BSBI NEWS

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Botanical Society of Britain & Ireland

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NEWSLETTER OF THE BOTANICAL SOCIETY OF BRITAIN AND IRELAND

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Cover: a rare form of *Epipactis*, likely to be *E. helleborine* (Broad-leaved Helleborine), lacking chlorophyll in the leaves, Montgomeryshire (v.c. 47), 5 June 2020. *Graham Griffiths* (see Wales roundup, p. 62).

Back cover: *Hieracium sabaudum* f. *bladonii* on a railway bridge at Gomshall, Surrey (v.c. 17), August 2018. *Mike Shaw*. From *Hawkweeds of South-east England* (see Reviews, p. 76).

Contributions for the next issue of BSBI News (no. 146) should be sent to the Editor, John Norton (john.norton@bsbi.org) by 25 November 2020.

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Botanical Society of Britain & Ireland

FROM THE PRESIDENT

Well, could I have imagined what being BSBI president meant for 2020? No, I could not possibly have guessed how the 'summer' would turn out. I was looking forward to visiting Ireland, Scotland and Wales, and here I am in Arnside, Cumbria. But, as many of you will know, it is one of the most diverse ecological areas in Great Britain and Ireland. So, like many of you, I have continued to explore my local patch, and it is surprising what you find and learn to appreciate more fully when you look more closely.

Speaking of which, can I just remind members that the BSBI Yearbook is actually a mine of useful information, and whilst you can find much of it, and more, on the website, then it is always on my study table so I can quickly look up referees, committees, Vice-county Recorders, field meetings and indoor meetings calendar (when they happen), and I hope they will again in 2021, and I can write a more upbeat piece. Also, it is a change to be able to thumb through a paper copy and not sit in front of the computer all day. I can be in the garden and browse through it whilst watching for interesting flying insects (see president's blog). It will be an important reference next year with the structural changes that are happening in relation to our Resilience/ Organisational Strategy (see p. 4).

I am still referring to it as Resilience for the time-being, as I feel that everyone has been showing their resilient nature recently, and there have been some brilliant and entertaining initiatives by people from many walks of life. Some of these have grabbed my attention and inspired me to be more creative. Quite a few folk have developed their artistic streak, and been able to express themselves in new ways. I used to paint and draw very detailed plant studies, but I've loosened up and been trying to capture the essential features of some local Wildlife Trust nature reserves.

I hope that most of you have been able to find something of interest and useful to occupy the past five months of 'lockdown', and share things with friends and family again.

Lynne Farrell
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EDITORIAL

Although I am very keen on brambles and have dabbled in dandelions I had never looked critically at a hawkweed until this summer, prompted by the publication of Mike Shaw's *Hawkweeds of South-east England*. This of course is the latest edition to the BSBI Handbook series and represents an incredible achievement by the author (former West Sussex Vice-county Recorder) since most of the work on the book, including field-based and herbarium research, took place in the last ten years. It is reviewed in this issue. With the aid of the book (and after a stuttering start) I managed to correctly name three taxa present on my local chalk downland site in southern Hampshire, but I don't think I will become an expert on hawkweeds any time soon.

This issue is another bumper one, packed with a variety of articles to hopefully suit all levels of expertise and interest. The feature article by Prof. Richard Bateman on molecular systematics is heavy going but gives a useful insight into the role that DNA sequencing has had over the last 30 years in the fields of plant evolution and taxonomy. He also comments on what might happen in the future. For Beginner's Corner I am grateful to previous Editor Andrew Branson for providing us with a run-down of the best field guides to buy this Christmas.

Please contact me if you would like to submit an article, note or letter for publication in *BSBI News*, and do consider writing one even if you have never done so before. Shorter articles are much preferred and ideally should be illustrated with good quality photographs. Contact me if you have any queries about content and illustrations. Note that very long articles and articles concerning taxonomic name changes should be submitted to *British & Irish Botany* (**bib@bsbi.org**) – see p. 59 for the lists of contents of the recent issues and a link for further information.

John Norton
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BSBI ANNOUNCEMENTS

MEMBERSHIP AND PAYMENTS

As the time to renew your subscription to BSBI approaches please remember to take note of the following. Your reminder will be sent in December.

- **Cheques** – NEVER make a cheque payable to R.G. Ellis, always assume it should be made payable to BSBI or Botanical Society of Britain and Ireland unless clearly stated otherwise.
- **PayPal** – NEVER send PayPal payments to the personal account of Gwynn Ellis, always use the buttons on the BSBI website.
- **Pre-publication offers** – NEVER combine payments for different offers (including subscriptions) on one cheque, it makes accounting that little bit more difficult.

When sending change of address details please remember to give your membership number or your old address, especially postcode and include any new phone number.

With Brexit looming who knows what the future will bring, so it could be useful if all Irish members would please let me have their Eircode if they have not done so already. If you don't know it, visit *https://finder.eircode.ie/#/* to find out.

Gwynn Ellis
BSBI Membership Secretary
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Paperless Direct Debit

We've launched a great new way for you to pay your annual BSBI membership. It's called Paperless Direct Debit (PDD). So, if you don't already pay by Direct Debit (DD), you can now create one here: *bsbi.org/subscriptions*. We've always encouraged members to pay by DD as it is quick and easy for you and efficient and cost effective for BSBI. PDD now makes it even easier; there's no paper, no printing, no postage, it's more secure and it takes less than 5 minutes. Two thirds of our members already pay this way so why not do the same? Please contact me if you have any queries.

Julie Etherington
BSBI Finance Manager
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BSBI ANNUAL EXHIBITION MEETING 2020

We had planned to return to the Natural History Museum in London for this year's Annual Exhibition Meeting on Saturday 21 November but in light of the restrictions around Covid-19, we have opted instead for a virtual (online) event. You will be able, as always, to look forward to a full day of talks, exhibits and a behind-the-scenes virtual tour of the NHM herbarium – from the comfort of your own home.

All you need in order to participate is a computer or smartphone and an internet connection. You don't even need to register this year unless you want to book exhibitor space. One advantage of moving the event online is that there are no space restrictions, so we can accommodate a lot more exhibits. If you've never exhibited before – this is your chance!

Find out more in the flyer inside this issue of BSBI News which sets out the draft programme of speakers, the timetable for the day and all the information you need in order to enjoy BSBI's first ever virtual Exhibition Meeting. See: *www.bsbi.org/annual-exhibition-meeting* or email me.

Louise Marsh
BSBI Communications Officer
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BSBI ANNUAL GENERAL MEETING

This year's AGM will take place on Saturday 21st November. Members will find an invitation inside this mailing and on the BSBI website: *www.bsbi.org/annual-general-meeting*. The 2020 AGM will be held online as an exception due to Covid-19 health risks. Members will be able to watch presentations, ask questions and vote at the online meeting or use post for proxy voting and nominations.

Steve Gater
BSBI Company Secretary

FIELD MEETINGS

The coronavirus pandemic has unfortunately meant that all the BSBI field meetings planned for 2020 had to be cancelled. The situation remains uncertain, but it seems likely that some restrictions will still be in place in 2021. We will endeavour to plan suitable meetings that can take place within whatever guidelines are in force, but the number of participants at them is likely to be restricted and the meeting may be cancelled at short notice. We will be publishing the usual list of planned meetings in the 2021 Yearbook, but do keep an eye on the meetings web page for updates and details of how to book.

We will try and follow our usual policy of placing meetings on the web page as soon as details are confirmed. Some of those meetings that were due to take place this year will be held in 2021.

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jdsh@bas.ac.uk

BSBI'S FUTURE – WHERE WE ARE GOING AND HOW WE WILL GET THERE

As many of you are aware, with support from the Heritage Lottery Fund, various parts of BSBI have been coming together over the past year to develop our new Organisational Strategy – our plan for what we want to achieve over the coming years and how we will do it. This follows several years of consultations and debate across BSBI where all parts have had an opportunity to input. We're now delighted to announce that our Strategy 2021–2024 is complete and available to view on our website at *www.bsbi.org/bsbi-strategy-2021*. In summary, we have tasked ourselves with delivering three goals:

1. Building a diverse community of botanists to sustain and develop the skill base. This will be achieved through expanding opportunities for existing and new botanists to enhance their skills or simply get more enjoyment out of looking at wild flowers. We will also aim to attract more people, including those from diverse backgrounds, to explore botany, including in urban areas.

2. Providing high quality, impartial data and interpretation for research and to help address biodiversity loss and climate change. This will be achieved through supporting volunteers to gather scientifically valuable botanical data and providing quality recording mechanisms and data storage. We will make this information available in support of work looking at changes to our flora and the conservation of important plant populations.

3. Disseminating information to drive a passion for plants. This will be achieved through providing more ways to participate in our activities and growing and improving our print and electronic methods of communication and information provision. We will enhance our website and increase our contact with external organisations and the media.

Alongside the Strategy we have looked at our structures and the way we run the Society. In order to fulfil our potential and deliver our Strategy effectively, we realise that we will have to make some changes to the way we reach and implement decisions, structure our committees differently and improve communication between them and clarify the things that different parts of our society do. Planned improvements for the next 12 months are described alongside our Strategy and further improvements will be considered and added for future years.

Having explained our plans and the changes involved, it's important to point out what will remain the same. Volunteers will remain central to all we do. BSBI is entirely reliant on, and extremely grateful for, the volunteer effort, time and skills received from members and supporters. That will not change as a result of this plan. What will be different is that all will be fully aware of BSBI's goals and planned activities and exactly how they can contribute towards delivering them and fulfilling BSBI's potential. Our volunteers are at the heart of these endeavours and we intend to provide them with all the necessary tools and functions to support them in their activities.

In a changing world, our wild plants have never been more in need of the support, understanding and appreciation that BSBI is uniquely placed to provide. Since 1836 BSBI has repeatedly re-focused and re-structured so that we could meet the demands of the times. Now it is time for BSBI to take another step forward so we are ready to meet future challenges.

Lynne Farrell (President), Chris Miles (Chair, Board of Trustees) and Jane Houldsworth (Head of Operations)

Residual myths in molecular systematics

RICHARD BATEMAN

Ophrys apifera (Bee Orchid). *John Norton*

Thirty years have elapsed since DNA studies began to replace herbarium-based studies of morphology for generating higher classifications of plants. Rapid technological progress has allowed a greater than exponential increase in the volume of DNA-based molecular-genetic data available to plant systematists. Molecular data now dominate plant classification at all taxonomic ranks above the species level, and are now also increasingly applied to circumscribing species. There are inevitable downstream consequences for nomenclature, forcing (or, more accurately, encouraging) us to familiarise ourselves with a modest number of new formal names (most are simply new combinations rather than new epithets) as taxa are steadily revised to take account of relationships newly recognised through genetic studies.

Despite the long period of time that we have had at our disposal to become familiar with the impacts of molecular studies on taxonomy, and thus ultimately on field botany, several myths regarding the many strengths and weaknesses of molecular approaches have proven remarkably persistent. I therefore hope that BSBI members will forgive me for making yet another attempt to raise awareness, and reduce innate prejudice, by systematically addressing some of the more persistent myths.

Myth 1: Plant names remained comfortingly stable until DNA made its irritating presence felt

There is a lot to be said for stability, not least when putting a name to a plant. Familiarity is comforting, and learning a new name for an already familiar plant can therefore appear perverse. Indeed, in cases where the renaming has been based purely on legalistic criteria I would argue that renaming *is* perverse! However, where the new or altered name is a result of new scientific insights being gained from newly acquired data and/or from conceptual advances in the theory of classification, the case becomes much stronger. Giving too much weight to stability under such circumstances deprives us of the insights that reliably accompany genuine progress.

The very first professional lecture I ever gave was presented at the BSBI conference on Critical Group Taxonomy hosted by John Edmondson in Liverpool in September 1985 – a time when any erstwhile molecular revolutionaries had not yet broken cover and taxonomic practices had barely changed since the time of Linnaeus. I spoke on that most 'critical' of critical groups, the orchid genus *Dactylorhiza*. One of my 35 mm slides simply bore a list of approximately 20 synonyms that applied to just a single biologically valid subspecies, *D. incarnata* subsp. *cruenta* (the

appropriately named Bloody-early Marsh-orchid). From the outset, the vast panoply of synonyms had demonstrated to me that traditional taxonomists are perfectly capable of disagreeing with (or remaining ignorant about) each other's views without needing any help from new-fangled techniques. In 1985, the new-fangled technique that I was promoting was detailed quantitative morphometrics; here, it is genetics through DNA sequencing.

Myth 2: Molecular classification is fundamentally different from morphological classification

Well, it all depends on how you apply your knowledge of plant morphology. Traditional morphological taxonomy is usually performed intuitively, through comparison of dried specimens and supposed discontinuities in states of particular characters as perceived by the human brain. In most cases, mathematics and statistics play little if any role in what is essentially an authoritarian process.

But from the 1960s onwards, two novel approaches were developed that formalised morphological descriptions as a matrix of plants (or taxa) versus large numbers of individual comparable characters. Such matrices can be converted mathematically into either assessments of overall similarity (phenetics) or through simple parsimony algorithms to form evolutionary trees where particular characters undergo transitions on particular branches, and the sequence of branching from base to tips is assumed to reflect the sequence through time of the relevant speciation events ('cladistics': e.g. Wiley et al., 1991). Although most evolutionary trees are now built primarily using DNA data, it is easy to forget that the concepts underlying character-based tree-building were originally developed for morphological data, and are still used for this purpose by some of us diehards. Admittedly, today's mathematical algorithms used to construct DNA-based trees are considerably more complex, but the basic principles remain unchanged.

The essence of extracting a classification from an evolutionary tree can be captured in a few tongue-twisting terms, three of which are now used ubiquitously to describe groups of organisms or taxa (actual examples involving the expanded genus *Anacamptis* are given in Figure 1 and its caption). The main insight gained through cladistics is to infer monophyletic groups, each consisting of a single hypothetical ancestor and all of its descendants. Monophyletic groups are crucially distinguished from both paraphyletic groups, which consist of a single hypothetical ancestor but only some of its descendants, and polyphyletic groups, which have multiple hypothetical ancestors and so have no evolutionary cohesion. When delimiting a paraphyletic group, a taxonomist must make two decisions: at which branch point it originated and at which branch point it evolved into a different group. Whereas in a monophyletic group, the taxonomist must only decide the point of origin in the tree; the rest of the classificatory decision-making has in practice already been performed by evolution. The importance of monophyly resides in the fact that it maximises the role that evolution plays in circumscribing taxa and minimises (though does not eliminate) the subjective role played by the taxonomist.

Myth 3: The only principle of molecular classification is monophyly

I have lost count of the number of articles I have published attempting to dispel this widely-held myth. Consider the three molecular trees that I have included in this article that relate to the bee orchid genus *Ophrys* (Figures 2–4). The bee orchid genus *Ophrys* has been much debated in recent years because, based on current evidence, I consider it to include only nine species (Bateman et al., 2018) plus a large number of subspecies, whereas other orchid specialists consider it to contain several hundred species (e.g. Delforge, 2016).

The molecular tree based on only a single nuclear gene region (nrITS: Figure 2) shows *Ophrys*, *Serapias*, the expanded *Anacamptis* and the expanded *Himantoglossum* to each be monophyletic. But so are other groups within these genera, such as the seven 'microspecies' analysed within *Ophrys fusca* s.l. (highlighted in green). What makes *Ophrys*

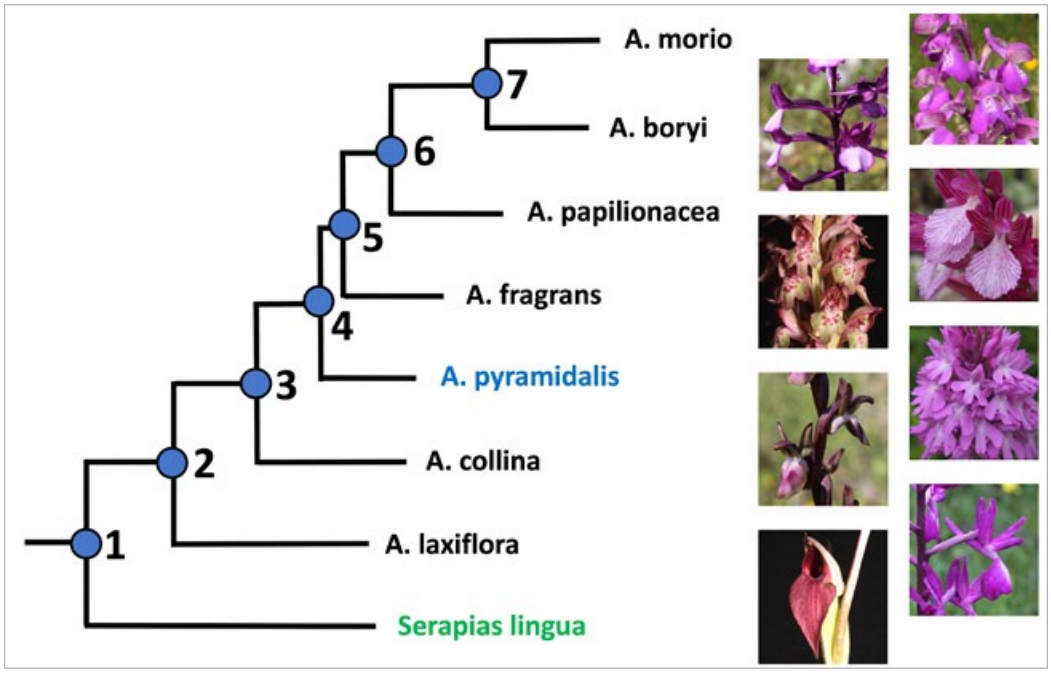

Figure 1. Portion of first-generation candidate gene DNA-based tree showing relationships among selected species of the expanded genus *Anacamptis*. The genus is monophyletic, as it includes all of the species descended from hypothetical ancestor 2. Similarly, the pairing of *A. morio* and *A. boryi* is monophyletic, because they are the only descendants of hypothetical ancestor 7. *Anacamptis* was expanded from a monotypic genus consisting only of *A. pyramidalis* because otherwise the remaining species would be paraphyletic; originating at hypothetical ancestor 2 but then explicitly excluding *A. pyramidalis* above ancestor 4. If, for example, one were to separate as a new genus *A. pyramidalis* plus *A. boryi*, uniting them because they share unusually slender labellar spurs, that new genus would be described as polyphyletic; partly derived from ancestor 4 and partly from ancestor 7. Modern classification accepts only monophyletic supraspecific taxa. *Redrafted from portion of Figure 2 of Bateman et al. (2003).*

and *Serapias* unequivocally circumscribed genera is not monophyly alone but rather monophyly plus the comparatively greater length and statistical robustness of the branches immediately below them, compared with the much shorter branches that separate species within these genera. Crucially, it is the combination of monophyly with the relative lengths and statistical robustness of the subtending branches that dictates where lines are optimally drawn to circumscribe genera. For example, although *Steveniella* is placed immediately below the expanded *Himantoglossum* in Figure 2 and could therefore in theory be united with it to expand this monophyletic genus, the branch linking *Steveniella* to *Himantoglossum* (green arrow) is short and receives no statistical support. Given such profound uncertainty of its correct evolutionary placement in the tree, it would not be appropriate for me or others to amalgamate *Steveniella* into *Himantoglossum* based on this weak and limited evidence (similar arguments preclude the separation of *Coeloglossum* from *Dactylorhiza* and *Nigritella* from *Gymnadenia*).

