



Spring 2020 Sample Issue
See inside for a selection of articles from *BSBI News* no. 144 and details of how to join the BSBI. Members receive three print copies of *BSBI News* each year as part of the package of membership benefits.



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BEGINNER'S CORNER

Starting with buttercups

HAZEL METHERELL

Buttercups, unsurprisingly fall within the Buttercup Family (*Ranunculaceae*). However not all *Ranunculaceae* are Buttercups. In addition to the familiar yellow flowers there are the white-flowered Water-crowfoots. These, as their name implies grow either in or near water. They have the reputation of being difficult to separate at species level. We shall ignore them for the moment!

There are, however, three common yellow buttercups. Bulbous Creeping Buttercup (*R. acris*), easy to tell apart, which side by side. And you

A useful trick when a flower over and look at the petals join the flower that the flower is made of five structures – the five petals and five smaller sepals. A difference between a key to identifying a straightforward – not are sometimes color (photos). Now you have see whether they are down the peduncle, outwards, perpendicular to your problem is over

If the sepals are at the peduncle. Red smooth or does it lie and down it with full then you have Meadow Buttercup also has

There are other differences too of course. If you dig around at the base of the plant, Bulbous Buttercup (as its name implies) has a swollen stem and Creeping Buttercup has obvious creeping runners. Meadow Buttercup has neither of these features. With practice, plants not in flower can be fairly easily identified by looking at the leaves – some pointers are given in the captions to the photographs, opposite.



Underside of flowers showing green or yellow patent sepals (often quite small in this species) and smooth peduncle. Leaves are sharply toothed and the lobes are unstalked.

Flowers with recurved sepals (often long) and a ridged peduncle. Leaf with blunt teeth and stalked middle lobe. Young seedling with 'bulb'. This species is often hairier than the other two.

Flowers with patent sepals and a ridged peduncle; leaves are slightly hairy with a long-stalked middle lobe and side lobes often short-stalked; note the characteristic pale blotches.

Stipules: a brief introduction

JOHN POLAND

This is a much-delayed (due to controversy surrounding the topic) continuation of a run of articles between 2005 and 2008 describing plant morphology used in vegetative ID. Stipules (from Latin *stipula* meaning straw, stalk) are found in perhaps up to a third of our British and Irish flora depending on how you count. Their presence isn't diagnostic alone but the type of stipule and its position can tell you a lot about a genus or family.

What are stipules?

Stipules are a pair of scale or leaf-like appendages (rarely united to form one organ), spines or glands at or near the base of a petiole. They are attached to either the stem or petiole and are often small or easily missed. They can be caducous (soon falling), even on herbs, leaving a discrete scar. Spotting stipules often demands careful observation – a good hand lens is essential. Young leaves in leaf axils may occasionally be mistaken for stipules so observers beware.

What is the function of stipules?

Primarily, plant defence. Stipules normally exist only to protect the young unfurling leaf so are soon redundant and have usually dropped by mid-summer or even before the leaf is fully expanded. In some trees and shrubs stipules may also be unrecognisable as modified bud scales protecting the bud, although they are particularly obvious in *Liriodendron tulipifera* (Tulip-tree).

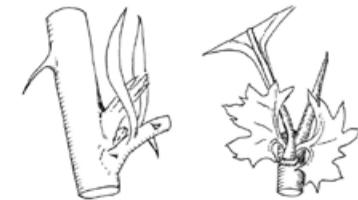
Stipules may be reduced to glands or extra-floral nectaries which secrete nectar to attract ants to

Types of stipule

Stipules generally take one of the below forms but more than one form can be found on some species. You don't have to travel far to see stipules; a quick look in your garden, driveway or windowbox should give you a few examples.

1. 'Typical' paired stipules

The standard one pair of stipules per leaf. Frequently encountered but highly variable in size, texture and shape; they can be leaf-like as in *Crataegus monogyna* (Hawthorn) or linear as in many *Rubus* (Brambles) or *Melilotus* (Melilots). They can also be minute, such as in *Ilex aquifolium* (Holly), contrary to what is written in our standard Floras which say absent from the family!



