arranged in 'taxonomic order' (water lilies and buttercups at the front, grasses at the back) and has a 'key' that you can work through. By using a taxonomic guide you will learn which families are closely related and which ones are not, even though they may be superficially similar.

Diagnostic features

These are the features that help you to be confident that the plant you have identified IS that plant and not anything else. Keys in a good ID guide will really help you learn what to look for when identifying a plant.

Go on a short course

Try a short ID course first of all – it may be an introduction to botany or a day on a particular family or habitat group of plants or the top ten plant families – or do the Identiplant online course. Now tackle another family on your own – try the campion family (Caryophyllaceae) or roses (Rosaceae) or pea family (Fabaceae).

For more help and hints: **bsbi.org/get-involved**

Level 3

For Level 3 onwards, you'll benefit from looking at leaves and other vegetative characters in Poland and Clement's Vegetative Key to the British and Irish Flora, as well as starting to make use of Clive Stace's New Flora of the British Isles, or Webb's An Irish Flora.

It's also time to tackle some of the tricky groups such as ferns, grasses, sedges and rushes - you'll want to understand how ferns reproduce and how to tell the difference between a fern and a flowering plant. Get started with fern ID by using the AIDGAP Fern guide or the FSC leaflet.

You'll also want to start tackling grasses - try the FSC grasses leaflet and a pictorial guide such as Francis Rose's 1989 guide or the Collins field guide to Grasses, Sedges, Rushes and Ferns. More grass ID resources can be found here:
bsbi.org/grass-id

For a habitat-based approach, try Ben Averis's book, Plants and their Habitats.

We hope you'll also feel confident enough to start submitting records to a recording scheme. The BSBI Recording App is a great place to start.

Go on a longer course

Try a residential course at the Field Studies Council or other field centre. There are courses on how to use identification keys which help you identify a plant family or group such as the ferns and their allies.

Join a local group

One of the best ways of learning your plants is to go out into the field regularly with other botanists; there may be a local recording group run by a BSBI County Recorder or other keen botanists. The field outings are usually free and often other botanists are keen to help you learn new plants. You will be able to learn how to record the plants that you see (who, what, where, when).

How long does it take?

How serious are you? If you work at it you can become a level 4 botanist in three years and a level 5 in around five years – the general rule is, it takes 10,000 hours to become an expert. Take a FISC to find out your level.

Tackle another habitat

Try visiting a habitat you are unfamiliar with - maybe on a BSBI national field meeting - and learn to identify some of the common plants found there. Make sure you are also aware of the role of indicator plants in relation to habitat identification.

Getting to grips with grasses, sedges and rushes

These 'grassy' monocots are among the most difficult plants to tackle but are absolutely essential for any ecological work. The first part to tackle is to understand the differences between these three groups; they each belong to a different family so finding out the diagnostic features is important. The naming of parts is very different because of the reduced flowers: no petals or sepals in the grasses and sedges (and well- disguised in the rushes).

Try a roadside verge

Choose a section of roadside verge that looks reasonably wild and fairly species-rich (and hasn't just been cut). Identify as many species as possible – you should be able to tackle the larger common grasses in flower and any umbellifers plus other flowering plants and possibly common ferns, such as male fern or broad buckler-fern.

BOTANICAL SKILLS LADDER

7 Outstanding ID Skills

A national expert with a comprehensive knowledge of the British and Irish flora, involved in writing monographs or reviewing taxonomic groups.

6 Excellent ID Skills

Expected to have a comprehensive knowledge of the British and Irish flora and able to record more than 90% of all taxa present on a site, including the most difficult "critical" taxa.

5 Very Good ID Skills

Able to identify most widespread vascular species in flower or vegetatively, including species of grasses, rushes and sedges, most rare species and common sub-species and hybrids, and likely to have broad experience of species and habitats nationally. Expected to record at least 70% of all taxa present at a site, and able to use vegetative keys accurately.

4 Good ID Skills

Able to identify most widespread vascular plants including grasses, rushes, sedges and ferns and actively working to improve their identification skills for more challenging groups. Able to survey a site for vascular plants professionally, but may miss sub-species and hybrids.

3 Reasonable ID Skills

Able to identify many common and widespread flowering plants, including some common grasses and sedges, and able to identify common ferns. Not yet capable of producing a comprehensive site list. Aware of key plants used as indicators for specific habitats e.g. Yellow Archangel or Woodruff being ancient woodland indicators.

2 Modest ID Skills

Able to identify some common flowering species, although may only be able to identify a few distinctive common grasses and sedges. Unlikely to be able to identify many ferns. Has some skills enabling the use of field ID keys to identify less common species.