If we now move on to consider Figure 3 – a study that analysed the genus *Ophrys* only but drew its DNA characters from much of the nuclear genome – the shape (topology) of the tree is very similar to that given for *Ophrys* in Figure 2, but because Figure 3 represents a far larger number of analysed characters, all of the tree branches are greatly lengthened and therefore strengthened. Nonetheless,

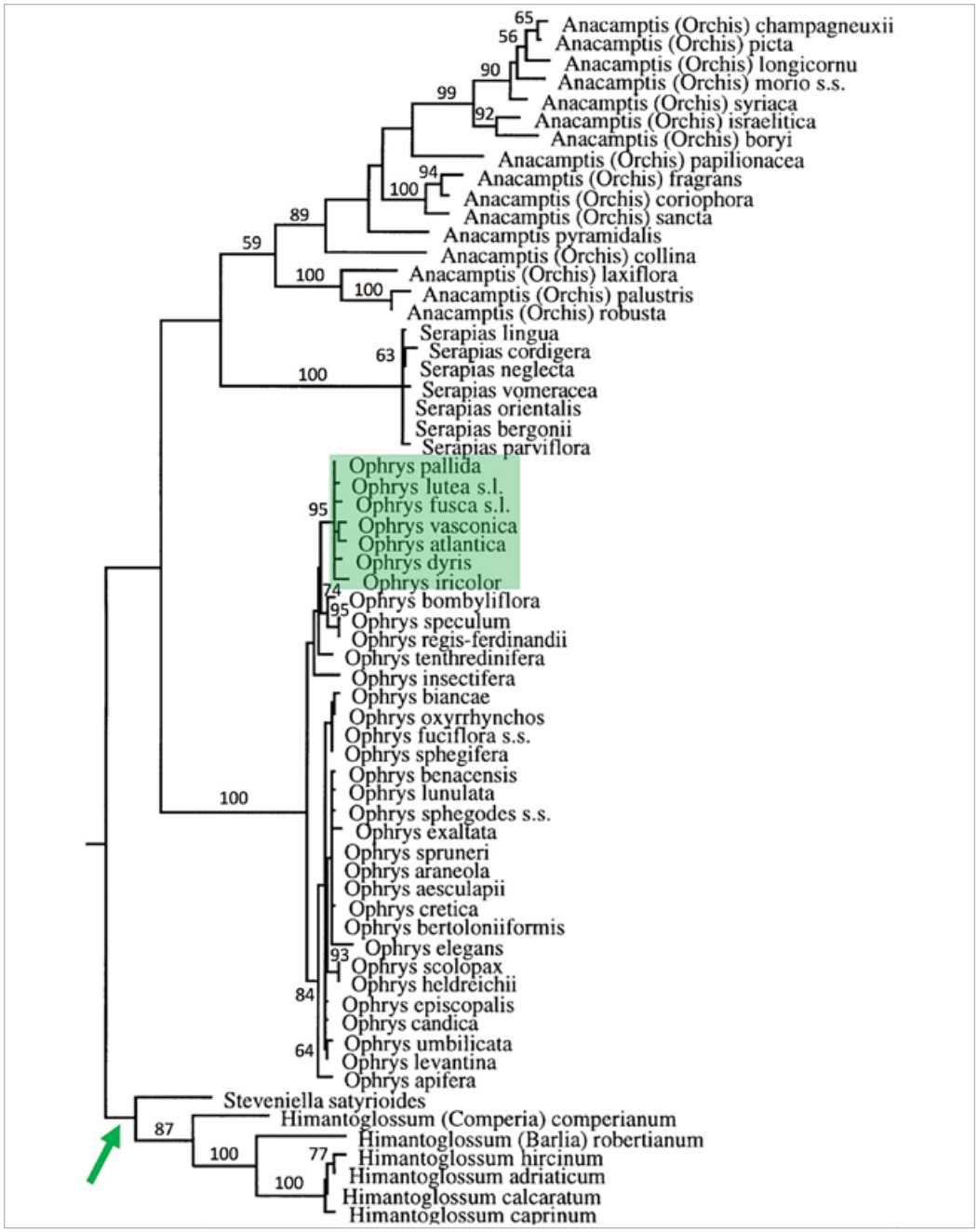

Figure 2. First-generation candidate gene DNA-based tree placing the genus *Ophrys* in its broader evolutionary context. Each taxon is represented by a single plant, sampled from throughout Eurasia. Tree constructed from 443 SNPs (this portion from c. 150 SNPs) obtained through Sanger sequencing of a single ubiquitous genetic region, nrITS. Tree built through parsimony; numbers on branches indicate bootstrap support exceeding 50%. *Selected and modified portion of Figure 2 of Bateman et al. (2003).*

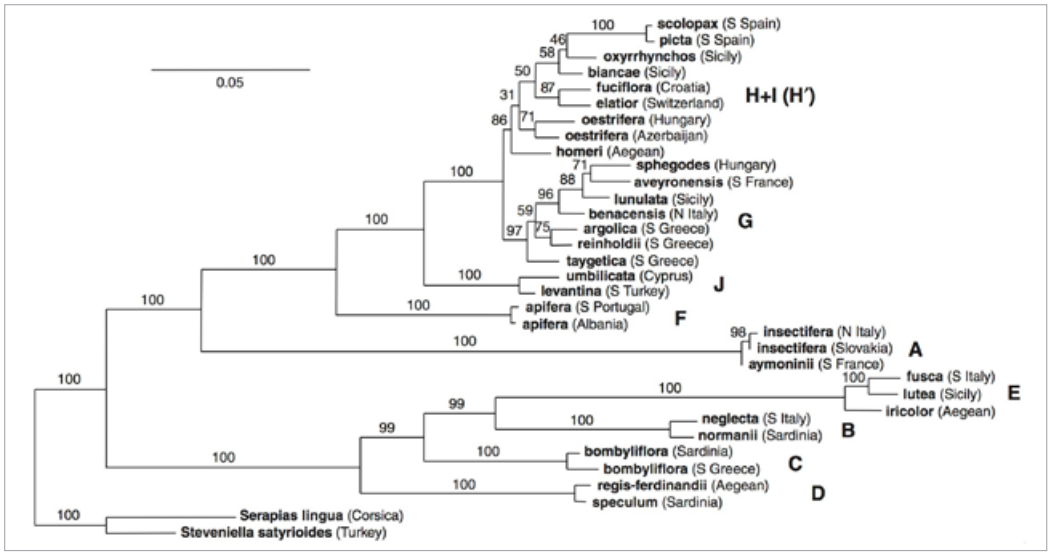

Figure 3. Second generation (RAD-seq) DNA-based tree spanning all nine major groups of the genus *Ophrys* (boldface capitals). Most microspecies are represented by only a single plant, sampled from across the Mediterranean. Tree constructed from 4,159 nuclear SNPs obtained through the second generation sequencing method termed RAD-seq. Tree built through maximum likelihood; numbers on branches indicate bootstrap support. *Figure 3 of Bateman et al. (2018).*

once again, comparatively long branches subtend each monophyletic group of plants, thereby clearly delimiting eight of the nine groups that I view as bona fide species within *Ophrys* (labelled A–H). Only the distinction between *O. sphegodes* (G) and *O. fuciflora* (H) is less clear-cut, as these 'macrospecies' are subtended by branches closer in length to those separating the many 'microspecies' (in my opinion, subspecies and varieties) that exist within most of groups A–J.

We once more zoom in by about an order of magnitude less in molecular divergence when considering the study summarised in Figure 4, which examined only four morphologically and molecularly very similar 'microspecies' within *O. sphegodes* that co-occur in southeast Italy but gathered extensive datasets from all three genomes present within each plant (see 'Myth 4'). Multiple plants from two or more populations of each 'microspecies' have been analysed by the authors of Figure 4 (Cozzolino et al., 2020). Three of the four morphologically established microspecies are seen as monophyletic (the lowermost taxon, *garganica*, is shown as paraphyletic). But crucially, the branches that subtend each of the three monophyletic groups are not substantially longer than those within each group. Assuming that you have collected sufficient volumes of genetic data through second-generation sequencing, this is the pattern of branching that you would expect to find among a set of closely related populations of the same bona fide species.

If you then compare the three trees presented here as Figures 2–4, it is worth noting that the genetic differences are about ten times greater in Figure 2 than in Figure 3 and about ten times greater in Figure 3 than in Figure 4. Although the individual plants may appear genetically quite different in Figure 4, in truth they are no more distantly related than you are from your own sisters and brothers, aunts and uncles, nieces and nephews. It is essential to consider the scale of genetic difference in contrasting trees when attempting to convert those trees into a robust, biologically meaningful classification.

To summarise, being monophyletic is an important property – perhaps the most important property of a family, genus and arguably even

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EXA 5 E
EXA 2 B
EXA 4 C
EXA 4 C
EXA 4 C
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EXA 5 E
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SPH 5 E
SPH 2 B
SPH 2 B
INC 5 E
INC 2 D
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INC 2 D
INC 6 E
INC 5 E
INC 1 F
INC 6 F
INC 6 F
INC 6 F
INC 6 F
GAR 2 C
GAR 3 D
GAR 6 E
GAR 6 E
GAR 6 E
GAR 6 A
GAR 6 F
GAR 6 E
GAR 6 E
GAR 2 C
GAR 3 D
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a species – but monophyly alone is insufficient to delimit a taxon; it is better viewed as a pre-qualifier. We are primarily seeking discontinuities – differences between groups of plants that are significantly greater than average within the chosen set of samples. It would of course be helpful to us if genetic discontinuities such as those evident in Figures 2 and 3 were to be matched by similar discontinuities in the morphology of the plants, so that we can readily diagnose them and thus recognise them in the field. But the only way we can actually know whether this is true is to analyse morphology within a comparative framework, quantitatively and scientifically, generating morphological matrices that parallel the corresponding molecular matrices.

Myth 4: Only a tiny portion of the entire genome is used to build DNA-based evolutionary trees

If I were writing this article in the 20th century this statement would not be a myth. But I am actually writing at a time that is already one fifth of the way through the 21st century, when sequencing technology is advancing even more rapidly than computing technology.

Essentially, sequencing simply involves determining the linear order of four nucleotide bases (abbreviated as A, C, G and T) along the DNA strand representing a known region of one of the three genomes found in each plant cell: the nuclear genome is partitioned among chromosomes and is inherited equally from 'mother' and 'father'. The organellar genomes of the many plastids (primary function photosynthesis) and mitochondria (primarily function respiration) present in each plant cell are, in most higher plants, inherited solely from the 'mother'.

As reviewed by, for example, Heather & Chain (2016), sequencing approaches that target a single 'gene' are termed 'first generation'. In the early days, such analyses required the use of radioactive materials (obliging at least one of my colleagues to sacrifice his trousers after one unfortunate spillage!), and they typically yielded a string of only about 200 DNA 'letters' per analysis. Given that human and chimpanzee DNAs are about 99% similar overall, this would mean only two DNA 'letters' distinguishing humans from chimps are likely to be found per analysis. Technological improvements soon meant that up to 800 letters per analysis could be obtained by employing fluorescent labels rather than radionuclides, allowing much greater automation of the sequencing process. The search began to determine which plant genes are most diagnostic of species – DNA regions that were eventually termed DNA 'barcodes'. The resulting, internationally agreed, recommendation was to focus on two plastid genes, *matK* and *rbcL* (Hollingsworth et al., 2009), though Chinese 'barcoders' later wisely recommended adding the nuclear ribosomal region ITS that is more effective at lower taxonomic levels (Li et al., 2011).

Subsequent, 'second generation' sequencing allowed ready access to a much greater percentage of the total genomes. This set of techniques replaced fluorescence with luminescence via impressively sophisticated nanotechnology and permitted many plants to be sequenced during a single analysis. Parallel technological developments in computing allow overlapping sequences to be strung together until a substantial proportion of the entire genome can be read. Subsidiary techniques allow single-letter differences between organisms (termed single-nucleotide polymorphisms – SNPs) to be filtered out from the much larger number of identical letters. As early as 2005, we could already state that about 35 million SNPs separate us from chimpanzees.

Figure 4 (opposite). DNA-based tree of multiple plants of four 'microspecies' (*garganica*, *incubacea*, *sphegodes* sensu stricto, *exaltata*) within *Ophrys sphegodes* sensu lato, sampled from just seven populations on the Gargano Peninsula of SE Italy. Tree constructed from 59,435 variable bases from the nuclear genome obtained through the second generation sequencing method termed Genotyping-by-sequencing. Numbers in squares indicate contrasting categories of plastid genome (35 SNPs) and letters in circles indicate contrasting categories of mitochondrial genome (53 SNPs). Tree built through maximum likelihood; numbers on branches indicate bootstrap support. *Modified after Figure 2 of Cozzolino et al. (2020); reproduced with permission of the publishers, Wiley, from Journal of Systematics and Evolution.*

Unsurprisingly, most molecular analysts now aim to generate second generation datasets, and the early 21st century concept of single-region barcodes already appears passé. Instead of worrying about the paucity of genetic data at our disposal, we now worry about how best to analyse and interpret such vast datasets via our immensely powerful computers. Nonetheless, it is still ultimately our brains that are challenged with attempting to extract biological and taxonomic meaning from such huge bodies of data.

Now the race is on to perfect 'third generation' nanopore sequencers, which sequence single molecules of DNA by monitoring fluctuations in electric charge as the strand passes through the pore (Heather & Chain, 2016). They have the potential to perform accurate field-based DNA analysis (e.g. Bateman, 2016). I believe that we would already possess such devices, had the potential size of the market been made sufficiently clear to prospective developers. And when we finally do have ready access to such devices, they will prove revolutionary.

Myth 5: DNA sequencing is not of direct relevance to field botany

The relevance of molecular methods to field botany can be considered in two contrasting contexts: passive and active. What I term passive relevance is that, as a field botanist, I would like to believe that the species I record on the ground are genuine biological entities and are the product of evolution, rather than artificial constructs of another human being's brain. The more science that can be brought to bear when circumscribing taxa, especially species, the greater is the probability that the entities we are mapping are real and that the characters put forward as being most diagnostic (whether morphological or molecular) are the best available.

But it is active relevance that I believe is currently being misunderstood by most of the people involved in studying biodiversity. Third-generation sequencing, with its fiendishly clever technology and extreme miniaturisation, offers real potential for finally not only making DNA analysis readily portable but also placing it in the hands of all of us, a hand-held sequencer becoming as commonplace as a GPS device (e.g. Bateman, 2016). Most of my colleagues who advocate such broad access to DNA perceive hand-held sequencers as primarily an identification tool, relating field measurements to classifications previously generated by 'experts'. For example, the resulting data could be checked against a professionally compiled sequence database such as GenBank, immediately returning possible identifications listed in order of decreasing probability.

But I see the most appropriate role of non-professional botanists as being far more deeply involved and dynamic. The field sequences that will in the future be generated by us all should actually being entered into the master database, ideally accompanied by scale images. Such a system would encourage at least a tenfold increase in the speed at which we can delimit species through molecular methods. Given both the necessary technology and the necessary confidence, we could all contribute massively to modern, evolutionary-based taxonomy, rather than simply being passive users of conservative classifications devised by others and so caught in limbo between the 18th century and the 21st.

Myth 6: Trees based on vast amounts of DNA data reconstruct evolutionary history with infallible accuracy

Yes, I'm afraid that this too is a myth – one that would need a separate article to explore in adequate depth. Consider Figure 4, which presents the results of a study recently published by a research group operating only a little behind the cutting edge of DNA technology (Cozzolino et al., 2020). Second-generation sequencing has been applied to all three genomes – nuclear, plastid and mitochondrial – which can then be compared with each other (also with a modest amount of morphometric data: Sedeek et al., 2014). It is clear from these and later results (Bateman et al., in press) that the evolutionary signal obtained from the nuclear genome is far more consistent with morphometrically-circumscribed 'microspecies' than are the signals derived from the mitochondrial and plastid genomes, despite the

fact that it is the plastid genomes that have been most commonly used in the past to reconstruct evolutionary trees and still contain the internationally recommended 'genes of preference'.

It is also clear that taxon sampling is crucial to obtaining credible outcomes, and that a monographic approach encompassing typically one large genus or small family is needed to explore each taxonomic group. Studies that are instead taxonomically broad but based on narrow geographic regions are doomed to under-achieve, particularly in areas of the globe such as the British Isles where most of our rather deficient hotchpotch of plant species migrated into our post-glacial landscape only within the last 10,000 years. They can assist in basic identification but have less to offer either taxonomic circumscription or evolutionary insight. Given present levels of understanding, DNA data are certainly no panacea.

The deepest understanding, and therefore the best classifications, emerge when several different kinds of data are collected as part of a carefully choreographed project involving intensive, detailed sampling of plants and their features, the resulting data being analysed within a well-founded conceptual framework. Morphology, molecules and ecology all have their crucial parts to play in telling a coherent evolutionary story. Unfortunately, many evolutionary biologists who generate large quantities of DNA data shy away from converting those data into formal classifications. Colleagues often tell me that they are interested in evolutionary mechanisms rather than taxonomy, a defence that I consider spurious because it is obvious to me that taxonomy should reflect evolutionary mechanisms. I suspect that the famously contentious nature of taxonomy, together with the lack of any internationally agreed standards for the amount and kinds of data that should be gathered before taxa are (re)described, also contribute to taxonophobia.

However strong and well-integrated future evolutionary studies become, different classifications – in some cases radically different classifications – will continue to compete for our attention, and formal names will continue to change periodically. That is not in itself a bad thing. But it will help biodiversity-related studies enormously if those differences transcend mere opinion so that they at least reflect explicit contrasts in scientific emphases.

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Lysimachia minima (Chaffweed) – another roadside halophyte?

ANDY AMPHLETT

Lysimachia minima on A889 road verge south of Dalwhinnie, September 2015. *Andy Amphlett*

Lysimachia minima (previously *Centunculus minimus*) (Chaffweed) was memorably described by Francis Rose as '*amongst (the) smallest flowering plants of Europe*' (Rose, 1981). Its habitat is described as '*damp sandy places in rather open communities on heaths and by the sea, often on somewhat disturbed ground*' (Clapham et al., 1987); '*open places on damp, sandy sites, often near the sea and usually on acidic soils… (including) sand dunes, sandy cliffs, along paths and tracks on heathland, and in forest rides. It is a poor competitor*' (Preston et al., 2002); '*bare damp sandy ground on heaths and in woodland rides*' (Stace, 2019).