Typical paired stipules of *Rubus fruticosus* agg. and *Crataegus monogyna*

2. Interpetiolar stipules

Located on the stem between a pair of opposite leaves, they are formed from the fusion of two

BSBI caters for all botanical tastes and all skill levels, from absolute beginners to national experts. Our contributors include some of the top botanists in Britain and Ireland, e.g. John Poland, author of the *Vegetative Key to the British Flora*.



My first year as a BSBI member

HOWARD BECK

Four years living in New Guinea in the 1970s drew my eye to botany, but it was not until around 2008 that interest finally gelled into something more attentive. Being a Yorkshireman with deep pockets and short arms there was much prevaricating, but with encouragement from others I finally joined the BSBI in October 2013. Apart from

my antipodean days shadow of the Penn (v.c. 64) being my first short article reflects on first full botanical photographs by the author. As with many of myself wholehearted Atlas. My season kicked and grew steadily. In May I took a trip to the Highlands, a trip largely Scott's superb book. I paid my second visit (Diapensia) and on

Dryas octopetala (Mountain Avens) on the roadside near Durness.

find the species just coming into bloom. I took this as a good omen. I was not disappointed. The Isle of Skye saw a racking up of an impressive species list on the Trotternish Ridge. Though I had failed

a water plant I slipped into what I believed was a pool no deeper than 15 cm and went in up to my waist! But compensations there were, when later I found *Oxytropis halleri* (Purple Oxytropis), *Botrychium lunaria* (Moonwort), *Scilla verna* (Spring Squill) and *Arctostaphylos alpinus* (Alpine Bearberry), all species new to me. Unfortunately I was too late for the delightful *Primula scotica* (Scottish Primrose).

This break also marked my first visit to the Orkneys, a place I always wished to see, not least for its magnificent archaeological remains. While awaiting the ferry at Gils Bay I found a lovely roadside colony of *Saxifraga* × *arendsii* a first for Caithness, while my week on the isles also produced *Saxifraga hirsuta* (Kidney Saxifrage) – new to Orkney. I was on a roll by the time I returned south of the border.

While cycling in Cumbria I chanced upon a solitary specimen of *Pyrus salicifolia* (Willow-leaved



Saxifraga × *arendsii* spotted on a roadside verge in Caithness.

Pear) – a first record for the county – beside a beck near Stainton, then on my own stomping ground my luck continued with the discovery of the attractive *Cerinthe major* (Greater Honeywort) near Paythorne (reported by David Broughton in his June blog) and a fine stand of *Symphoricarum mosae-anglicae* (Hairy Michaelmas-daisy) beside the River Wenning at Burton-in-Lonsdale (both firsts for v.c. 64).

And so as an excellent season began winding down, an October walk with a friend along the Arnside foreshore revealed an interesting *Atriplex* (Ornache) among shingle not far from the promenade. Having no clue as to species, I sent the record to Mike Porter and thanks to him and his co-recorders this was eventually identified as the rare hybrid *Atriplex austriaca* × *Atriplex canescens* (native to Cumbria).



INTRODUCING MY VICE-COUNTY

Ayrshire (v.c. 75)

Recorders: Gill Smart, Dave Lang & Carol Crawford

CAROL CRAWFORD

Ayrshire, (v.c. 75), is in SW Scotland. You may have heard of its agriculture – Ayrshire brown and white dairy cows, or early ‘tatties’ – its British Open golf courses at Troon and Turnberry – or Robert Burns living much of his short life here. You may not have heard that Ayrshire is also a great area for botanising. Diverse topography, geology/soils and land-use give a wide array of habitats and

It is one of the largest long from south of B almost 50 km where or partly inside. Ayr areas: North, East character. Note: Arr Council but is within small group botanists recorders between

Scilla verna (Spring Squill) and *Ranunculus bulbosus* (Bulbous Buttercup) at Bennane Head, with view of Ailsa Craig.