1 Basic ID Skills

Able to recognise a few common and widespread flowering plant species or groups such as a buttercup or daisy. Unlikely to be able to identify many grasses, sedges or ferns. Can use a simple key to identify some common species.

Professional and voluntary opportunities

Level 5 and above:
- ▸ Teach a professional level plant ID course
- ▸ Become a FISC Assessor or Gold Standard Surveyor
- ▸ Be commissioned to undertake botanical surveys nationally for a particular group

Level 4 and above:
- ▸ Become an Identiplant Tutor
- ▸ Teach vocational courses
- ▸ Undertake National Vegetation Classification or Irish Vegetation Classification surveys as part of consultancy work
- ▸ Take part in the National Plant Monitoring Scheme (NMPS) in the UK at Indicator or Inventory Level

Level 3 and above:
- ▸ Undertake botanical surveys such as UKHab, Phase 1 or Fossitt habitat surveys as part of consultancy work

Level 2 and above:
- ▸ Lead a local informal botany walk
- ▸ Take part in the NPMS in the UK at Wildflower Level

Related botanical activities

Level 5 and above:
- ▸ May provide training and advice to others on species ID
- ▸ Up to date on relevant legislation related to plant collection and protected and invasive species
- ▸ May publish botanical ID guides
- ▸ Consults a reference collection
- ▸ Engages with BSBI referee network to submit reliable records

Level 4 and above:
- ▸ Likely to make regular use of more advanced texts such as Stace's Flora to help identify less common species
- ▸ Likely to submit records to BSBI County Recorders and to use scientific names

Level 3 and above:
- ▸ Likely to make regular use of field ID keys
- ▸ Starting to use more advanced texts such as Stace's Flora
- ▸ May have started submitting records of common species to BSBI County Recorders

Level 2 and above:
- ▸ May have attended a few ID training courses
- ▸ May have joined a local botany group

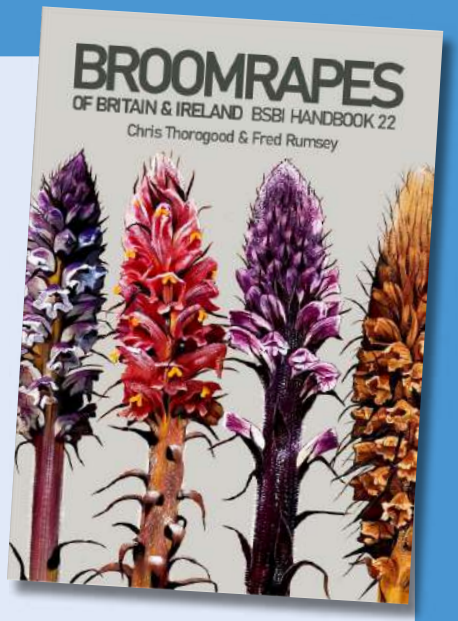
Level 4

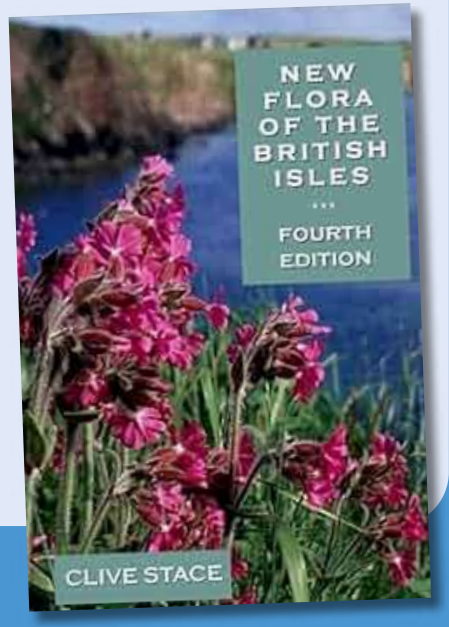
You may have started collecting BSBI Handbooks – these will help you tackle the tricky families such as crucifers (Brassicaceae), umbellifers (Apiaceae) and docks and knotweeds (Polygonaceae). All are available in print or as eBooks from the BSBI website.

You will also be learning your grasses, sedges, rushes and ferns at a more detailed level. You will know the differences between these three key monocot families and should be able to name the parts in the Poaceae (grass family), Cyperaceae (sedge family) and Juncaceae (rush family).

At this stage you may want to consider making full use of Clive Stace's New Flora of the British Isles, and looking for a course on using a Flora, to demystify some of the terminology.