In 2015 I found a large population of *L. minima* beside the A889 south of Dalwhinnie (NN68, v.c. 96) (see photo above and on p. 17); the largest stand extending 24 m along the western verge of the road. In denser patches, the reddish tinge to the plants and their texture was immediately eye-catching, at least to someone with a penchant for examining road verges for halophytes. Detailed examination revealed the characteristic dark border to the underside of the leaves and 'top-shaped' capsules. This was the first time I had seen this species on a roadside, here reaching an unusually high altitude of 390 m AOD. Typical roadside halophytes growing with or close to it included *Puccinellia distans* (Reflexed Saltmarsh-grass) and *Sagina maritima* (Sea Pearlwort). Checking the BSBI Distribution Database (DDb) I noted that several other Recorders had also found *L. minima* on roadsides, but I could find no mention of this habitat in floras.

Method

All records (3832 inclusive of duplicates) of *L. minima*, on the DDb at 25 March 2020, were downloaded to a spreadsheet. The Comment / Locality note / Habitat / Placename Fields were searched for terms related to 'Road', 'Verge', Car park' and 'Street'. The text in these Fields was then manually searched for any additional roadside records. That resulted in 153 roadside records. Excluding these records from a DDb query, the remaining records which had site

grid references at 10 m precision or better, were checked for any additional roadside locations, using the DDb's mapping options. That process added an additional 11 records, giving a total of 164 records.

Analysis

Roadside populations are recorded from 95 hectads in 34 vice-counties of Britain and Ireland (Figure 1). Vice-counties with records from more than 5 hectads are v.c. 105 (14), v.c. 104 (8), v.c. H1 (7), v.c. 98 (7) and v.c. H27 (6). The number of hectads first recorded per BSBI date class are shown in Table 1.

In 28 hectads, the only records are of roadside populations (Figure 2). All the populations in these hectads were first recorded since 2006, and in 25 hectads post-2009. These 28 roadside only hectads comprise 7.4% of the post-1999 hectad range of the species.

The records indicate a marked post-2009 increase in the hectad range of roadside populations. There will be an Atlas 2020 recording bias here; there was also a (smaller) increase post-1986 during fieldwork for Atlas 2000.

There is a marked concentration of roadside occurrences in the NW Highlands of Scotland, and this is where many of the hectads that only support roadside populations occur. In general, roadside records are from within or adjacent to the core range of the species, but there are several records that demonstrate a marked range extension. For example: beside the A85 in Glen Lochy (NN22,

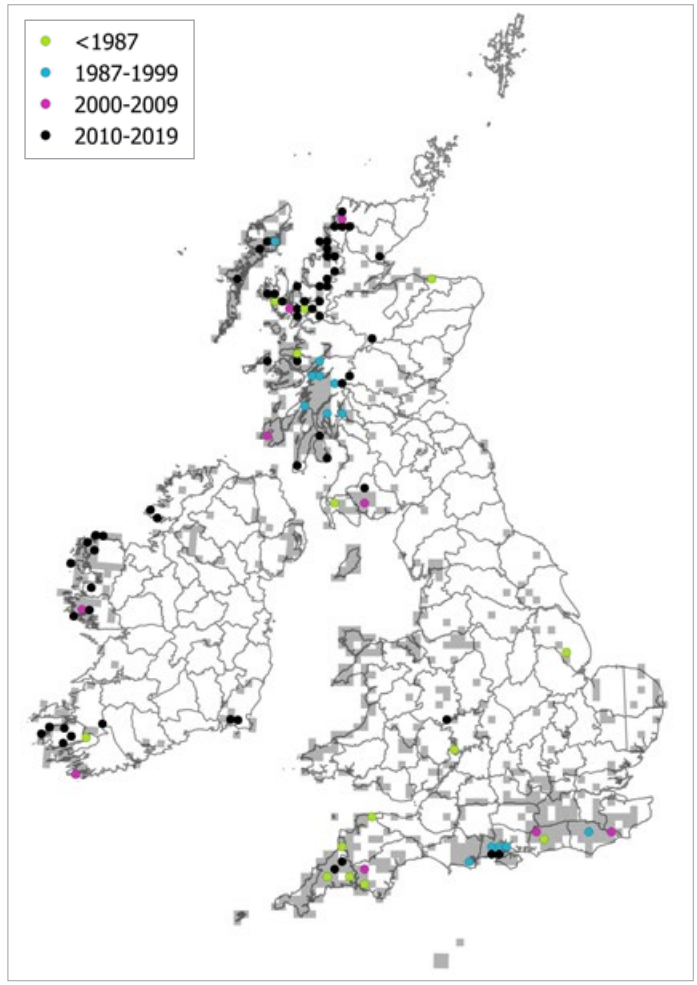

Figure 1. Distribution of roadside populations of *Lysimachia minima* (Chaffweed) by date class of first record (hectads). Grey shading indicates all records for all dates, including coastal and roadside populations.

Table 1. Number of hectads with roadside populations of *Lysimachia minima* first recorded per BSBI date class.

BSBI data class	Hectads
pre-1930	4
1930–1949	0
1950–1969	4
1970–1986	6
1987–1999	13
2000–2009	9
2010–2019	59

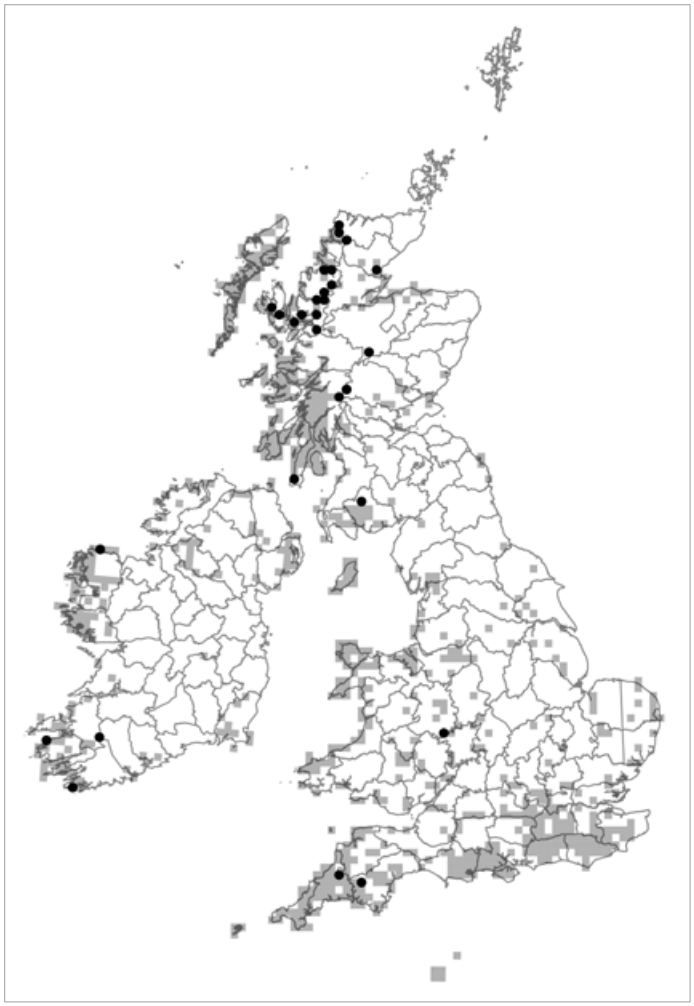

Figure 2. *Lysimachia minima*. Hectads with roadside populations only (black dots).

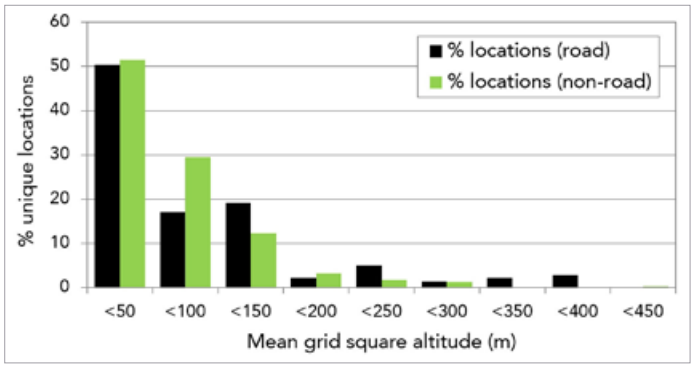

Figure 3. Mean grid square altitude (metres) of unique roadside cf. non-roadside locations of *Lysimachia minima*, with grid reference precision 1000 m (monad) or better.

v.c. 98); beside the A82 north of Tyndrum (NN33, v.c. 88); and especially, beside the A889 south of Dalwhinnie (NN68, v.c. 96) referred to above. This location is c. 60 km from the nearest previously recorded population, and here plants occur along a c. 1 km length of road edge. Altitudes of roadside populations (median 50 m AOD, interquartile range 26–116 m) are similar to non-roadside populations (median 48 m AOD, interquartile range 18–88 m); Figure 3.

An analysis of associated species of roadside populations was undertaken, based on the 113 unique 100 m grid squares within which roadside populations of *L. minima* have been recorded. In total, 442 associated species and hybrids have been recorded, of which 415 have Ellenberg values. The majority (91.1%) have an Ellenberg 'S' (salt) value of zero, as does *L. minima*, meaning 'absent from saline sites; if in coastal situations, only accidental and non-persistent if subjected to saline spray or water' (Hill et al., 2004). Forty-one associated species and hybrids have Ellenberg 'S' values between 1 and 5, indicating salt tolerance (a value of 1) to obligate halophytes (a value of 4 or 5). The most frequent associated species

Top: *Lysimachia minima* (Chaffweed) (in foreground, with vehicle tyre tracks immediately adjacent), NN 6374 8403, A889 south of Dalwhinnie, 360 m AOD, (v.c. 96), September 2015. Brownish plants of *Gentianella campestris* (Field Gentian) on low bank to right. Bottom: close-up of plant with fruit. Note characteristic dark border to the underside of the leaves and 'top-shaped' capsule. *Andy Amphlett*

(at 100 m grid square precision) is *Radiola linoides* (Allseed), with an 'S' value of 1. Obligate halophytes recorded in association with roadside populations of *L. minima* are *Puccinellia distans*, *Sagina maritima*, *Spergularia marina* (Lesser Sea-spurrey) and (rarely) *Juncus ranarius* (Frog Rush).

Discussion

Lysimachia minima is now widespread on road verges, with most of the recorded colonisation being first recorded after 2009. The majority of associated species are not halophytes, but in a few locations *L. minima* is growing beside heavily salted roads along with obligate halophytes. It is therefore at least salt tolerant. While most roadside locations are within or adjacent to the core range of the species, a few locations must be the product of long-distance dispersal, e.g. the Dalwhinnie site discussed above, most probably by vehicle tyres. The combination of salt tolerance, dispersal ability and high seed production suggests that this species could be about to become more widespread beside roads in Great Britain and Ireland.

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Betonica officinalis (Betony) in Scotland and climate change

DAVID TRUDGILL

This article explores possible reasons for an abrupt decrease, prior to the year 2000, in the abundance of *Betonica* (*Stachys*) *officinalis* (Betony), and of several other meadow species close to the border between England and Scotland. More recently, Betony and some other meadow species have colonised northern Scotland and the possible role of factors such as the sowing of wildflower seed mixtures and climate warming are examined.

The stimulus for this article was the Betony that we had established from seed in our wildflower meadow near Blairgowrie. The seed came from a rough pasture west of Dunkeld (Perthshire) where Betony has been present for many years. It has established well in our meadow and I was surprised when our local BSBI plant recorder (Martin Robinson) told me that Betony was rare in Scotland as I was familiar with it when we lived in England where it appeared to be 'common'. Consulting BSBI distribution maps prior to 2000 confirmed that Betony was comparatively rare in Scotland. The map for the period 1987 to 1999 (Figure 1) identified 27 populations of Betony from 24 hectads, the greater majority of which were in southern Scotland (a hectad is 10 km × 10 km square: the area of Scotland is c. 800 hectads). In contrast Betony was recorded from almost every hectad in England and Wales, except for the predominantly arable agricultural areas in eastern England (Figure 1, left).

Why was Betony relatively rare in Scotland prior to 2000?

One possible reason for the apparent rarity of Betony in Scotland prior to 2000 is that Scotland, and particularly northern Scotland were relatively under-surveyed (Bell, 2015). However, if Betony had been present on the mainland in northern Scotland, it is difficult to believe some populations would not have been discovered. Other possibilities include differences in land use between Scotland and the rest of Britain, but this also seems unlikely given the recent increase in Betony in very different parts of Scotland. Consequently, it seems more likely that in the past, with the exception of the Isle of Skye where a few populations were present, Betony never became established in northern Scotland (defined here as north of Dunkeld, Perthshire – the northern limit of Betony on mainland Scotland prior to 1999). It could be argued that this was because the 'Little Ice Age' made Scotland too cold for Betony to produce seed. However, the UK distribution map for 1950–1969 is very similar to that 40 years later. Also, Betony is present in the mountainous areas of Wales and northern England and in Europe it is found north of the Arctic Circle (Kew Science – *Plants of the World online*). Therefore, it seems most likely that following the end of the last ice age the northward spread of Betony faltered close to the Scottish border, possibly due to a combination of factors, but primarily to a lack of seed spreading into Scotland. As Betony seed has no obvious long-distance dispersal mechanism, it is relevant to consider how it became so widespread in England and Wales, but not in Scotland.

Movement of seed

The recent changes in agriculture and climate are likely to have less effect on the spread of plants whose seed are readily moved by wind, water and birds than on those whose seed are spread by other means. Costley (2015) observed that Betony was comparatively slow to recolonise a field that had reverted to a traditional hay meadow and was absent from meadows that were less than 88 years old. In the past, the movement of the seed of many species

between meadows was primarily by the movement of hay, of farm equipment, and of grazing animals (Wallin et al., 2009). Betony flowers late in the summer, so its seeds were unlikely to be spread in hay, except if cut unusually late. Therefore, movement of livestock, including their dung, seems likely to have been especially important. There was no information for Betony, but seed from many species survived passage through horses (Stroh et al., 2012). Some seed of *Sanguisorba officinalis* (Great Burnet) and *Filipendula ulmaria* (Meadowsweet) survived passage through cattle and six months in a manure heap (Edwards & Younger, 2006). Bonn (2005) observed that a proportion of the seed of 12 of the 14 species she tested survived passage through sheep and cattle and recorded passage times of up to three days – sufficient time for animals 'on the move' to disperse seed over quite a distance. In this way, and given adequate time, seed of species that, after the last ice age colonised only a small part of southern Britain could be spread far and wide.

One can speculate that one reason for the past failure of Betony to colonise most of Scotland was due to a lack of seed reaching suitable sites, and that this was due to patterns of movements of livestock, hay and equipment being different close to the Scottish border to those in in the rest of England. Perhaps trade was predominantly north to south as, until the mid-1800s, the predominant movement of cattle was from Scotland to markets in England.

The increase of Betony in northern Scotland

To determine whether Betony had been expanding northwards, or retreating southwards, I compared its population number and range in the period 1987–1999 with that in 2000–2019 (Figure 1). This revealed that since 1999 the number of populations recorded in Scotland had more than doubled. In the period 1987–1999 there were only two Betony populations recorded north of Dunkeld, both close to Portree in the Island of Skye where it had been present for at least 80 years (Stephen Bungard, pers. comm.). In the period 2000–2019 a total of 17 new populations were identified north of Dunkeld, all of which are classified as 'introduced' or of 'unknown' status. Betony is now found as far as Elgin in the north and South Uist in the west (Figure 1, right).

Other meadow species with discontinuous distributions, and recent increases in northern Scotland

Some species are much more abundant and widely distributed just south of the Scottish border than they are north of it. The BSBI distribution maps show that Great Burnet is widespread and abundant in much of England and Wales but prior to 1987 had not been recorded from northern Scotland. In the period 1987–1999 a single population was recorded near Grantown-on-Spey. This population has persisted and since then five new populations have been identified north of Dunkeld, all classified

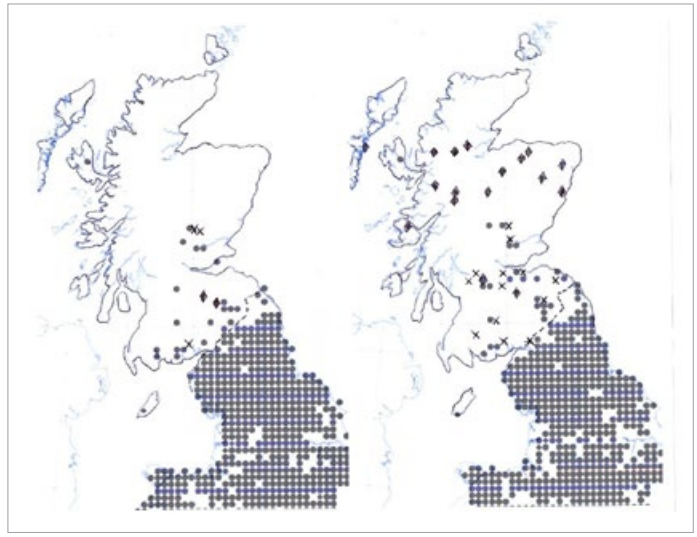

Figure 1. Distribution of Betony (hectad scale) for 1987–1999 (left) and 2000–2019 (right). Solid circles notify populations classified as native, diamonds introduced, and crosses unknown. *Based on BSBI Distribution Maps (with hand-drawn additions).*

as introduced or of unknown origin. Prior to 1987 *Poterium sanguisorba* (Salad Burnet) had been recorded from nine hectads north of Dunkeld, most of which were coastal, and all populations except one were either introduced or of unknown origin. Most of these did not persist and in the period 1987–1999 there were only three populations. In the period in 2000–2019 a further six populations were recorded giving a total of nine, all of which are classified as introduced or of unknown origin. Prior to 1987 seventeen populations of *Plantago media* (Hoary Plantain) had been recorded north of Perth, mostly coastal and 'introduced' except for a small cluster around Dingwall. These were probably introduced as contaminants of grass seed (David Welch, pers. comm.). Grass seed is now cleaner and in the period 1987–1999 the number of *Plantago media* populations had decreased to six. Four of these appear to have persisted with a further four added in the period 2000–2019. None of these new populations are classified as native.

There is another group of meadow plants that were previously uncommon in both Scotland and also in some parts of northern England that have similarly increased in northern Scotland. There was only one population of *Pulicaria dysenterica* (Common Fleabane) north of Dunkeld in 1987–1999 to which a further five were added between 2000 and 2019. There were none of *Pastinaca sativa* (Wild Parsnip) prior to 2000, but six populations were identified from 2000 to 2019. The recent expansion in Scotland (and in Ireland) of *Scrophularia auriculata* (Water Figwort) has been remarkable (Figure 2). Prior to 1987 only two populations had been recorded north of Dunkeld. In the period 1987–1999 only five populations were recorded, none of which were on the mainland. In the period 2000–2019 this had increased to >50 populations, including some in the very north of mainland Scotland and Orkney. Most are of unknown status, but Ian Green (pers. comm.) suggested they may derive from garden escapes that have reverted from variegated to green?