Landforms, geology and habitats

Ayrshire's major landforms are coast, hills (Southern Uplands at the south and Clyde-Muirshiel uplands at the north) and the Midland Valley. River valleys



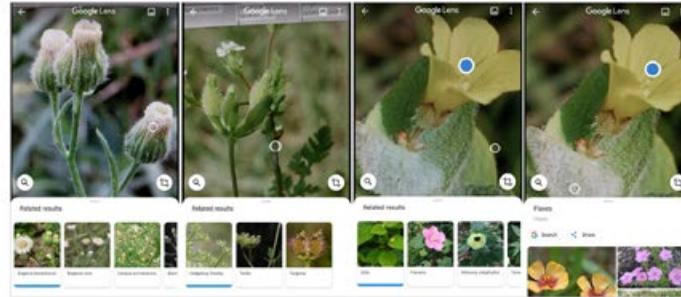
Artificial Intelligence for plant identification on smartphones and tablets

HAMLYN JONES

In recent years there has been an explosion in the availability of apps for smartphones that can be used to help with plant identification in the field. There are a number of approaches available, ranging from those apps that identify plants automatically based on the use of Artificial Intelligence (AI) and automated Image Recognition, through those that require the user to use traditional dichotomous keys or multi-access keys, to those that may only have a range of images without a clear system for identification of any species of interest. *All photographs by the author.*

Here I concentrate only on those free apps that are available to identify plants automatically from uploaded images, with at most the need for only minor decisions by users (listed in Table 1). I first confirmed that the apps all behaved similarly when using either a live image in the field or the later testing of that image when displayed on a computer monitor and photographed by the smartphone. The performance of the ten free automatic plant identification (id) apps that I found was then tested on 38 contrasting plant images of wild and naturalised British species (including grasses, sedges, herbs and woody plants as well as on images of flowers, leaves, fruits or whole plants), largely selected from my own visual-flora website (visual-flora.org.uk). The samples included a number of common species, some garden escapes and several less common or even rare species (e.g. *Cyperus fuscus*). Each image was tested five times with each app because many apps gave surprisingly variable identifications even when using exactly the same image. All tests were conducted in October or November 2019, but many of the apps are continually improving.

A selection of the 38 images tested are shown in Figure 1, including some which were successfully identified by all apps through to some that were only



Google Lens: Various examples of the use of Google lens, showing (a) a surprisingly accurate id for Argentine Fleabane (*Erigeron bonariensis*), (b) a close guess for Bur Chervil (*Anthriscus caucalis*), though it is not certain what species is meant by Hedgehog Parsley, (c) and (d) two poor attempts at Marsh St John's-wort (*Hypericum elodes*) with suggestions from Sida or Pavonia to 'Flaxes'.



Seek: (a) The initial page of the Seek app, (b) and (c) improving precision of id for Pot Marigold (*Calendula officinalis*) and (d) further detail available when clicking on the camera symbol in (c).

Although it only reports English names on the front screen, if you take a photograph it then provides further information, including the Latin name.

Flora Incognita

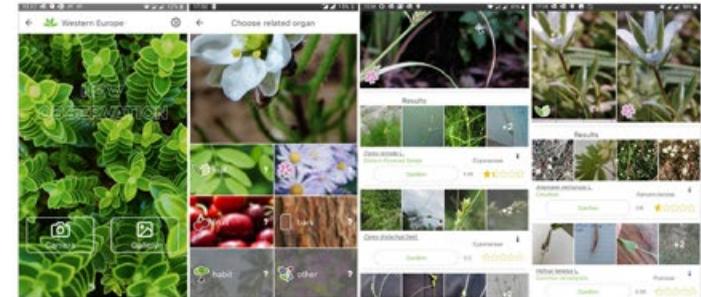
This was also an impressive app, achieving the second highest rate of identification to species level of all apps tested and good rates of identification to genus and to family. To use this app the user

first needs to make an initial identification to herb/shrub, tree, grass/sedge or fern. The app then gives the user options of taking photos of leaves, flowers, fruits or the whole plant. The app then provides an identification when it has enough information. For the present tests, to allow direct comparability with the other apps, only a single image was provided each time. It is likely that the use of additional photos would improve the accuracy of this app further.

Feature articles cover a wide range of botanically-related topics.



Flora Incognita: (a) The front page of Flora Incognita, (b) the next page where one selects the group of plants, followed by (c) the next page requesting a flower photo and (d) suggested identifications (admittedly without any confidence) for Corn Spurrey (*Spergula arvensis*) where the correct answer was the second suggestion.