Resources to help you at this stage are available here:
bsbi.org/plant-id-for-experienced-botanists
and here:
bsbi.org/plant-crib





Variation within species

At first you will learn variation between species – what is it that makes one plant species different from another? However, one of the important aspects of becoming a very good botanist as opposed to just a reasonable one, is to learn the variation within a species. This means seeing a plant in different habitats and at different stages in its life cycle and annual cycle. How many species can you identify vegetatively rather than just in flower?

Tackling pteridophytes

The ferns and their allies present similar problems to the grasses and other monocots with reduced flowers – the naming of parts starts all over again as the reproductive parts are very different to the flowering plants. You will also really need to understand alternation of generations to fully appreciate how the fern life cycle works.

Share your knowledge

Consider running vocational courses or becoming an Identiplant tutor. You could also contribute to recording through the National Plant Monitoring Scheme, or National (or Irish) Vegetation Classification surveys.

What are you aiming for?

You will know that you have got to a professional level when you can place a quadrat (real or imaginary) into vegetation and you can identify all of the vascular plants in it. You will benefit greatly from being a member of the BSBI so that you can keep abreast of latest developments in plant taxonomy and ecology and also to use the network of expert referees.

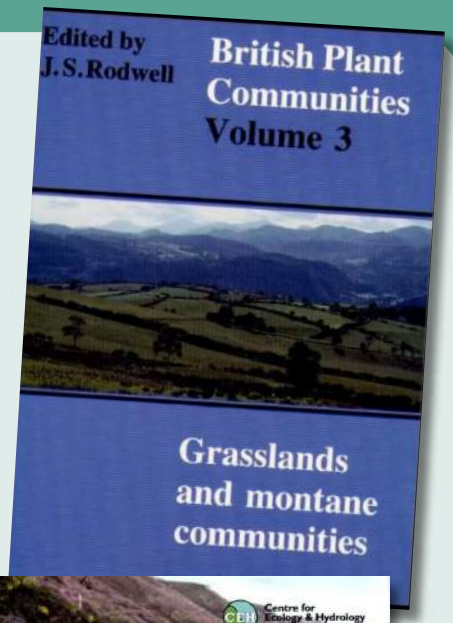
Reminding yourself of the scope of the 'problem'

Do you know your plants now? How about sub-species, varieties and hybrids?

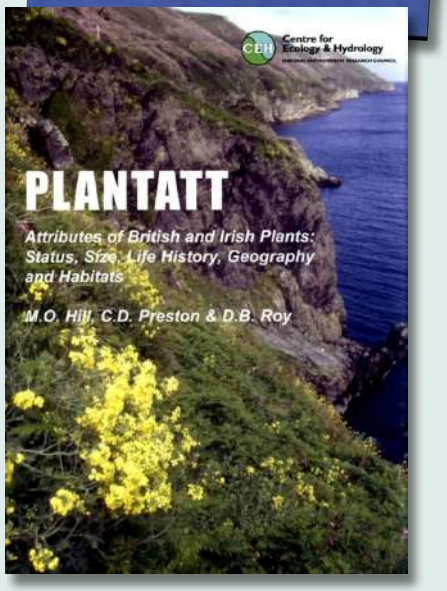
There is still plenty to do but time to move on...

Level 5

What usually distinguishes a very good ‘county’ botanist from one able to work at a national level, is the ability to transfer identification skills to other habitats. You will find it helpful to attend BSBI field meetings in areas with which you are unfamiliar. This will help you, as you build up the skills needed to tackle an unknown plant using a range of strategies.



One key skill that is expected of a level 5 botanist is not just the ability to identify a wide range of vascular plants, but also to be able to produce good botanical records. There are three main types of botanical record – a site list (for either a named site or a grid square), a single species record (with a precise and accurate grid reference) and also the ability to make a sample record for a quadrat.



You will also be aware of ecological resources such as PLANTATT, and understand the National Vegetation Classification/Irish Vegetation Classification.

You may start to specialise in a habitat type and develop a reputation for excelling in identification and surveying of this particular habitat.

How to become an expert

The most experienced botanists do not stop learning – there will always be a new group to tackle.

What habitats are you still uncertain about? Saltmarsh? Montane? Are there any families you are still shying away from?

The ‘difficult’ plants are hard to define – botanists usually list grasses, sedges, rushes and ferns as the obviously tricky ones but there are more families of really difficult plants: docks, willows, goosefoots, yellow composites, crucifers, fumitories and of course most water plants. Then there are the hybrids – which genera contain species which are more likely to hybridise?

Do you routinely collect voucher specimens to send to BSBI expert Referees, for your own reference collection, and/or to submit to a herbarium or other collection? Do you have - and make good use of - a full set of BSBI Handbooks?