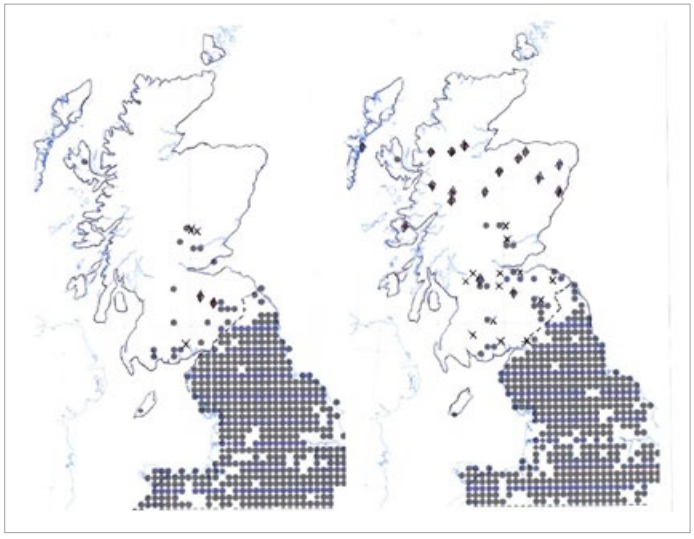

Figure 2. Distribution of Water Figwort (hectad scale) for 1987–1999 (left) and 2000–2019 (right). Solid circles notify populations classified as native, diamonds introduced, and crosses unknown. *Based on BSBI Distribution Maps (with hand-drawn additions).*

How and why are Betony and some other meadow species now increasing in northern Scotland?

For a species to colonise a new site the seed must reach the site, the site must provide a suitable habitat for germination and growth, and the climate must be favourable. As Betony has only recently colonised northern Scotland this poses the questions: 'How did it get there and what, if anything, has changed'?

I contacted several of the BSBI Vice-county Recorders in the north of Scotland and there seems little doubt that the recent increase in Betony is due to introductions. The sources of the seed must be a considerable distance away as Betony was almost certainly not present before. This raises the question as to how did the seed get there? Were the introductions accidental or deliberate? Although many agriculture-related pathways for

spread have been lost, new ones have arisen. Bonn (2005) summarises some accidental methods of introduction including (potentially long-distance) transport in mud attached to vehicles, and their passengers. This may be how some populations of Betony first reached northern Scotland. Ian Strachan (pers. comm.) found Betony adjacent to the car park by Laggan Lochs and also by the Commando Memorial above Spean Bridge. Lynne Farrell (pers. comm.) recorded Betony on the Isle of Lewis outside the museum shop where it had clearly been accidentally introduced.

Other pathways are also involved. Mick Crawley (pers. comm.) commented that the Betony recorded from Helmsdale were planted, whereas those at Kinloch Hourne were perhaps accidentally introduced with horticultural material.

Deliberate introductions – wildflower seed mixtures

Duncan Donald (pers. comm.) has no doubt that the population of Betony at Torridon campsite was deliberately sown in a seed mixture that also included *Agrimonia eupatoria* (Agrimony). In Torridon, Scottish Natural Heritage sowed a seed mixture containing Salad Burnet and Great Burnet, and several other species to 'prettify' their car park area (Duncan Donald, pers. comm.). One of the two records of Hoary Plantain in Jura came from an RSPB reserve where it was imported in bird feed and in a seed mixture to grass-up a new bank (Malcolm Ogilvie, pers. comm.). In this context, it is interesting to note that at a tetrad scale the distribution of *Leucanthemum vulgare* (Oxeye Daisy) clearly follows many of the roads in the upland parts of Scotland (e.g. the A9, see BSBI map), but it is unclear whether this reflects spread by vehicles, spread in seed mixtures broadcast onto the verges, the type of habitat available along the sides of roads, or all three.

The wildflower seed mixtures available to buy vary depending on their purpose and the environment for which they are designed. Betony is included in mixtures for clay and acid soils and for damp and shaded areas. These mixtures often also include Great Burnet, Salad Burnet and Hoary Plantain. All of these species have increased their distributions northwards since 1999, but in northern Scotland they tend not to be found together, perhaps indicating that the sowing of wildflower seed is not the major method of their introduction. *Silaum silaus* (Pepper Saxifrage) is also often included in mixtures with Betony but, although present in southern Scotland prior to 1970, it has not extended its range beyond central Scotland. In contrast, Wild Parsnip has extended its range into northern Scotland although it is not generally a component of wildflower seed mixtures. However, its seed is available to those who want to grow it for culinary purposes. These observations support the conclusion that, besides the sowing of wildflower seed, other pathways of introduction and spread are involved.

Climate warming

It is difficult to argue that in the past parts of northern Scotland were too cold for Betony. Even so, it is not possible to exclude increasing temperatures as one factor contributing to the recent expansion of the range of Betony into northern Scotland. Britain has warmed significantly in the last 40 years. Figure 3 compares the mean annual temperatures for 21 met. stations, adjusted for altitude above sea level (0.65 °C was added for every 100 m above sea level) for two decades, 1970–1979 and 2010–2019 and, over this period average temperature increased from 9.44 °C to 10.32 °C (+0.88 °C). The areas circled in red encompass met. stations with average temperatures between 9.0 °C and 9.9 °C and this zone has shifted more than 200 km northwards. Rainfall has also increased in most parts of Britain.

Final comments

Stroh et al. (2019) analysed the distributions of 458 native and archaeophyte lowland grassland species and showed that almost the whole of Scotland, except for the south-east, had only 150 to 250 species per hectad compared with 250 to 450 species south of the border. As Scotland, especially northern Scotland has a less diverse meadow flora than most of England and Wales, should a northwards expansion in the species we lack be welcomed?

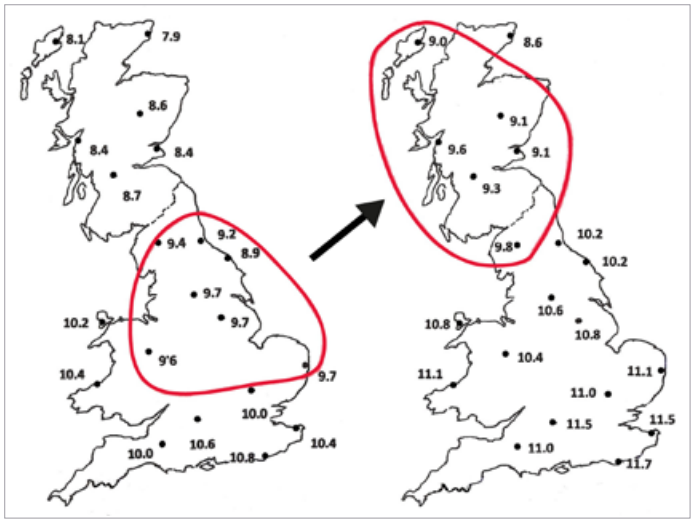

Figure 3. The mean annual temperatures for 21 met. stations, adjusted for altitude (+0.65°C for every 100 m above sea level), for the decades 1970–1979 (left) and 2010–2019 (right). The areas encircled in red are those with average temperatures between 9.0°C and 9.9°C.

Welcome or not, a northwards expansion should be expected because of climate warming, but Bell (2015) found that of 196 taxa examined with their northern limit in the UK only 59 had extended their distributions northwards. Consequently, Betony and the other species considered here are in the minority. The distribution maps before and after 2000 give the impression of populations of Betony and the other species 'popping up' almost at random in northern Scotland. However, as with Oxeye Daisy, these new populations are usually close to roads and people. As these species were previously either absent or very rare these new (alien) populations must mostly be the result of seed being introduced from a considerable distance away. The sowing of wildflower seed mixtures is only one of several methods of introduction and may not be the most important. It is also unclear whether the upsurge of Betony and the other species in northern Scotland is mainly due to an increase in the amounts and distribution of their seed, and/or whether other factors, such as climate warming, are equally or more important. If the latter, further additions to the flora of northern Scotland are inevitable. However, is it sensible or desirable to classify these new additions as alien, as they will be under current Scottish legislation (see my letter, page 82), even when they are native in other parts of Britain?

Acknowledgements

I am grateful to the Vice-county Recorders in northern Scotland, to David Elston, Lynne Farrell, Peter Stroh, Ken Thompson and Kevin Walker for helpful comments. The views expressed are, however, entirely my own.

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Historic records of *Carex filiformis* (Downy-fruited Sedge) in Wiltshire

DAVE GREEN

I have always held a great fascination for old county floras so when I first came to Wiltshire in the late 1970s I swiftly acquired a copy of Donald Grose's *Flora of Wiltshire* (Grose, 1957).

It has been a revelation to me that botanists had spent many years finding plants and then many more writing a book about it. After poring over the text, it became very evident to me that it was just like a giant treasure map. The anecdotes, comments and locations it contained drove me on to investigate over the following years, and in many cases refind the records that had been reported decades before and sometimes even in the previous century.

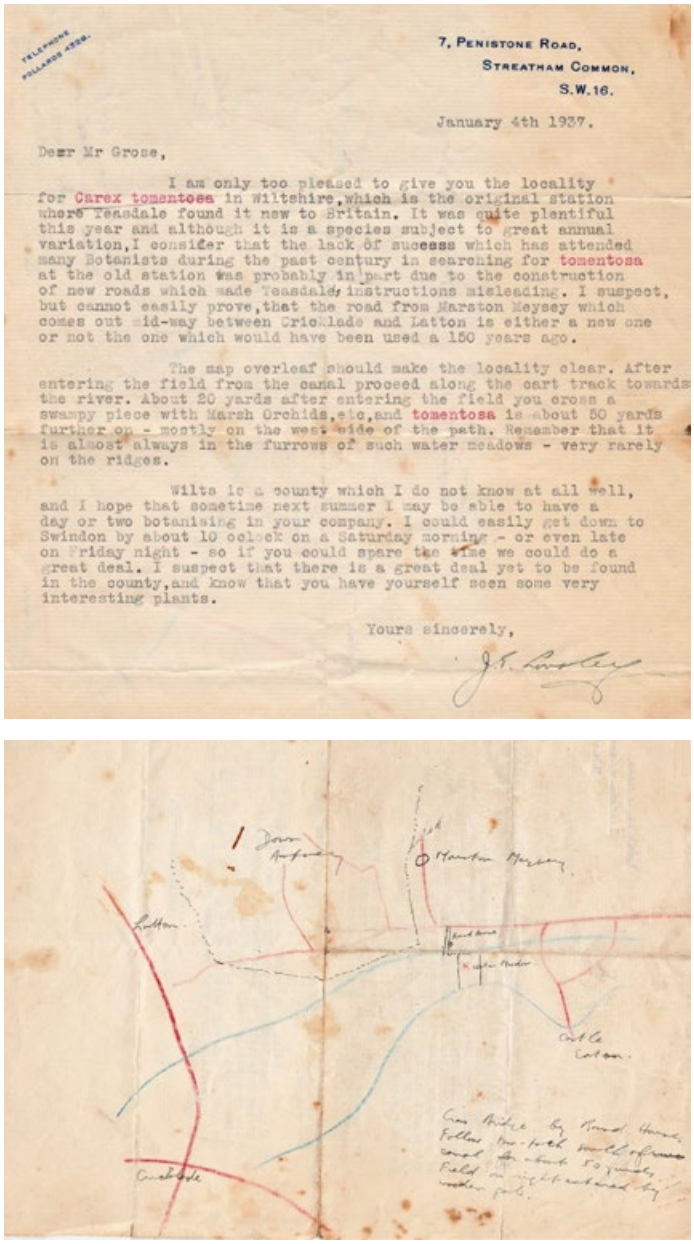
I continue to be fascinated by these books and historic records and still investigate the past accounts that they hold but I was beginning to wonder how on earth were all the locations of plants and of the sites, pre-computer database, passed on? Word-of-mouth obviously, but many of the botanists lived far apart and so letters – many, many letters – were written.

When I inherited the vice-county recordership for North Wiltshire (v.c. 7) in 1981, I also inherited a card index box. This metal equivalent of a shoebox contained several hundred cards, alphabetically indexed, and interleaved with notes, maps and letters. There was also another box full of miscellaneous items; this had obviously been handed down, via my predecessors – and what gems it held – maps and letters from the great and the good botanists of the past. I have included one of these below and have set out the history around it and where we are with that species up to the present day.

Downy-fruited Sedge *Carex filiformis* (previously known as *C. tomentosa*) was classified as Nationally Rare and included within the Red Data Book on Vascular Plants, 1st edition (Perring & Farrell, 1983). Comments within this publication and also the *New Atlas of British & Irish Flora* (Preston et al., 2002) states that there are just 13 known populations in the British Isles, all afforded some form of protection.

Carex filiformis (Downy-fruited Sedge). *John Norton*

The species was first recorded in the British Isles by Teesdale in 1799 at Marston Meysey, Wiltshire, on the headwaters of the River Thames. Grose, in his 1957 flora, commented on this record 'it is remarkable that no new locality has been found for it in Wiltshire. It is uncertain in appearance, sometimes being abundant, at other times being detected only with difficulty'. The location apparently was lost for over 130 years, until refound



7, PENISTONE ROAD,
STREATHAM COMMON,
S.W.16.

January 4th 1937.

Dear Mr Grose,

I am only too pleased to give you the locality for Carex tomentosa in Wiltshire, which is the original station where Teasdale found it new to Britain. It was quite plentiful this year and although it is a species subject to great annual variation, I consider that the lack of success which has attended many Botanists during the past century in searching for tomentosa at the old station was probably in part due to the construction of new roads which made Teasdale's instructions misleading. I suspect, but cannot easily prove, that the road from Marston Meysey which comes out mid-way between Cricklade and Latton is either a new one or not the one which would have been used a 150 years ago.

The map overleaf should make the locality clear. After entering the field from the canal proceed along the cart track towards the river. About 20 yards after entering the field you cross a swampy piece with Marsh Orchids, etc, and tomentosa is about 50 yards further on - mostly on the west side of the path. Remember that it is almost always in the furrows of such water meadows - very rarely on the ridges.

Wilts is a county which I do not know at all well, and I hope that sometime next summer I may be able to have a day or two botanising in your company. I could easily get down to Swindon by about 10 o'clock on a Saturday morning - or even late on Friday night - so if you could spare the time we could do a great deal. I suspect that there is a great deal yet to be found in the county, and know that you have yourself seen some very interesting plants.

Yours sincerely,

J.E. Lousley

Plate 1. Letter written and sketch map drawn by Ted Lousley, dated 4 January 1937 and forwarded to D Grose, relating to the refinding of a population of *Carex filiformis* in its first known location, 137 years after the original discovery by Teesdale. The contents of this letter were passed on to relevant government agencies and this information is now included in the history of this species in Britain. To help with interpretation, the red lines are the roads, and the lower blue line is the Thames; the upper blue line is the disused Wilts & Glos. Canal.

by J.E. (Ted) Lousley in 1936. Ted Lousley, was probably the most famous botanist of his day and later in life, renowned for writing *Wild Flowers of Chalk and Limestone*, in the New Naturalist series. He was also author of the *Flora of the Scilly Isles* (1971); he named species of plant new to science and re-found the then extinct Military Orchid (*Orchis militaris*) in Buckinghamshire. Grose, on hearing of the refind of the *Carex*, asked for the location and opposite is a copy of that reply in letter form and on its reverse the map.

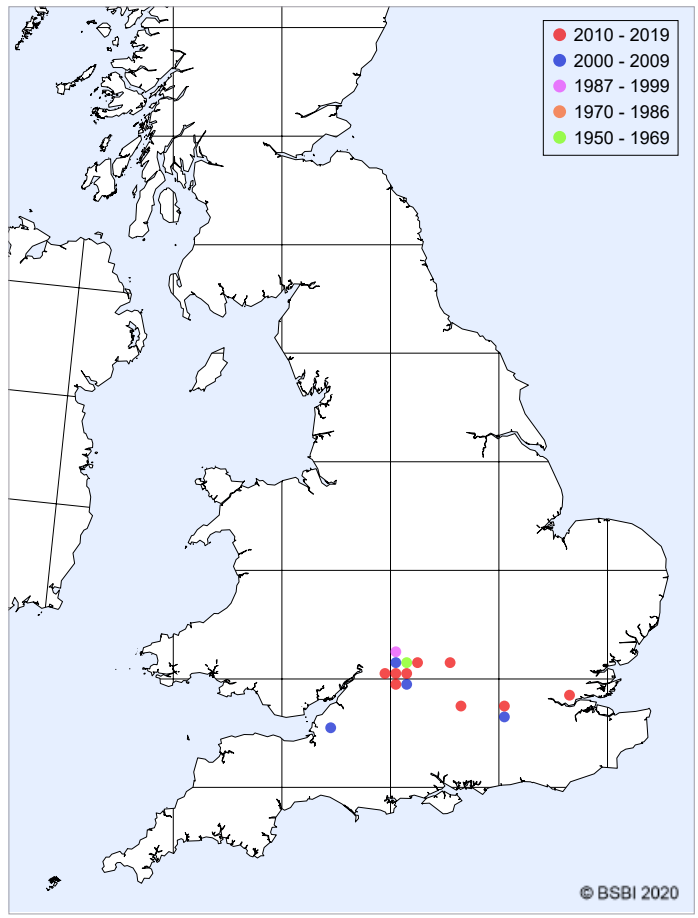
Alas, the site is now gone. I visited the location and reported in the Wiltshire Flora that 'in 1985 DG found the field to be a flat wheat field'. The area is in North Wiltshire (v.c. 7) in what is now the Cotswold Water Park. Until the late 1960s the region was very much off the beaten track not only to botanists, but to all naturalists. The gravel extraction spine road that opened up the locality at about that time allowed access to the unimproved upper Thames meadows. Unfortunately, these were being bought up and destroyed for the gravels that lay below them but through surveys carried out by the Nature Conservancy Council (NCC, now Natural England), albeit piecemeal, identified a number of them as being of national importance. In 1974 a population of *Carex filiformis* was found at Clattinger Farm, by NCC national neutral meadow expert Derek Wells. These meadows had

been designated a SSSI in 1971 based on their botanical diversity. Further records over the years in differing locations at Clattinger now makes this site's population possibly the largest in the British Isles.

Another record close by, was found by Lorna Wild in 1988 in similar habitat, and adjacent to Clattinger, at Swillbrook Meadows. Lorna presented me a single specimen that I was happy to identify as *Carex filiformis*. I returned to the site twice over a period of ten years only to be confronted by grazing cattle each time, however, on a revisit in 2018 I recorded the plant in six locations across the meadow.

Further populations over time were found by Francis Rose in 1987 at Pike Corner just 3 km east of Clattinger, and this site was made a SSSI in 1986. The national centre of this sedge does appear to be the headwaters of the Thames in Wiltshire and Gloucestershire; recent Wiltshire finds have added to this number with Martin Buckland and myself, bringing the number to four localities with the finding of a brand new site in 2018, near Upper Waterhay just 2 km east of Pike Corner.

Whereas some GB sites only contain a few plants, several of them have thousands of plants each year. Over the years, other populations have been found, all in the south of England. The vascular plant Red List for England (Stroh et al., 2014) now lists *Carex filiformis* as Least Concern.



Current 10 km square distribution map for *Carex filiformis*. *BSBI Distribution Maps*.

Acknowledgements

I would like to thank Martin Buckland for his input and editorial skills.