PlantNet: (a) The front screen of the app, (b) after taking a photo one chooses the type of image from a choice of four, (c) an example of a correct identification for Remote Sedge (*Carex remota*) and (d) an example where the app failed, suggesting Wood Anemone (*Anemone nemorosa*) for Upright Chickweed (*Moenchia erecta*).

Flora Incognita was found to be another rather conservative app that made few wrong or misleading ids, usually returning only one or two suggested ids. This is another app that gives a level of confidence for any ids proposed, which is a useful feature.

PlantNet

Although overall this was the fifth best performing app of the ten tested, it still identified very nearly

50% of attempts correctly to genus. This is another app that requires some user input, where the user has to decide whether an image should be classified as: leaf, flower, fruit, bark, habit or other. PlantNet generally lists a number of suggested ids, each of which is assigned a confidence level on a scale of 0-5. It comes with specific datasets for different world regions; for the present tests we used the Western European database.

THE NATIONAL PLANT MONITORING SCHEME: WHAT'S IN IT FOR BSBI MEMBERS?

The National Plant Monitoring Scheme (NPMS) was launched in 2015 and aims to provide us with a way of improving our understanding of how environmental change is impacting on our wild plants and amassing a body of data which can be used to inform

repeatable with a high degree of accuracy, so we can be confident that any observed changes are real and not an artefact of how the data were gathered.

Jodey Peyton, Chair of BSBI Events & Communications Committee said: 'There are some really helpful videos for NPMS

species identification book that is sent free of charge to everyone who registers for the scheme. Kevin Walker, BSBI's Head of Science, wrote many of the descriptions. The book is clear and easy to understand (no fancy botanical/plant words), so it's great if you're a beginner and

ADVENTIVES AND ALIENS

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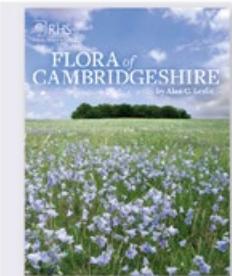
COMPILED BY MATTHEW BERRY

The only botanical news I have to report, other than members' records of course, is the publication of what should prove to be a very comprehensive list of Niger bird-seed aliens – the result of Gordon Hanson's meticulous cultivation experiments at Worsley (Hants). His paper, entitled

V.c.12 (N. Hants)

Saururus cernuus L. (Lizard's-tail). Overton (SU5152550288), 4/11/2019, S. Bell & S. White (conf. & comm. A. Mundell): near monoculture in boggy ground by pond under trees beside a

REVIEWS



Flora of Cambridgeshire Alan Leslie

Royal Horticultural Society, Wisley, 2019; pp. 912, 88 illustrations, 12 maps; hbk, £70.00.
ISBN 9781907057991

procurrens, *Solanum* × *procurrens*, *Rubus cantabrigiensis* and *Ranunculus cantabrigiensis*. Illustrated introductory chapters cover the usual topography, geology, climate, etc. and a review of gains and losses of species provides context and discussion on drivers of change.

A generous chapter on the history of plant recorders is a roll call of some of Britain's most illustrious botanists. Many are shown with photographs (twice as many pictures of botanists as there are of plants!); this is a fascinating overview of Cambridge botany right up to the present day.

extensive index, but it is a rather uncomfortable 'hybrid' that could have been avoided.

The main body of 683 pages of species accounts is solid text. I was initially surprised by the lack of maps and plant illustrations that are the staple ingredients of most modern Floras. [Cartophiles will not have long to wait: Graham & Mountford's forthcoming Fenland Flora will cover at least the northern half of Cambs]. But Leslie has a lot more to say than most Floras. Even with common plants like *Arabidopsis thaliana*, where most Floras might get away with 'common everywhere', Leslie carefully lists the range of sites

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- A membership welcome pack which includes three most recent issues of *BSBI News*, print copies of the BSBI Yearbook, BSBI Code of Conduct, our booklet 'So You Want to Know Your Plants' and a BSBI bookmark.
- Your password for the members-only area of the BSBI website where you can access scientific papers published in *New Journal of Botany*, view the BSBI membership list, download an Index to articles published in *BSBI News*... and much much more.

Regular sections include botanical notes from England, Wales, Scotland and Ireland; reports of first sightings of alien plants; notices about BSBI projects, events and activities; and book reviews edited by Clive Stace.