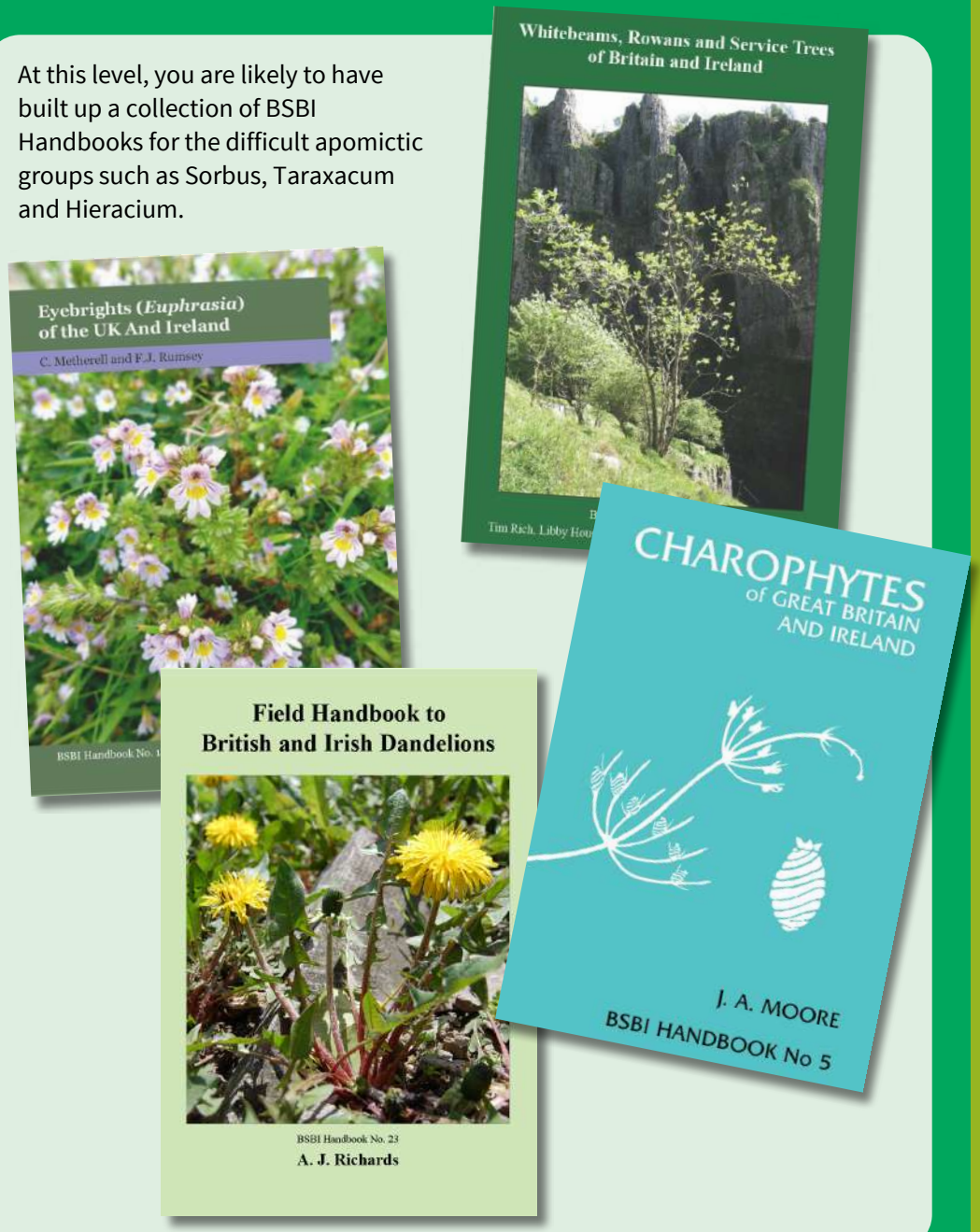
Have you considered running a field meeting or training event to pass on your identification skills? You could also consider becoming a FISC Assessor or working at the Gatsby Plant Science Summer School.

Do you keep a database of your own records, and submit records to BSBI County Recorders?

Have you taken a Field Identification Skills Certificate (FISC)? Or a repeat FISC to check that you are keeping your field ID skills updated?

Level 6 & 7

At this level, you are likely to have built up a collection of BSBI Handbooks for the difficult apomictic groups such as Sorbus, Taraxacum and Hieracium.



What is there left to do?