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A large colony of *Lysimachia europaea* (Chickweed-wintergreen) on Houndkirk Moor, Sheffield (v.c. 57)

KENNETH BALKOW

Lysimachia europaea (previously *Trientalis europaea*) (Chickweed-wintergreen) is an arctic-alpine species which is widely distributed in northern Europe. In Britain it is locally common in some parts of Scotland, with a smaller number of upland sites in northern England (Preston et al., 2002). The plant favours acid, peaty soils in open woodland and moorland, and the most southerly extant colony is on Houndkirk Moor, about 10 km south-west of Sheffield city centre. For many years it was believed that the plant was first discovered there in 1957 by local college teacher, Marjorie Shaw. However, a literature search by her namesake Margaret Shaw, prior to the publication of *A Flora of the Sheffield Area* (Shaw, 1988), showed that it had previously been noted in both 1881 and 1885 in reports of the Sheffield Naturalists Club (Shaw, 1973). The localities given were bogs at Ringinglow and Whirlow Bridge. It is possible that the plant was then known at two different sites, but local opinion suggests that these were both indirect references to Houndkirk Moor.

Lysimachia europaea (Chickweed-wintergreen), Houndkirk Moor, Sheffield, 3 June 2019. *Kenneth Balkow*

Over the years the population of plants on the moor has been monitored by a number of local botanists, with site instructions passed down by word of mouth. On a featureless area of moor the most useful landmark was a set of iron railings (the remains of an old weather station), and searches were usually concentrated within a 40-metre radius of those. In most years only a handful of plants was seen, though notable exceptions were 50–60 reported by Charles Waite in 1973 (Shaw, 1973) and over 80 in 2001 by members of the Derbyshire Flora Group (Willmot & Moyes, 2015).

In 2016 I found my usual route to the railings was blocked by a newly-erected fence, so I entered the moor via a gate on Sheephill Road. After walking uphill a short distance I saw that the railings were only about 200 metres further on but this entailed walking through a stand of *Pteridium aquilinum* (Bracken). As I penetrated this I noticed *Lysimachia* leaves at my feet and these soon became so numerous that it was difficult to walk without stepping on them. Because the Bracken was dense and already well above waist height it was difficult to judge the size and extent of the colony, but clearly hundreds of plants were present, although rather few were in flower. For various reasons I did not return to the site until 2019, but crucially my visit was much earlier in the season (2 June) so the Bracken was only 20–30 cm high. I was able to estimate that the *Lysimachia* colony covered an area of at least 50 by 40 metres, and with many plants in flower it was a truly amazing sight considering that we had previously imagined that the species was barely hanging on in the area. I returned again on 30 May this year where I carried out some sample counts of flowers in ten

Bracken on Houndkirk Moor hiding a colony of *Lysimachia europaea*, 30 May 2020. *Kenneth Balkow*

quadrats and found an average of 18 per square metre, suggesting a total population of 30–40,000 plants. This will be an overestimate if individuals close together were growing from the same rhizome, or if some plants produced more than one flower (2–3 flowers per plant occasionally seen). However, in each quadrat many plants had not yet flowered, so the population may well be much higher.

It seems unlikely that the colony is a new one, since seed-set is said to be poor and the plant is also described as a poor colonist (Preston et al., 2002). Nevertheless, it is surprising that such a large colony has been missed by previous generations of botanists visiting the moor, especially as it lies within 200 metres of a bridleway and public road. However, the lie of the land means that it is not easily seen from either, especially when the bracken has grown up. I also think that previous searches may have taken place too late in the season, when plants had finished flowering and were less conspicuous. Moreover, the description of the habitat as a moorland flush, given in the *Flora of Derbyshire* (Clapham, 1969) and repeated in the modern version (Willmot & Moyes, 2015), has probably prompted botanists to examine only the wetter parts of the moor. The new site reported here is not a flush and consists of almost nothing but Bracken, with only occasional *Rubus fruticosus* agg. (Bramble), *Urtica dioica* (Common Nettle), *Digitalis purpurea* (Foxglove), *Chamaenerion angustifolium* (Rosebay Willowherb), plus seedlings of *Betula* sp. (Birch) and *Sorbus aucuparia* (Rowan). The species is also known to grow beneath bracken on the North York Moors (v.c. 62).

It is considered that global warming will cause northern species such as this to retreat further northwards, so it is important to have a baseline against which future changes can be assessed. I hope that the present study provides this, as well as indicating that the population here is not as small and immediately vulnerable as we once thought.

Acknowledgement

I would like to thank Alan Willmot for comments on the first draft of this article.

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A cupboardful of photographs (the v.c. 81 Berwickshire photos project)

MICHAEL BRAITHWAITE

For many years I have been intermittently aware that I hold a large collection of colour photographic slides and, latterly, a further collection of digital images. I have felt that 'something could be done with them' by way of extracting material of ongoing interest relating to my 35 years as Vice-county Recorder for Berwickshire, but have always felt that it was unlikely that I would ever have the time and energy to do so. To my surprise I have now done 'something' and write this account in the hope that others will be moved to attempt their own project. I imagine that there are similar photo collections 'out there', gathering dust.

The cornerstone to my project is the *Berwickshire BSBI Botanical Site Register* 2013 (CBSR) in which I published descriptive accounts for all sites in the vice-county with known botanical interest (see References). The accounts include a site description, a map and detailed species records. My v.c. 81 Berwickshire CBSR photos project builds on this by presenting dated photos for as many sites as possible that show something of the condition of the habitat at a particular point in time. Plant portraits are seldom included.

The photos are presented in PowerPoint presentations for each hectad. Within each presentation the photos are arranged by site following exactly the same sequence as the CBSR. Each site is treated as a separate section starting with a slide with the descriptive text for the site from the CBSR. Slides with photos follow. A caption is added alongside each photo. The file size of the photos has been limited to about 500 KB to avoid cumbersome files. PowerPoint format has been preferred to PDF format so that users are able to add their own photos and copy any of my photos for their own purposes. It is hoped that projects to revisit the sites and observe change will be facilitated by this resource.

The project

My collection has about 10,000 photos, those from 1980 to 2004 as colour slides and those from 2005 to 2013 as digital images. I did not botanise in Berwickshire after 2013. Only a modest proportion of the photos relate to Berwickshire botany. I have selected 1,019 photos for my project, 976 from Berwickshire and 43 from a separate survey in 2003 of Berwick upon Tweed (the small triangle of land north of the River Tweed that lies in England). I had only written a title on photos that I had used in presentations to illustrate talks to various clubs and societies. Most of these were plant portraits unsuitable for my project. The remaining colour slides were in their original boxes with the month in which they were processed on the lid, but nothing on the individual slides. The digital images all carry in 'properties' the date on which they were photographed, but, as with the colour slides, no title.

Despite these limitations I have been able to match almost all the relevant photos to a particular day and place using two main resources. The first resource was an archive of all my botanical recording visits that I had already prepared in an Excel spreadsheet, while a second resource was the MapMate database of my botanical records. Opening the spreadsheet I could quickly cast my eye over the visits made in the month or two over which the photos in a particular box of slides had been taken and spot a match with the scene on the photo. This was of course only possible because I have visited many of the sites several times over the years and have a good memory for places. The MapMate records helped me localise a few problem photos. Some difficulties related to photos taken on occasions when I was not botanising. The selected colour slides were digitally scanned at a relatively low resolution. It was slow going and took me seven months, doing a little at a

time. It occurs to me that, in future, it would be of great benefit to use a GPS-enabled camera which could save the exact locality of each digital image.

The coverage achieved

I have been pleased to find that the photos selected cover the botanical sites in the CBSR appropriately, though, inevitably, some of the photos are more helpful than others.

CBSR site rating	No. of sites	Sites with photos	Total photos	Photos per site
Outstanding	5	5	60	12.00
Excellent	12	12	116	9.67
Fine	36	36	191	5.31
Good	65	55	269	4.89
Moderately good	87	61	187	3.07
Fragmentary	182	69	153	2.22
Total	387	238	976	

Sadly, the coverage has not been so even over time (Figure 1). I have never been a keen photographer and, particularly in the early years, can now appreciate that I was unduly focused on taking plant portraits. Nevertheless, I remind myself that my botanising would not have taken place if it had not been enjoyable, and that recording the plants met with was sufficiently challenging without any attempt at systematic photography.

The question of scale

The selected photos are at a range of spatial scales. The majority are a view across an area of a hundred metres or so. A minority are much more detailed habitat shots, particularly of moorland flush communities. I have noted 10 m grid references in only a few special cases where I could be sure of the precise locality. I have not formed an opinion on what would be an ideal mix of scales, as so much depends on the type of vegetation at a particular site.

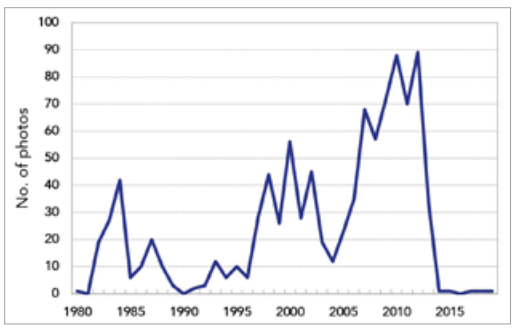

Figure 1. Number of photos taken per year.

Evidence of habitat change

As the photos were not taken with a particular project in mind, it is unsurprising that there are not very many cases where photos of the same view were taken at different points in time. So there is only limited evidence of change. However, taken as a whole, the project photos do provide a resource to draw on by anyone wishing to study how the countryside is changing. The key feature of the resource is that each photo is localised and dated.

Changes that are evidenced include:

- NT63 Bemersyde Moss SSSI – formerly there was more open water and a huge colony of Black-headed Gulls.
- NT64 Hareheugh Craigs – the grassland now has seasonal grazing under a Stewardship Scheme – the colonies of *Dianthus deltoides* (Maiden Pink) have prospered but those of *Viola lutea* (Mountain Pansy) have crashed.
- NT73 Birgham Wood – a pond has been dug in a wetland area much reducing the colonies of several locally scarce species including *Cirsium heterophyllum* (Melancholy Thistle) and *Carex riparia* (Greater Pond-sedge).
- NT74 Greenlaw Moor SSSI – there is evidence of the unauthorised drainage of a base-rich flush much reducing the populations of several locally scarce species including *Blysmus compressus* (Flat-sedge).
- NT76 Frampath Burn – this attractive wooded burnside was formerly set in moorland. The heather has all been lost to ploughing.
- NT77 Ramsheugh Bay SSSI – this bay has a shingle beach with a notable population of *Glaucium flavum* (Yellow Horned-poppy) which is being progressively replaced by a massive

colony of *Centranthus ruber* (Red Valerian) (see photo).

- NT77 Pease Dean SSSI – changes chronicled include the loss of mature *Ulmus glabra* (Wych Elm), replanting and the loss of grassland to scrub following the cessation of grazing.
- NT86 Drone Moss SSSI – the raised bog is now being invaded by *Rhododendron* from an adjacent caravan park.
- NT95 Foulden Braes – this extensive riverside grassland is part of an arable farm and is no longer grazed, leading to massive scrub encroachment (see photos).
- NT95 Hilton Bay SSSI – the calcareous grassland on an eroding slope is being invaded by scrub following a major operation to stabilise the slope, as the erosion was threatening the track of the mainline east coast railway. *Alchemilla glaucescens* (Silky Lady's-mantle) is amongst the scarce species at risk.
- NT96 St Abbs Head NNR – the grazing on the Head is now rested during the main flowering season allowing *Armeria maritima* (Thrift) and *Astragalus danicus* (Purple Milk-vetch) to respond magnificently.

Conclusion

I have enjoyed my project which has brought back many happy memories of people and places. I feel that the result has been up to my modest expectations.

Circulation of the project files

I am circulating the project files to a selection of those to whom they seem most likely to be of use, with permission to copy the files to others. I am also offering the files (free) to anyone who cares to send me an unused USB flash drive or a SD card which I will return after loading the files. The CBSR is already available as a PDF on the BSBI website under Berwickshire.

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[Note: PDF versions of the above three publications are available on the BSBI website under Berwickshire]

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Left: View northwest across Ramsheugh Bay over the expanding *Centranthus ruber* colony. The barer area in the distance is the site of the *Glaucium flavum* colony, 27 June 1998. Middle: View west across Foulden Braes before the recent massive scrub encroachment, 12 May 1984. Right: View west from a relatively scrub-free part of Foulden Braes to the dense scrub beyond, 13 June 2013. *Michael Braithwaite*

The Botanical Society of Scotland's Urban Flora Project

BRIAN BALLINGER & JOHN GRACE

Many of us live in towns and are surrounded by plants, some planted and others that have made their own way there. However, people who take an interest in the botanical world often head for the hills, coastlines and wild land. An increasing awareness of the botanical heritage of cities and towns in Scotland led John Grace, five years ago, to propose a study of urban species and habitats – the Urban Flora Project (UFP). The aim was to involve a variety of people, professional and amateur, to record and study the botany of our towns.

This has become a major project of the Botanical Society of Scotland (BSS), (*www.botanical-society-scotland.org.uk/Urban Flora of Scotland*). The project seeks to encourage the appreciation and conservation of our urban flora and to protect it from widespread destruction. Obviously urban sites will always require some management but this should be done sensitively. Public pressure sometimes leads to damage, with people failing to appreciate the beauty and value of wild flowers and plants in cities.

In our project we have sought to record plants growing within cities and towns of more than 1000 people, provided they are within the urban area and do not appear to have been deliberately planted. We also gather some basic abundance and habitat information. Data are entered on a special project area ('activity') of the database iRecord (Walker et al., 2019). As well as vascular plants, bryophytes, algae, lichens and fungi are included (Figure 1).

The BSS runs a summer programme of field visits and many of these have targeted urban locations, often in collaboration with other societies including the BSBI. Recorders also work independently and in informal groups. Sadly, Covid-19 has put a stop to our 2020 summer programme, but some records are still being made by individuals during their local walks.

As described by Walker et al. (2019), records submitted to iRecord go through a series of checks. Firstly, there is automatic checking of the expertise of the recorder and previous records of the species at a location and some records are flagged as in need of further verification. Some records have been verified on iRecord by approved verifiers (usually the appropriate Vice-county recorder). Most records

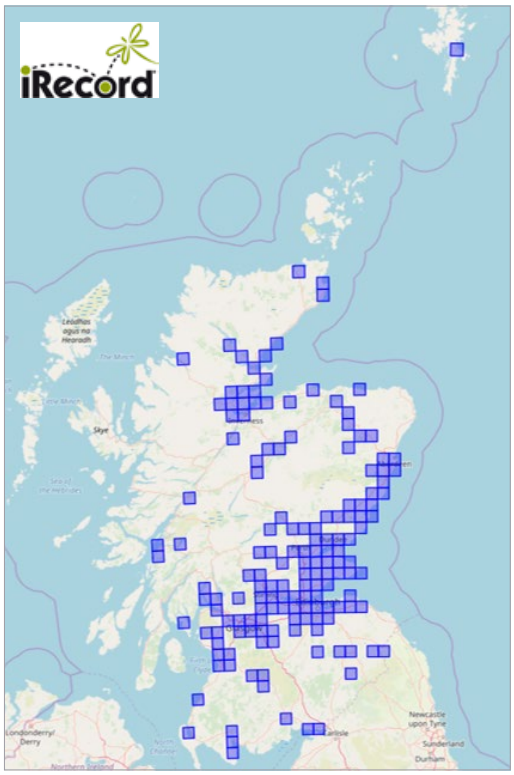

Figure 1. Locations of sites visited during the Urban Flora Project. *Records have been contributed to the project by many individual recorders, via the iRecord online recording system provided by the UKCEH Biological Records Centre.*

have been transferred to the BSBI DDb (Distribution Database), some directly and some to a partitioned workspace together with other Indicia records. Here they can be checked by the vice-county recorder.

We have now visited many towns and cities in Scotland and made approximately 45,000 records (Figure 1). At this stage most of our records are for vascular plants, but there have also been many bryophyte records, especially for Edinburgh.

We have recently produced a provisional checklist of vascular plants (Ballinger, 2020*a*) which will be updated at intervals. There are likely to be additions. This is available as a PDF on the BSS website or as a printed copy from Summerfield Books. Approximately 1,200 taxa are on the list at present. The commonest urban species in our survey are *Bellis perennis* (Daisy) and *Senecio vulgaris* (Groundsel) amongst natives and *Buddleja davidii* (Butterfly-bush) and *Cymbalaria muralis* (Ivy-leaved Toadflax) amongst neophytes.

Data analysis is in progress. We have been investigating the relative species richness of urban and rural areas. Given widespread rural monoculture, it has often been said that urban sites are more species rich (Kowarik et al., 2011). One study has used randomly selected BSBI data to compare urban and rural squares and this did indeed show greater diversity in urban sites. These data were presented at the Scottish Botanists' Conference in November 2019 (Grace et al., 2020).

Our ongoing studies of urban and rural sites have so far not shown statistically significant differences, although we are able to see that some species are almost exclusively 'urban'. Easter Ross studies of 25 paired urban and rural sites failed to show a difference in numbers of species, but site selection was not fully random (Ballinger, 2019; 2020*b*). However, the proportion of neophytes in urban areas was considerably higher than in the rural sites. In the 10 more remote rural sites, 2% of the species were neophytes in contrast to 19% in the corresponding urban locations and in the 15 rural sites adjacent to towns there were 7% neophytes as opposed to 22% in the paired urban locations.

A more recent pilot study of randomly selected pairs of urban and rural 100 × 100 m sites showed no significant difference in species diversity, but there was a slight trend towards greater urban richness. We plan to extend these investigations to other areas.

We also hope to study other features of the urban flora, such as variation with location, climate and habitat and trends with time. Some urban sites may be particularly important. Urban walls often contain good populations of ferns and some urban flora displays can be beautiful and feature unusual species. Towns also may be a port of entry for new species entering the Scottish flora.

We are roughly half-way through the work. We plan to produce a more detailed Flora, a book describing the nature of the flora of towns and cities and some scientific papers as well as popular articles. All our data will be added to appropriate recording schemes. Unfortunately, we have had to abandon this year's plan of outings because of the Covid-19 pandemic, but if you are interested in joining our efforts please make contact. You can catch up with our newsletters here: *www.botanical-society-scotland.org.uk/content/Urban-Flora-News*.

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INTRODUCING MY VICE-COUNTY

Middlesex (v.c. 21)

MARK SPENCER

Middlesex is now the most urban vice-county in Britain and Ireland. The vast majority of the county is covered by Greater London and only relatively small areas in the north and west remain semi-rural. Roughly speaking its boundaries are made of the rivers Lea to the east, the Thames to the south and the Colne and its distributaries to the west. The northern edge was largely marked by the southern boundary of modern-day Hertfordshire. By the start of the 16th century, much of the county was given over to providing fresh fruit, vegetables, dairy and meat produce for the growing city of London. In 1889 Middlesex lost its urbanised south east to the newly created County of London and in 1965, following the massive 20th century expansion of London, the County of London was abolished, and modern Greater London came into being. Much of Middlesex was engulfed by Greater London and the remaining fraction was passed to Surrey and is now known as Spelthorne Borough.

Common Mallow (*Malva sylvestris*), Mugwort (*Artemisia vulgaris*) and Hoary Mustard (*Hirshfeldia incana*) are common plants in many of Middlesex's highly anthropogenic habitats. Nevertheless, the increased rigour with which much of the city is purged of vegetation, these important plant species are probably not as abundant as they once were. (*All photographs by Mark Spencer*)

Not surprisingly, there is not a lot of ancient, semi-natural vegetation remaining. Much of the Thames and its surviving tributaries that drain through the county have been heavily modified. On the tidal parts of the Thames, nearly the whole of the river has been embanked with brick, stone, or concrete and in some areas planted with homogenous reedbed schemes. One of the few places where this has not occurred is at Syon Park where semi-natural riverside vegetation persists. As a consequence, regional losses of moisture-demanding plant species have been severe. Marsh Sow-thistle

(*Sonchus palustris*) was once locally frequent in areas such as the Isle of Dogs. On the lower, tidal Thames and it is tributaries, it is now restricted to the Medway and a reintroduced population on the River Cray. Today's riverside vegetation is often dominated by willows and other trees or heavily mown grass. Smaller plants are relatively uncommon although the western reaches of the Thames still support populations of nationally common waterside plants that have persistent, perennial root systems, such as such Skullcap (*Scutellaria galericulata*) – many of these plants are also locally frequent on the canals. Mown riverside areas also support some of London's rarer plants such as Strawberry Clover (*Trifolium fragiferum*), a small population, possibly introduced, remains on the Isle of Dogs at Mudchute Farm (a site that has many interesting non-native plants such as *Lapsana communis* subsp. *intermedia*) and there are a few scattered populations in Spelthorne.

Alongside a history of urbanisation, the county is one of the most thoroughly and earliest explored parts of England by botanists. In the summer of 1629, Thomas Johnson participated in expeditions to explore the plant life of Kent and Hampstead Heath.

This example of diverse railway grassland and scrub habitat is largely out of reach. This site is also the location of a classic scene in one of Ealing Studios most famous films – which one?

Johnson's account is one of the earliest examples of botanising in this country. The description of the plants of Hampstead Heath is brief, only three pages, but it does provide an insight into what that place was once like. Johnson and his friends passed through Kentish Town and then made for the wood, probably Kenwood, which in earlier times was often named Caen Wood. It is evident from their records that the wood at that time was more open than the dense and, at times, tangled wood of today. How do we know this? Several of the plants Johnson recorded are no longer to be found, they require fairly open and sunny, nutrient poor habitats with only moderate shade. Plants such as Johnson's 'Serratula flo[s]. pur[purea] & albis' (Saw-wort, *Serratula tinctoria*), 'Astragalus Sylvaticus Thalii' (Bitter Vetch, *Lathyrus linifolius*) and 'Morsus Diaboli' (Devil's-bit Scabious, *Succisa pratensis*) are now regionally extinct over much of today's Greater London. The loss of grazing animals such as sheep and rabbits and the influx of nitrogen rich pollutants from cars and dogs have seen them off.

Despite the widespread loss of native and archaeophyte plants, Middlesex remains a fascinating place to hunt for plants. Urban areas as focal points of human activity are very valuable environments for understanding how the natural world is responding to the pressures of the Anthropocene. The ecological distinctiveness of cities largely lies in their insularity, they are unlike the surrounding countryside; they tend to be hotter, dryer and windier than surrounding landscapes. In the context of some ecological and evolutionary processes, cities are young habitats. Yet, there is already evidence that there is active evolution in urban biota. I cannot recall of botanical examples from London, but I have no doubt that if we looked, we'd find them. However, in the French city of Montpelier, populations of a recent colonist *Crepis sancta*, are evolving differing seed dispersal strategies to populations of the same species in rural areas. One of the earliest documented non-native London plants, London Rocket (*Sisymbrium irio*), was first recorded by John Goodyer in the 1650s. It is associated with the aftermath of the Great Fire of London when it was noticed in great abundance

London Rocket (*Sisymbrium irio*): the plant on the left is the paler yellow form found in various locations, including Islington; it may be a recent introduction. The plant on the right is typical of the canals of east London and the area surrounding the Tower of London, it is possible that these are descendants of those first noted in the 17th century.

Two recent and gradually increasing colonists from southern Europe, probably introduced via horticulture, are white ramping-fumitory (*Fumaria capreolata* subsp. *capreolata*) and Mediterranean Nettle (*Urtica membranacea*).

throughout the largely destroyed city. During the ensuing centuries it gradually decreased and became a great rarity. Over the last 30 years or so it has gradually increased and is now locally frequent in old haunts such as the old Roman wall near the Tower of London and on parts of the canal nearby, especially at the junction the Regent's Canal with the Hertford Union Canal (also known as Duckett's Cut). It has also appeared in new locations such as the Exmouth Market area in Islington. Despite having very little morphological variation in the UK, the Middlesex and London populations come in two distinct forms: Islington plants have rather pale yellow flowers, whereas ones from the Tower and Duckett's Cut areas are of a stronger, brighter colour. The cause of this variation is unknown; my preferred option is that they represent independent introduction events.

Over the last 20 years, Islington, like many other parts of London has seen significant influxes of southern European and Mediterranean annual plants. Plants such as Early Meadow-grass (*Poa infirma*), Mediterranean Nettle (*Urtica membranacea*), White Ramping-fumitory (*Fumaria capreolata* subsp. *capreolata*), Four-leaved Allseed (*Polycarpon tetraphyllum*) and Jersey Cudweed (*Laphangium luteoalbum*) are increasingly well-established and on occasion, abundant. They join a suite of other, largely annual species, such as Water Bent (*Polypogon viridis*), Spotted Medick (*Medicago arabica*) and Round-leaved Crane's-bill (*Geranium rotundifolium*) that have been rarities in Middlesex for many decades but are now often very common.

Due to extensive redevelopment of the last 30 years, there are now very few accessible brown-field sites in Middlesex, searching for interesting non-natives is now best achieved along street pavements, canal towpaths and nature-friendly parks. Mile End Park in east London is a fine example of an urban park that is sympathetic to the extant ecology. Amongst its canalside treasures are ponds with charophytes and a closely mown lawn teaming with interesting annual legumes, most notably the nationally vulnerable Bur Medick (*Medicago minima*). Sadly, much of inner London's canal system is now

Until you are used to it, identifying early meadow-grass (*Poa infirma*), can be tricky. The pale-yellow foliage and sparse inflorescence are distinctive and very different to annual meadow grass (*Poa annua*), the darker plant on the left.

vigorously tidied and in many areas, plants, both native and non-native are dwindling. This affect has been particularly severe in the areas around the King's Cross and Olympic Park developments, nearly all of the semi-natural urban vegetation has been destroyed and replaced with prairie-style horticultural plantings. We are eradicating our urban natural heritage in favour of a colour-by-numbers floral arrangement to please the eye.

Thankfully, the extensive canal system and the adjoining river Colne catchment in west London remains rather more unkempt and supports populations aquatic plants such as Perfoliate Pondweed (*Potamogeton perfoliatus*), a great rarity here. Much of this area remains underexplored of late and any records of aquatic plants, especially *Potamogeton* spp. will be welcomed (in fact, I welcome any records from anywhere). Increased pollution and motorised canal traffic have largely extirpated pondweeds and similar plants in the county. Today, Hounslow Heath in west London is a relatively undistinguished area of open grassland and scrub with a small area of restored heathland. The observations by Rev Adam Buddle and his compatriots during the late 17th and early 18th centuries, show that prior to the heath being taken over as a military parade ground

it was an extraordinarily rich place, teeming with rare plants such as Starfruit (*Damasonium alisma*). Branched Horsetail (*Equisetum ramossimum*) was recorded by Buddle from the heath in 1705. This record is by far the oldest record for this rare plant in Britain. Today, very little remains of the heath as much of it is now under housing or within the boundaries of Heathrow Airport. Thankfully, some treasures remain; in 2017, Small Cudweed (*Filago minima*) was rediscovered on the Heath after over 120 years absence.

Middlesex has never been an important county for orchids; most notable records such as pre-20th century ones for rarities such as Fly Orchid (*Ophrys insectifera*) and Military Orchid (*Orchis militaris*) are from the Harefield area, one of the very small parts of the county where the underlying chalk comes to the surface. Sadly, the rare orchids are now long gone from Harefield but the woodlands in the vicinity of Harefield church support fine, native populations of Coralroot (*Cardamine bulbifera*) as well as long and well-established populations of Wild Tulip (*Tulipa sylvestris*). The nearby Coppermill Down, part of the Mid-Colne SSSI, is Middlesex's only chalk down land but is now so degraded by negative management as to barely warrant a glance. Amazingly, in 2013, a London Natural History Society botany group discovered White Helleborine (*Cephalanthera damasonium*) in the grounds of Buckingham Palace; the last time it was seen in the county was at Garrett Wood, Harefield at the start of the 20th century. Even apparently drab roadside verges can harbour significant discoveries; in 2006, the first record of Lizard Orchid (*Himantoglossum hircinum*) in over 300 years of botany recording in Middlesex was made near Syon Park, the plant was growing behind a bus shelter! Amazingly, the plant persists despite exceedingly hostile management.

Perfoliate pondweed (*Potamogeton perfoliatus*) was thought to be extinct in Middlesex for many years. It was rediscovered on the Grand Union Canal near Yiewsley during LNHS botany recording day in 2018.

Several significant ancient woodlands remain, the most important being Ruislip Woods, a National Nature Reserve. Other important ancient woodland areas are the woods of the Hampstead area, including Queen's and Highgate Woods, much loved and safeguarded for many years by David Bevan. The woods of Ruislip and Hampstead harbour fragmentary populations of plants that are otherwise extinct in Middlesex, such as Common Cow-wheat (*Melampyrum pratense*). Many of these plants struggle to survive – the last individual of Thin-spiked Wood-sedge (*Carex strigosa*) in the Hampstead area succumbed to the direct impact of a dog relieving itself on the plant. Thankfully, not all native species are on a downward trajectory. Twenty years ago, I and other London botanists thought that Rue-leaved Saxifrage (*Saxifraga tridactylites*) was heading towards extinction. There were probably less than 100 individuals of this small, early spring-flowering annual remaining in Middlesex. Recently, it has gone through a rapid resurgence and has been seen in many locations across London and is well-established on railway clinker beds near several major train stations and increasingly turns up in pavement cracks.

In 1965, the London Natural History Society (LNHS) was inspired by the BSBI's recently published *Atlas of the British Flora* (1962) and

Left: Thomas Johnson and his friends possibly overlooked May Lily (*Mainanthemum bifolium*) in Kenwood. Some consider its native status there is questionable. This collection was made by J.T.I. Boswell-Syme in 1852. May Lily is now extinct, having last been seen in the early 1950s. Right: Marsh ragwort (*Jacobaea aquatica*) is now a scarce plant in Middlesex and is largely restricted to suitable habitat in the Colne valley and parts of the tidal Thames. This plant was collected as part of a research project in 2013 and is now deposited at the Natural History Museum. *Reproduced with the kind permission of the Trustees of the Natural History Museum (CC-BY and ©)*

commenced recording across an area known as the 'LNHS polygon'. The polygon is based upon the society's recording scope which covers a 20-mile radius centred upon St Paul's Cathedral. These recording efforts resulted in the publication by Rodney Burton of the *Flora of the London Area* in 1983. In 2006 I succeeded Rodney as the BSBI vice-county recorder for Middlesex and the equivalent LNHS role as 'vascular plant recorder'. Shortly after, I proposed to the LNHS botany committee that we should undertake a new mapping project. This project operates under the working title of *The London Flora Project* and I will soon commence writing species treatments for the next Middlesex and London Flora, after I have fulfilled my commitments to the latest *Atlas*!

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BEGINNER'S CORNER

What field guide should I buy?

ANDREW BRANSON

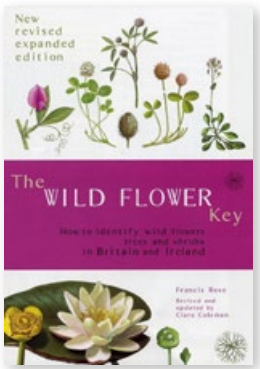
I was rummaging through some boxes of books at an auction house recently and came upon a hoard of botanical books, some leatherbound, others, as they say, in their original dust wrappers. There were 'guides' dating back to the 18th century, illustrated with wonderful engravings, nestled in amongst modern floras and field guides. Why would anyone want so many books? Yes, they were wonderful to look at and hold but the truth is that most people who enjoy plants in the wild refer to a limited hierarchy of works, both to confirm their identifications and also to learn more about the context of their discoveries. Today's budding field botanist has an apparently bewildering array of guides and floras to choose from. There are, however, a core of books which most people use. Several of these have been around for some time. However, it is worth buying the latest editions as these will include recent changes in taxonomy, new species and distributions. But note that none of the current editions of the popular field guides include the latest scientific name changes from the fourth edition of Stace's *New Flora of the British Isles*, published in 2019 (see below).

The way our field guides look is essentially a result of the phenomenal success of the bird guides of the 20th century, with their winning formula of artwork plates on one side of the spread and descriptions, with maps, on the other. The problem is that there are many more plants than birds. For example, a bird guide covering the British Isles may include around 500 species, but Collins *Wild Flower Guide* has 1,900 species and Stace's *New Flora* includes about 5,000 taxa. Trying to accommodate this dilemma has resulted in a number of different approaches from publishers. An obvious solution is to either include only common species or to exclude less colourful plants, such as grasses, sedges and ferns. However, it is important to bear in mind that the way we use field guides is to compare and contrast the plant in front of us with the text, illustrations and keys in a guide. If the range of species covered is limited, often because of lack of space, then there is the danger of trying to 'fit' the plant to the available information and coming up with the wrong identification. This can be a real problem for those who run recording schemes. But, if the book is more comprehensive, the guide can become too heavy to carry, thus defeating its prime purpose of taking the book to the plant (*Collins Wild Flower Guide* is about 1.2kg!). These 'bricks' can be heavy to carry around in the field – expect a generation of botanists with back problems!

Field guides to consider

Bearing in mind the above, five currently available guides are worth considering. Three are illustrated with artworks and two with photographs. Here is a quick look at these.

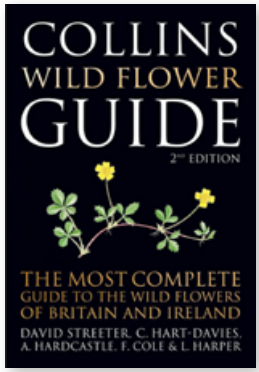
Artwork field guides



The Wild Flower Key by Francis Rose, updated and revised by Clare O'Reilly in 2006, combines a clever use of keys and descriptions, with important features highlighted, and has a useful key to plants not in flower. This is a guide that has been used by many

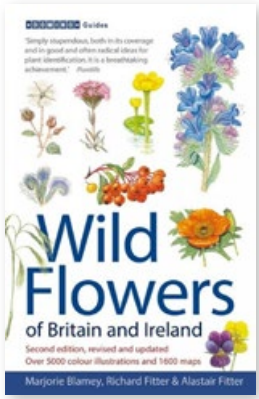
over the decades (the 1st edition was in 1981) and is still widely recommended. Its drawbacks are that its artwork is uneven (the 2006 edition, however, includes some excellent line drawings of finer details) and that it doesn't cover grasses, sedges and ferns.

Collins Wild Flower Guide (2nd edition, 2016) by David Streeter is far more comprehensive, giving



equal weight to all the groups, but comes in at 704 pages. It also has an effective mix of keys and descriptions. However, the artwork is again uneven, although unlike *The Wild Flower Key*, most species are illustrated in full.

Wild Flowers of Britain and Ireland (2nd edition, 2013) by Marjorie Blamey, Richard Fitter and

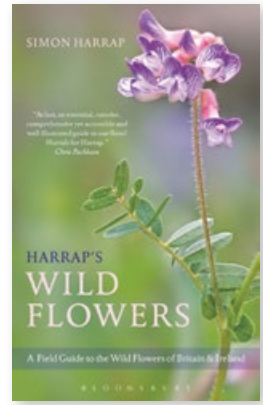


Alistair Fitter, like the Collins guide, covers all the groups, and even has thumbnail-sized distribution maps. The descriptions are rather brief and the use of keys is not as good as in the previous two books. Blamey's artwork can be a little too colourful, but the range of features illustrated is good. It manages to pack a lot of information into its 492 pages.

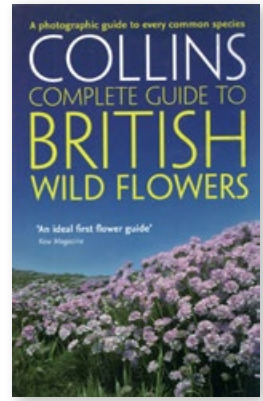
Photographic field guides

There are only two guides which use photographs that have a reasonably comprehensive approach.

Harrap's Wild Flowers by Simon Harrap, first published in 2013, has a clear layout and includes a map (based on the BSBI database), short description and photographs of each of the 930 or so species it includes. The presentation means that despite its 417 pages it does not cover the grasses, sedges and ferns. The 2,000 photos have been carefully selected and complement other guides. There are no keys.



Collins Complete Guide to British Wild Flowers by Paul Sterry (2006), from his Collins series, manages to

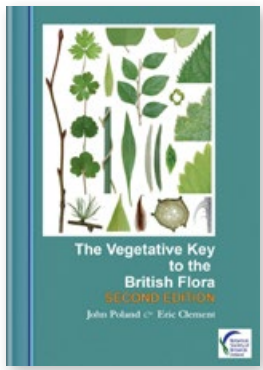


include a lot in its 304 pages, describing and illustrating more than 1,000 species, including a good range of grasses, sedges and rushes. In addition,

100 rarer species from various 'botanical hotspots' are described and illustrated. The layout follows the 'text with facing plates' formula, but details such as fruits and leaves of some species are included on the text page; there are 'thumbnail' maps in the margin.

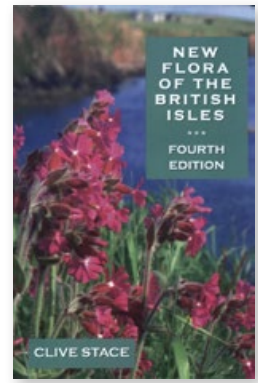
Going further

It goes without saying that plants only flower for a short time of the year, so to really get to grips with identification it is a good idea to be able to identify plants solely by their vegetative parts. The best guide for this is undoubtedly *The Vegetative Key to the British Flora* (2nd edition, 2020) by John Poland and Eric Clement. This provides identification to nearly 3,000



taxa (including many aliens). It is in the form of a series of extensive and innovative keys, sometimes accompanied by line artworks. It has to be said that despite the excellence of the book this is not one for a beginner to plunge straight into. It takes some practice to use and the terminology, although precise, can be a little daunting. The latest edition has all the new Stace names.