There are the critical groups such as the apomictic whitebeams, brambles, hawkweeds and dandelions, and the difficult taxa that hybridise freely such as eyebrights. There are not always Referees for these groups so the usual way to tackle these is to collect voucher specimens for your vice county or area and submit a collection to a Referee if there is one for that group, or hold on to your collection until a new Referee is appointed. You may also consider becoming a Referee yourself.

Activities at Levels 6 and 7 can include:

- Participate in BSBI conferences and other events, offering exhibits, and delivering talks and workshops.
- Pass on knowledge to others; teach courses, submit articles to BSBI's scientific journal British & Irish Botany
- Identify gaps in local/national botanical knowledge and help plug them
- Assist a County Recorder, learning the ropes for possibly taking on the role in future
- Become an iRecord verifier
- Contribute to recording for a local Flora
- Deepen studies of favoured plant group/s by becoming a BSBI Referee

You may consider writing a Handbook or monograph on a genus, or becoming a BSBI Referee for a particular taxonomic or habitat group.

The most important aspect of these two levels is that up to level 5 you will have been expanding your knowledge – at these levels you are more likely to be deepening your knowledge of one or more specific areas.

Above and beyond

Plant Atlas 2020

Plant Atlas 2020 is the most in-depth survey of the British and Irish flora ever undertaken.

Available as a physical book and as a searchable, interactive website, the work represents 20 years of recording and over 30 million records submitted by thousands of botanists. These records are available for study and will serve as an essential resource for the conservation of our wild plants and their habitats for years to come.

Key findings and main trends:

► 53% of our native plant species such as Heather and Harebell have declined in Britain due to human impacts such as agricultural intensification and climate change

► Non-native plant species now outnumber native plant species in the wild – this startling discovery has huge implications for the insects and other species of wildlife that depend on our native plants

► Many non-native species are benign but some such as New Zealand Pigmyweed and Sitka Spruce have become invasive, disrupting ecosystem function and outcompeting native species

► Many montane plants have declined due to climate change whereas some southern species such as Bee Orchid have benefited and spread further north

plantatlas2020.org

Shape the future of BSBI

At the core of BSBI is a network of members working to advance the understanding and appreciation of wild plants and support their conservation.

bsbi.org/about-bsbi

Many members serve through acting as Referees or County Recorders, but there are exciting and worthwhile opportunities for everyone, whatever level of the Botanical Skills Ladder you currently occupy. Similarly, there are opportunities wherever you might live, however much time you have to spare and whatever your area of interest.

Perhaps you could:

► Join one of our country committees, influencing our work at the national level, or one of our standing committees, focused on science and data, skills and training, and events and communications

► Contribute imagery to our website or via our Photographic Competition

► Volunteer as part of the remote support team for New Year Plant Hunt

► Write for our News & Views blog, sharing your experiences of botany, field meetings, publications and more

► Create content for social media and help new audiences find out about botany

► Lead on the governance of the Society by serving as a Trustee on the Board

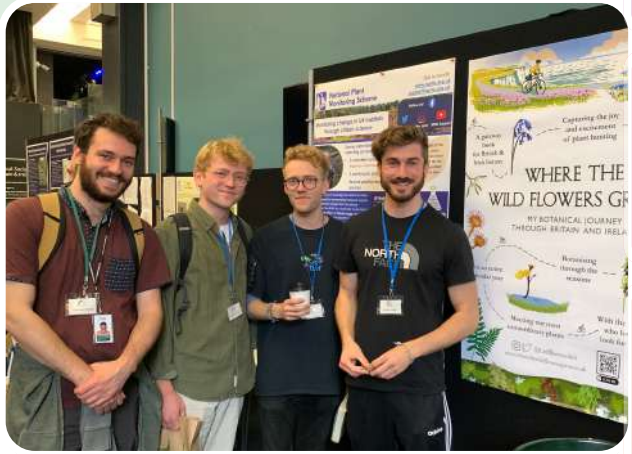
► Support our data entry and analysis

► Organise a meeting to encourage training, recording or to engage beginners, or join a group organising our annual conferences

► Become an National Plant Monitoring Scheme mentor or verifier

If you can think of a way you would like to be involved with the Society, we'd love to hear from you

bsbi.org/volunteering-opportunities



So you want to know your plants...

Resources:

Botany books and hand lenses:

- ► Summerfield Books
- ► Natural History Book Service

Online training and other resources:

- ► Identiplant

Field courses:

For a selection of short plant ID courses run by various providers across Britain and Ireland, please visit:
bsbi.org/training-courses-external

Grants:

- ► BSBI Training Grants
- ► BSBI Plant Study Grants
- ► And more...

bsbi.org/grants

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