The standard Flora that should be on every botanist's shelf is the latest edition of the *New Flora of the British Isles* (4th edition, 2019) by Clive Stace. This is the key reference work on our plants, but like the last book is text-based and illustrated with occasional line artworks and sets of monochrome photographs. The comprehensive nature of the Flora is reflected in its 1,266 pages.



Further advice

There have been numerous lists of preferred field guides over the years, but in the end it is a matter of personal choice: some feel photographs provide a more instant connection with the actual plant, others that clear artwork is better at portraying key diagnostic characters. The best guide, of course, is an experienced botanist who can enthuse you with their knowledge. BSBI and its county flora groups run many field meetings up and down the country. Why not go along and enjoy one of these and find out what books others use? You can then start to build up your own set of trusted field guides. But beware that this can be the start of another hoard of botanical books!

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ADVENTIVES AND ALIENS

Adventives and Aliens News 21

COMPILED BY MATTHEW BERRY

Although 2020 has been an unusual and difficult year, in ways that were not favourable to the free-roaming field botanist, there have been a surprising number of very interesting records which merit relatively detailed treatment. Hence, and in spite of having a longer preamble prepared, I would prefer to pass straight on to the records themselves, with just space enough to thank contributors and promise (again!) a fuller introduction for next time.

V.c. 6 (N. Somerset)

Eryngium bourgatii Gouan (Pyrenean Eryngo). Bristol (ST51286489), 20/7/2019, R. Higgins: one strikingly blue plant on verge of A38. New for Somerset. A garden plant (Apiaceae) native to France, Spain and Morocco. As indicated by the plant's English name, in the first and second of those three countries it occurs mainly in the Pyrenees. It is rather like *E. amethystinum* (Italian Eryngo), but more compact and from a gardener's point of view not as spectacular. True *E. bourgatii* has short basal leaves, up to c. 6 cm in length with unwinged petioles. The blades are divided into three main parts which are divided again into smaller, spinose lobes. The blue capitula occur in small groups, each with c. 10 long, narrow involucral bracts (vs 6–8 involucral bracts in *E amethystinum*). Garden plants that are particularly vigorous could be its hybrid with *E. alpinum* L. (Alpine Eryngo) or some other species. The leaves of cultivated plants are characteristically white-veined or marbled and presumably this is also a feature of the typical wild plant. See Adventives & Aliens News 10 (v.c. 24). There might have been more records for this species in 2019 than in any previous year, at least six that I am aware of, with another three of those included below. The omitted records are for v.cc. 7 and 14.

V.c. 9 (Dorset)

Verbascum creticum (L.) Cav. (Cretan Mullein). Swanage (SZ0323878045), 2/5/2020, D. Leadbetter: two plants on verge near 2 Sunnydale, Durlston Road. The yellow (rarely white) corollas are c. 4.5 cm across with unequal lobes, the upper smaller and marked with reddish-purple basal spots. The filaments of the two shorter upper stamens are clothed in violet hairs, those of the lower two more or less glabrous. The anthers of the lower two decurrent on the filaments. The long, curved style is also distinctive. The calyx lobes are large, leafy and glandular hairy. The upper stem leaves are ovate, toothed, relatively hairless and clasp the grey-hairy stem. The lower leaves should be petiolate and deeply lobed. It is unusual for a *Verbascum* in having only four stamens per flower, a fact reflected in its having once been

Verbascum creticum, Swanage, Dorset (v.c. 9). *David Leadbetter*

classified as *Celsia cretica* L. The Swanage plants are probably of garden origin. It has also been known as a grain casual. There are currently six records in the DDb (12 with duplicates), none very recent. Up to 1 m tall, it is a native of France, Spain and Italy (but not Crete!).

Galactites tomentosus (Mediterranean Thistle). Swanage (SZ0268878451), 7/5/2020, D. Leadbetter: one plant on east side of Townsend Road, probably seeded from planted area on opposite side of road. Stace (2019): 732. A bird-seed alien of old, it has also become more widely available as a garden plant and this, as much as anything, might explain a recent upsurge in records.

V.c. 10 (Isle of Wight)

Vicia ervilia (L.) Willd. (Ervil). West of Newport (SZ4488, SZ4587, SZ4588, SZ4688), 6/2020, P. Stanley: scattered as an impurity through a crop of *Trifolium alexandrinum* (Egyptian Clover), Great Park. It bears a superficial resemblance to *Vicia lens* (Lentil), but each leaf terminates in a short point or mucro rather than a well-developed tendril and the fruit is a long, narrow, beaded (torulose) pod, quite unlike that of *V. lens*. A Mediterranean annual which was formerly a grain casual but for which there have been no recent British or Irish records. Other outstanding alien legumes found as impurities of the main crop within these fields by Paul Stanley include *Trifolium angustifolium* (Narrow-leaved Clover) (one plant at SZ450889), *V. benghalensis* (Purple Vetch) (two plants, the best grown at SZ456885) and *V. pannonica* (Hungarian Vetch) (one plant at SZ454886).

V.c. 11 (S. Hants)

Trachycarpus fortunei (Hook.) H. Wendl. (Chusan Palm). Waterlooville (SU687094), 21/6/2019, A. Powling: 15 plants in grass amongst trees beside pavement, Hulbert Road; Berry Hill (SZ1099096027), 29/8/2019, F. Woodhead: on overgrown hardstanding, Hicks Farm. An ornamental tree (Arecaceae) native to China with long-stalked, fan-like leaves that is sometimes planted in parks and large gardens. Are seedlings being overlooked by the great majority of botanists, particularly in the south? There are over 500 records for Surrey (v.c. 17) alone, nearly all M.J. Crawley. From a Sussex perspective it is sobering to read on p. 31 of Johnson (1998) that 'most of the trees (Chusan Palm) of Leonardslee Gardens are self-seeded'. *Chamaerops humilis* L. (Dwarf Fan-palm), the only native European palm, is also cultivated but is more tender and less likely to produce seedlings; although cultivated trees are often considerably taller than their native counterparts. Its petioles have well-spaced erecto-patent spines (vs small blunt teeth in *T. fortunei*). Stace (2019): 969.

V.c. 12 (N. Hants)

Trifolium incarnatum subsp. *incarnatum* (Crimson Clover). North-east of Lower Bordean (SU6925), 6/10/2016, A. Powling & E.J. Clement: planted for game birds; Tangley (SU338522), 14/9/2018, A. Mundell & S. White: in field probably sown for pheasants; south of Clatford Oakcuts (SU33923832), 26/9/2019, A. Mundell & D. Pearson: area of arable sown for bees, etc. Grown as a fodder crop and for its nitrogen-fixing properties in crop rotation, a sometimes deliberate component and/or accidental impurity of wild flower seed mixes and also a tan bark casual. An annual native of southern Europe which was certainly decreasing in the mid-1990s, it seems to be increasing again.

Aegilops cylindrica Host (Jointed Goatgrass). Litchfield Estate (SU47545365), 3/6/2019, A. Mundell & D. Nelson: a single plant with many flowering and fruiting stems, in strip drilled with seeds to attract birds and insects. It can be separated from similar forms of the somewhat variable *Triticum aestivum* (Bread Wheat) by its round-backed glumes keeled only near the apex (vs keeled in upper half in *T. aestivum*). The latter is also more likely to be covered in varying degrees by a whitish bloom. A native of eastern Europe and south-west Asia, occurring as a wool, grain and dock alien. It was in a crop of Sainfoin in Cambridge (v.c. 29) in 1964, Ryves et al. (1996). There are only a handful of records in the DDb, the next most recent from 1979 (v.c. 33). Stace (2019): 1037. See Ryves et al. (1996), fig. 21 for an illustration.

V.c. 13 (W. Sussex)

Sedum hispanicum (Spanish Stonecrop). Chichester (SU86610484), 8/2/2020, F. Rumsey & S. Rumsey: several sprawling plants in bud at pavement edge/fence line of Majestic Wine car park, Needlemakers (A286). See Adventives & Aliens News 19 (v.c. 16).

Malva verticillata (Chinese Mallow). Elsted (SU8167519634), 12/2/2020, D. Nelson, S. Denness & J. Oakley (conf. M. Berry): one erect flowering plant of c. 60 cm plus some immature plants growing on a grassy verge on the main road through the village. The second recent Sussex record. *The Guardian* carried an article in June 2018, recommending it as a more easily grown alternative to spinach. It states that leaves can be added to soups, wilted with butter, boiled, steamed or fried in tempura. In herbal medicinal circles the seeds are apparently known to act as a demulcent, soothing irritation and mild inflammation of mucous membranes. See *BSBI News* 143: 43–44 for George Hounsome's note with details of a recent v.c. 17 record. Stace (2019): 403.

V.c. 14 (E. Sussex)

Sedum kimnachii (Kimnach Stonecrop). Hastings (TQ8280309739), 16/5/2020, J. Rose (conf. R. Stephenson): growing from a sandstone-and-mortar retaining wall c. 400 m from the sea, Hastings Old Town. As ever it is well worth quoting at least a part of the referee Ray Stephenson's adjudication: 'Despite their Mexican origin, these two species (i.e. *S. kimnachii* and *S. confusum*) are fully hardy in the UK, often seeding in inhospitable places. The seeds are so tiny and light they can be transported a very long way.'

Nemophila menziesii (Baby-blue-eyes). Eastbourne Seafront (TV6133298233), 3/5/2020, M. Berry: one plant in weedy earth gutter around base of Wish Tower, origin unknown. It seems to be the first Sussex record. An annual native of California (Hydrophyllaceae, although some authorities would place it in Boraginaceae), records are often associated directly or indirectly with wild flower seed

Sedum kimnachii, Hastings, East Sussex (v.c. 14). *Jacqueline Rose*

Phlomis russelliana, Lewes, East Sussex (v.c. 14). *Paul Harmes*

mixtures. It is also a garden plant. The var. most commonly in cultivation has pinnately lobed leaves and blue corollas with unspotted white centres, and the Wish Tower plant was of this sort. *Nemophila maculata* Benth. is also a garden plant, but has white flowers with a large purple blotch at the tip of each corolla lobe. Stace (2019): 582.

Phlomis russeliana (Turkish Sage). Lewes (TQ4100809977), 30/4/2020, P. Harmes (det. M. Berry): one plant growing in front of pavement, Rotten Row; Lewes (TQ4029209864), 14/5/2020, P. Harmes (det. P. Harmes): one plant growing on top of bank, rear of verge of A277, Brighton Road. A garden plant which can become established as at Mells (v.c. 6), where it was the lesser known of two established alien labiates (the other being the extant *Scutellaria altissima*), although there have been no recent records of it there. The only other Sussex record appears to be one for Beachy Head (v.c. 14) in 1964. Stace (2019): 661.

Cotula australis (Annual Buttonweed). Lewes (TQ4109), 25/4/2020, P. Harmes: extensive along central cobbled zone of Keere Street from TQ4125209964 to TQ4129909849. Paul Harmes also found it 150 m from the southern end of Keere Street in Southover High Street where the Winterbourne stream crosses, and in West Street, although in neither case was it as extensive as in the first site. A familiar wool casual at one time, there are now broadly two categories of record, from the short worn turf of the touring sections of caravan parks (see *BSBI News* 139: 53–55) and as a street weed in urban areas, of which the Lewes occurrences are among the latest examples. It was found in a very similar situation in London at Elephant and Castle (v.c. 17) in 2011 and 2014, see *BSBI News* 125: 48–49. It has also been known as a street weed since about 2008 in the Dutch cities of Alkmaar, Amsterdam, The Hague and the municipality of Etten-Leur. It is already a fast-spreading street weed in much of south-western Europe. An annual composite native to Australia and New Zealand. Stace (2019): 799. Clement et al. (2005): 334. The first Sussex records.

Cotula australis, Lewes, East Sussex (v.c. 14). *Paul Harmes*

V.c. 16 (W. Kent)

Hibiscus syriacus L. (Syrian Ketmia). Beckenham (TQ3867), 20/9/2019, G. Kitchener: a street seedling at Park Langley, parent in garden a few metres away. It was first recorded from a number of sites in this monad in 2018 by M.J. Crawley, e.g. at TQ3860067700. As Geoffrey Kitchener comments on p. 30 of *Kent Botany* 2019, 'Clement & Foster (1994) say that self-sown seedlings are restricted to gardens but this is no longer the case'.

Eryngium bourgatii Gouan (Pyrenean Eryngo). North-west of Longfield (TQ59806963), 21/6/2019, D. Steere: 'several plants growing on railway land looking neither planted nor fly-tipped and remote from houses and gardens', Mile End Green. The first v.c. 16 record. See *Kent Botany* 2019, p. 30 for a photo.

Acorus gramineus (Slender Sweet-flag). Beckenham (TQ38456727), 20/9/2019, G. Kitchener: in a shaded ditch by Hawksbrook Lane, Park Langley, already comprising a patch of 2 × 1 m. The cultivar 'Variegatus'. For differences between it and *A. calamus* (Sweet-flag), see Stace (2019): 872 and Poland & Clement (2020): 113. Although it does not seem to be a Schedule 9 species yet, it is included in Booy et al. (2016) alongside other aquatic aliens that are.

V.c. 17 (Surrey)

Hibiscus syriacus L. (Syrian Ketmia). North Sheen (TQ19757534), 14/7/2017, C.M. Bateman & G. Hounsome: shrub to c. 60 cm in flower in a pavement crack on the corner of Clifford Road and Upper Richmond Road (West), self-sown from an adjacent garden. See v.c. 16.

V.c. 21 (Middlesex)

Jasminum polyanthum Franch. (Many-flowered Jasmine). London E2 (TQ3482), 2/4/2019, M.J. Crawley: associated with flats in Old Bethnal Green Road; London NW2 (TQ2485), 30/4/2019, M.J. Crawley: in Sarre Road associated with a terrace; NW2 (TQ2486), 30/4/2019, M.J. Crawley: in Lyndale Avenue; Twickenham area (TQ1474), 9/5/2019, M.J. Crawley: in Kneller Road (Whitton) associated with a terrace; Westhampstead (TQ2584), 22/5/2019, M.J. Crawley: at Thameslink Station by railway. In all cases the exact status of the plants is unknown. A twining garden shrub (Oleaceae) native to China and Burma very occasionally found self-sown or as a surviving relic of cultivation on walls, etc. It differs from *J. officinale* (Summer Jasmine) in the earlier flowering time, the organisation of its more numerous flowers in a racemose cyme or cymose panicle (a corymbose cyme in *J. officinale*) and its evergreen foliage (*J. officinale* is deciduous). As well as further records for v.c. 21, there are also odd ones for v.cc. 1, 17 and 53.

V.c. 29 (Cambs)

Eryngium bourgatii Gouan (Pyrenean Eryngo). Cambridge (TL4460), 30/4/2019, P.J. Reynolds (det. A.C. Leslie/comm. J. Shanklin): one self-sown plant in asphalt outside 34 Roseford Road. The same recorder also noted it at this site in 2015 but the plants did not survive. These are the first v.c. records.

V.c. 35 (Mons)

Saururus cernuus L. (Lizard's-tail). Tredunnock (ST374937), 11/8/2019, E. Wood & S. Tyler (comm. S. Tyler): naturalised in a field pond. See Adventives & Aliens News 20 (v.c. 12).

Leucanthemella serotina (Autumn Oxeye). Watery Lane (SO4912), 21/10/2019, H. Colls (comm. S. Tyler): on either side of new pond near Wye Valley stores. A late-flowering, extensively rhizomatous garden escape (Asteraceae) native to south-eastern Europe which might sometimes still be mistaken for *Leucanthemum* × *superbum* (Shasta Daisy). It has glandular-punctate leaves while the latter does not, Poland & Clement (2020). Stace (2019): 796. Clement et al. (2005): 331.

Acorus gramineus (Slender Sweet-flag). Fourteen Locks (ST296887), 13/7/2019, S. Tyler, E. Wood & A. Wood: by pond in Allt-yr-yn nature reserve. The cultivar 'Variegatus'. See v.c. 16.

Gastridium ventricosum (Nit-grass). Bishton (ST3986), 11/9/2019, E. Wood & S. Tyler (comm. S. Tyler): on spoil material at the TATA steelworks site. A rare native of calcareous ground, a rare weed of arable fields on (usually?) clay soils and an annual casual in disturbed waste places of various sorts.

There is one other much earlier (1950–1969) v.c. 35 record, localised to hectad SO40. Stace (2019): 1080.

V.c. 57 (Derbys)

Modiola caroliniana (L.) Don (Bristly-fruited Mallow). Clay Cross (SK3888867925), 12/2/2020, M. Lacey: three plants (later only one) growing on the edge of a building site on a bank that had been landscaped but was still a mainly sandy area. By late May the remaining plant was flowering and fruiting well (Mick Lacey pers. comm.). A procumbent, short-lived perennial (Malvaceae) native to S. America but widely naturalised in the more tropical regions of N. America too. The stems root at the nodes, the roughly reniform leaves are crenate and shallow-lobed (the upper stem leaves more deeply lobed), c. 3–4 × 2–3 cm and with petioles longer than the blades. The long-stalked axillary flowers are solitary with five petals of a distinctive orange-red (brick-red) colour. There is an epicalyx of three segments. The fruit is a hispid schizocarp of 16–22, 2-seeded segments, c. 7–9 mm across. It was found on a demolition site in Ghent (Belgium) in 2015, where a bird-seed origin was postulated; and on dredgings from the river Scheldt at Bilzen in 2017. It is an increasing lawn weed in Portugal. In this country it was once known as a wool casual, Clement & Foster (1994). A remarkable record particularly given the species' tropical affinities.

Erucastrum gallicum (Hairy Rocket). Taddington area (SK1605570853), 31/5/2020, M. Lacey: in a field which is part of a meadow regeneration project, associates including at least two other annuals, *Torilis nodosa* (Knotted Hedge-parsley) and *Erysimum cheiranthoides* (Treacle Mustard). McClintock & Fitter (1956) very succinctly described this in a British context as 'the only yellow crucifer with both hairy pinnately lobed leaves and erect sepals'. There seems to be only one other v.c. 57 record, from 1960. Stace (2019): 440.

V.c. 63 (S.W. Yorks)

Euphorbia dulcis (Sweet Spurge). Oulton (SE36372674), 13/5/2018, D. Broughton: Cheesecake Farm. One plant persisting in semi-improved acid grassland.

Modiola caroliniana, Clay Cross, Derbyshire (v.c. 57). *Mick Lacey*

The cultivar 'Chameleon'. First recorded at this site in 2015 and again in 2016. There are no other records in the DDb for this v.c. Stace (2019): 360 and p. 361 for a drawing of a fruiting shoot and enlargement of a capsule.

Rubus loganobaccus (Loganberry). Woodlesford (SE3650929373), 28/6/2018, M. Wilcox: spreading along wall in abandoned area in lane off Alma Street. It has arisen in cultivation and is of hybrid origin. Bird-sown from gardens where grown for its highly palatable fruit. The earliest v.c. 63 record in the DDb is for 1985. See Stace (2019): 262–263 and fig. 261 for a leaf silhouette.

V.c. 83 (Midlothian)

Trifolium incarnatum subsp. *incarnatum* (Crimson Clover). Pumpherston (NT070695), 17/6/2013, D. Merrick: in Drumshoreland Road. The first v.c. record; Edinburgh (NT277707), 29/8/2013, R.I. Milne: in long grass south of playground and Inch House, Inch Park; east of Pathhead (NT4064), 17/8/2018, M. Moir: in the Loanhead area; Edinburgh (NT2472), 21/6/2019, S. Jury: two groups of plants spotted on waste ground by the Printmakers' Gallery at Fountainbridge, Castle Mills, Dundee Street. See v.c. 12.

V.c. 105 (W. Ross)

Leptinella traillii (Kirk) D.G. Lloyd & C.J. Webb subsp. *traillii* (Traill's Buttonweed). Rubha Reidh (NG741918), 8/2017, H. Brown (det. B. Rushbrooke/comm. D. Donald): at the edge of a car park in a small, disused quarry near the light house, close to the Rubha Reidh headland north of Gairloch. In June of this year, material Hilary Brown had collected and maintained in a pot since 2017, produced flowers for the first time. A photo was sent to the VCR, Duncan Donald, who decided that of the *Cotula/Leptinella* species listed in Stace (2019), it was closest in habit and jizz to *C. squalida* (*Leptinella*), but with less finely cut leaves. He then forwarded the photo to Ben Rushbrooke of Garden Cottage Nursery (Tournaig), and he identified it as *L. trailli* subsp. *traillii* (from Stewart Island and adjacent islands, N.Z.), a plant which has been grown at his nursery for some thirty years. He thinks that it probably came originally from Inverewe Garden. According to Wilson (1994), it is locally common on coastal banks and sandy ground, including on old dunes under rata forest. It also occurs inland from Mason Bay along the Freshwater River. It is a dioecious and patch-forming perennial with pinnatifid leaves that are 'dull brown-green or yellow-green, often partially stained dark brown', the suborbicular lobes with 'small hair-tipped' teeth. He cautions that plants on damper ground can have leaves that are more deeply cut. However it can always be distinguished from *C. squalida* by the obviously hair-tipped teeth of the leaf lobes. The leaves of subsp. *pulchella* are thinner and less leathery. On a recent (8/7/2020) visit to the Rubha Reidh site, Hilary found it to be flourishing. She thinks some stones and rubble might have been dumped in the quarry at some time in the recent past and that this might be how it was introduced. As it is dioecious, spread is unlikely to occur by seed. The first British and Irish record and perhaps also the first for western Europe.

Leptinella traillii subsp. *traillii*, from Rubha Reidh, (v.c. 105) growing in a pot. *Hilary Brown*

V.c. 107 (E. Sutherland)

Eryngium bourgatii Gouan (Pyrenean Eryngo). Dornoch (NH7952889665), 27/5/2019, M.J. Crawley: Upper Meadows. In a garden and of unknown status.

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The tropical flora of Britain 2: a community of naturalised glasshouse weeds exists in Edinburgh, but how should we record them?

RICHARD MILNE

Alexis Fitzgerald's (2020) article about the glasshouse weed *Pilea microphylla* raises an interesting question about those species that can only naturalise indoors: should we include these among British plant records, and in our more comprehensive floras? *P. microphylla* is far from being the only one, so to understand the extent of this issue, let us visit the back glasshouses of the Royal Botanic Gardens, Edinburgh (RBGE). These comprise a series of around 14 variously sized glasshouses with different controlled climates, linked by corridors that are covered but not heated. They are used to house research collections and grow up specimens for display, and are not open to the public. In all these glasshouses, there are fixed shelves about a metre above ground, generally covered in gravel, onto which pots are placed containing anything from tiny alpines to monstrous titan arum bulbs. Because they are not for public display, they are not meticulously weeded like the public glasshouses, allowing a fascinating and unique weed flora to establish.

It is possible to categorise the many weed species here according to how naturalised they are, as we do with outdoor plants, borrowing categories used by Stace (2019). Into the 'surviving' category we might place those that exist only as weeds in individual pots, such as the leafless fern *Psilotum nudum*. These could have been imported from elsewhere in the pot, and have not yet shown any ability to reproduce here. The 'established alien' category would include those that have spilled out of a pot via runners or rooting stems, or possibly seeding only in their immediate vicinity. For example, *Henckelia anachoreta* (Gesneriaceae) continues to come up every year in gravel on a surface where once a potted plant of the species would have been.

Of much greater interest are those species that seem to be fully naturalised in the glasshouses. The most thoroughly naturalised species here are those that have populations in multiple glasshouses, suggesting some aptitude for dispersal within this strange environment, perhaps aided by human shoes. Of these, there are four that do not occur outdoors in Britain, starting with *P. microphylla*. This occurs on floors, side walls and gravelly surfaces, and there is even one individual that rides to and fro on the base of a sliding door. Adding another genus of Urticaceae to the UK flora is the curious *Lecanthus peduncularis*, with tightly clustered flowers on a long peduncle. It is neither a widespread alien nor a popular garden plant, and not grown as part of the RBGE living collection, so it likely arrived from abroad as a contaminant, as probably did *P. microphylla*. The most abundant naturalised species here is *Pseuderanthemum alatum* (Acanthaceae), an attractive plant with brownish, variegated leaves, earning it the name 'chocolate plant'. This forms large, thriving colonies in the dark corners of at least three of the warmer, more humid glasshouses. A popular indoor garden plant, it might be an escape from cultivation, though it is not currently listed among the RBGE living collection. The fourth member of this strange community is *Begonia hirtella*, which has probably escaped from the extensive *Begonia* research collection here, but now crops up occasionally in various glasshouses and adjoining corridors. All four of these species seem to be shade-averse, especially *P. alatum*, and the dark recesses of these glasshouses seem to suit them.

Top: A naturalised population of *Pseuderanthemum alatum*, with close-up of flower. Middle (left): *Lecanthus peduncularis* with the liverwort *Conocephalum japonicum*. Bottom (left): *Ruellia squarrosa;* (right): *Pilea involucrata*. *Richard Milne*

If we extend the list to species that are more or less naturalised, but only in one glasshouse, it becomes giddily long, with species I've managed to name so far (often by asking glasshouse staff!) including *Ruellia squarrosa*, *Bonnaya ruellioides*, two *Pelargoniums*, *Saxifraga fortunei*, *Pilea involucrata*, *Adiantum microphyllum* and many more ferns that I can't yet name, plus the liverwort *Conocephalum japonicum*. Of these, the liverwort is in an unheated corridor and is perhaps the only one that might possibly venture into the arctic wastes of outdoor Edinburgh. To these can be added many species that do occur outdoors in Britain, notably *Selaginella kraussiana* (which was also well established in a now demolished glasshouse in the King's Buildings area of the University of Edinburgh), *Pteris vittata* and *Oxalis megallorhiza*.

Lastly, I cannot possibly omit one more indoor plant, the fern *Christadella dentata*, which existed for many years in the cistern of the gents' urinals in the RBGE science building, having got there by means known only to itself.

How then, are we to view these plants, which are geographically wild in Britain but climatically very separate for all our other flora? Every plant I've listed above is as wild as any weed that makes itself at home in an outdoor garden, and all bar *C. dentata* seem to be naturalised; were they outdoors we would not hesitate to record them as wild British plants. They are all more naturalised, at least in Edinburgh, than any that are classed as casuals, or 'surviving' by Stace (2019); indeed species like *P. microphylla* and *P. alatum* are also more naturalised than those categorised as 'established' (e.g. from garden throwouts).

All this argues for their inclusion in any comprehensive flora of Britain. But on the other hand, if we include weeds of tropical glasshouses in distribution maps, does it not confuse any inferences one might make about climate and distributions from such maps? Of those Edinburgh glasshouse species that have also been recorded outdoors in Britain, *P. vittata* does not venture north of Birmingham, whereas *O. megalorrhiza* is only in the extreme southwest (BSBI, 2020). Including the glasshouse records in maps for these species means the map no longer tracks suitable climate for them.

The simplest, though not necessarily the right, approach is to exclude indoor records altogether. At the opposite extreme, if we apply the same criteria indoors as outdoors, then all the above-mentioned species and many more will add themselves to the British flora, even though a member of the public is almost certain never to encounter them. Is there a middle way to be found? For example, did *P. microphylla* cross a line by appearing as a weed outside of glasshouses per se, although still indoors (in a potted palm in an office; Fitzgerald, 2020)? Should we specifically exclude species that naturalise only within botanic gardens, but include those in other glasshouses and indoor locations? Or might we simply consider worthy of note those species that have naturalised independently in two or more indoor locations? Thinking really left-field, should indoor records be grouped together a new and separate 'vice county', so that they don't obscure the signature of climate on occurrence maps? What do people think?

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Know your Onions – *Allium subhirsutum* and *A. trifoliatum* in Surrey (v.c. 17)

GEORGE HOUNSOME

Inspired by Matthew Berry's notes on *Allium subhirsutum* and *A. trifoliatum* in his *Adventives and Aliens* sections in *BSBI News* 126, 128, and as an expanded note in 133, I decided to re-examine my records for the former on my patch in Surrey (v.c. 17). The last of those articles describes the differences between the two. They each look the same vegetatively, with clumps of pale green, floppy, ciliate leaves (see photo below) but the flowers are subtly different: *A. subhirsutum* has a pale green or no line on the tepals and reddish/bronze anthers that dehisce liberating pollen, whereas *A. trifoliatum* has a pink line and yellow anthers that shrivel without producing pollen (see photos opposite). Matthew suggests that the former is by far the less common and often misrecorded for the latter. In 2019 I checked the one that I had ill-advisedly planted in my garden and it was indeed *A. trifoliatum*. I also checked the plants in a pavement crack at the foot of a garden wall in my road – they were *A. subhirsutum*. The alarm bells rang and so I decideded to check all my other records but it was mid-May and their flowering season had almost finished, so there the matter rested.

The seasons passed one by one and spring returned. In April 2020 I had an e-mail from Lynn Whitfield, a diligent member of the Surrey Botanical Society, querying an *A. subhirsutum* record of mine from near Addlestone. She had come across the colony and checked it in John Poland's Vegetative Key, making it *A. trifoliatum*, a determination I was happy to agree with. It also gave my slumbering conscience a jab in the ribs so, carefully observing social distancing, I checked the twelve sites nearest to my home. In one I couldn't refind it, in another it was buried somewhere in a sea of wet nettles and the third was in a crematorium which was closed. Of the other nine, eight were *A. trifoliatum* and one *A. subhirsutum*. The taxa were clearly distinct based on the anther and tepal characters listed by Matthew but difficult to separate vegetatively, one supposedly being hairier than the other. However, quantitative characters are a matter of experience and no doubt hairiness varies with age and habitat, something I can identify with. I haven't yet pulled any up to compare the bulbs, but I will. I do get the impression that *A. subhirsutum* is slightly later flowering but that is based on only

A hairy garlic in January, but which one? *George Hounsome*

Allium subhirsutum (left) and *A. trifoliatum* (right), showing uppersides of tepals and anthers (top) and undersides (bottom). *George Hounsome*

two years of casual observations and the difference may be too small to be useful.

My observations agree with Matthew's that *A. trifoliatum* is the commoner of the two, at least based on my Surrey records and his Eastbourne ones. In v.c. 12 (N. Hampshire) for example, there is only one site for it according to the BSBI DDb, by Mike Hackston but many for *A. subhirsutum* (Figure 1), perhaps partly because users of Mapmate can enter only that species (*A. trifoliatum* not being included in its list of vascular plants). All records for *A. subhirsutum* should be checked, made more difficult because although the plants can be easily seen in the sparse vegetation of late winter they are less visible among the burgeoning growth of mid-spring and the flowering period seems to be fairly brief.

If *Allium trifoliatum* is male sterile, as seems to be the case, it would not produce seeds and this

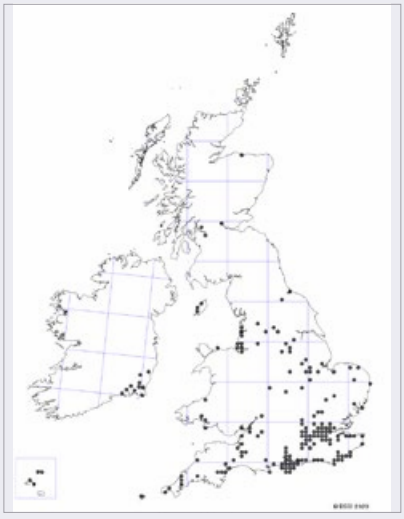

Figure 1. Distribution in Britain of plants named as *Allium subhirsutum*. *BSBI Distribution Maps*

fits with my own observations as well as those of Matthew Berry and Eric Clement (pers. comm.). Eric says that our plant does not perfectly match his herbarium specimen from Crete and suggests that ours could be a hybrid between the pure species and *Allium subhirsutum*. This is possible but if so, how does it manage to get around so well? It is notable that clumps established out of gardens are not surrounded by small developing plants, as with sterile *Narcissus* cultivars.

How did *A. subhirsutum* come to be the taxon of first choice? It's the only one in Stace Ed. 2 (1997) and Ed. 3 (2010) and also in Blamey, Fitter & Fitter's *Wild Flowers of Britain & Ireland* (2001), a book that many amateur botanists might have. Why they chose that species I've no idea. Both are described in Dilys Davies' *Alliums, the Ornamental Onions*, but that is likely to be on the bookshelves of only more specialist horticulturalists. The book has no keys, but it does have a few recipes to compensate. Both species are in Stace Ed. 4 (2019).

Finally, I don't recommend that you plant them in your garden. The bulbs are small and plentiful and you'll soon have more that you might want. I guess I'll have to get the two growing side by side to validly compare bulb form, but I'll keep them in pots.

I would like to thank Eric Clement for bringing the two species and Matthew Berry's notes on them to my attention, both for useful comments on this note and Lynn Whitfield for providing the spur for me to do something about it.

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Cortaderia richardii (Early Pampas-grass) postscript

DAVID PEARMAN

I have had two very pertinent comments on this following my note in *BSBI News* 144 (April 2020). The first from Clive Stace, who mentioned the telling point that the difference in the seed-set is due to the self-incompatibility of hermaphrodite *C. selloana*, not to the earlier season of *C. richardii*. It is explained in more detail, with the important reference, in Stace & Crawley *Alien Plants* (2015) p. 255.

The second, from Sylvia Reynolds, notes that the description of the lemmas in Stace Ed. 3 and Ed. 4 (2010 & 2019) is the wrong way around – it should be that those for *C. selloana* are acuminate, and those for *C. richardii* are bifid, as in Cope & Gray (2009).

My thanks to them both.

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Are we muddling Autumn Crocuses?

MICHAEL BRAITHWAITE

I suggest that a number of us recorders are muddling Autumn Crocuses. No, not *Colchicum autumnale* (Meadow Saffron) and *Crocus* spp., but *Crocus nudiflorus* (Autumn Crocus), a native of France, and *C. speciosus* (Bieberstein's Crocus or Large Autumn Crocus), a native of Turkey, which is superficially similar.

In *BSBI News* 144 (April 2020), I published a report of *Crocus nudiflorus* colonising under trees on the floodplains of rivers in the Scottish Borders. The accompanying photo on p. 24 (repeated here) has now been re-determined by John Grimshaw, director of the Yorkshire Arboretum, as *C. speciosus*. John is a self-confessed 'croconut' and has now helped me with photos of two other *Crocus* colonies and with corms from a colony in my own garden. All were thought to be *C. nudiflorus* but all are *C. speciosus*. However, there are a cluster of colonies along the River Tweed between Tweedbank and Melrose, Roxburghshire, first found by Andrew Bramhall in 1995. Photos of three of these colonies have now been confirmed by Brian Mathew as *C. nudiflorus*. So both species are naturalised in the Scottish Borders in rather similar habitat.

I have discussed the issue with Roderick Corner and we find that we first learned about Autumn Crocus from Clapham, Tutin and Warburg's *Flora*, which includes *C. nudiflorus* but not *C. speciosus*. The plants we found seemed to match that species, so we considered we had learned it. The first edition of Stace's *Flora* covers both species, but the distribution of *C. speciosus* is given as 'naturalised in churchyards and waysides in Surrey and E. Suffolk', not a distribution calculated to prompt Scottish recorders to review their records. Later editions of Stace's *Flora* expand the distribution, but this did not come to our attention.

It seems I may not have been alone in misidentifying the *Crocus*, as eight recorders have recorded *C. nudiflorus* in the Scottish Borders, while there were no records at all for *C. speciosus*. I now suspect that there has been a degree of confusion between the two species, so there is a clear need for fieldwork to sort this out.

Crocus speciosus (Bieberstein's Crocus) (previously misnamed as *Crocus nudiflorus*), Coldingham, Berwickshire (v.c. 81). *Robin Cowe*

The *Crocus speciosus* in my garden were probably introduced about 100 years ago. I happen to have a 1914 catalogue from Forbes Nurseries, at that time a huge enterprise supplying the whole of Britain from Hawick, just a few miles from my house. The herbaceous section of the catalogue runs to 188 pages and lists but one *Crocus* – *C. speciosus*. So Forbes Nurseries is a most likely source for my plants.

If we have sometimes got it wrong here in the Scottish Borders, we are unlikely to be alone. So this is my plea: if there are records for *Crocus nudiflorus* from your area, please consider whether they need revisiting. The BSBI referee, Brian Mathew, confirms that he is happy to identify photos or specimens.

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PLANT ALERT

August 2020 update

Since our first article in the last issue of *BSBI News* (spring 2020) an array of developments have taken place in the world of PlantAlert, despite the impact of Covid-19. With more people than ever out in gardens we have made it our mission to reach as many gardeners of varying abilities across the UK. We have received a significant amount of media coverage, featuring on BBC Radio 4 Gardener's Question Time at Home (Episode 11) and the 6pm regional ITV News programmes (in late July) to name just two. You can now explore these articles and digital media featuring Plant Alert via our media page on *www.plantalert.org*.

The result of this coverage has been an increase in records. The most frequently reported species are displayed on our constantly updated results page (see links below). Currently top of the list is Japanese Knotweed (*Reynoutria [Fallopia] japonica*) followed by Himalayan Balsam (*Impatiens glandulifera*). Both species were featured and pictured as examples of escaped ornamentals in the media coverage, probably encouraging people to report them. Perhaps more unexpected is Himalayan Honeysuckle (*Leycesteria formosa*) in third place. This species has spread considerably over the last twenty years outside gardens, so to know it is regarded as a species difficult to control in gardens provides valuable evidence for a potential risk assessment.

Apart from records of already well-known invasive plants, we have also received records of native species, e.g. *Potentilla reptans* (Creeping Cinquefoil) and *Equisetum arvense* (Field Horsetail) and well-known garden weeds, such as *Oxalis corniculata* (Procumbent Yellow-sorrel). Despite this, we have had a steady flow of ornamental garden plant records, including some species which are yet to appear 'en masse' on the BSBI distribution maps, such as *Tropaeolum tuberosum* (Mashua) and *Perovskia atriplicifolia* (Russian Sage). This is promising as it indicates we are receiving records of species potentially at the early stages of their journey out of gardens and into the countryside.

Plant Alert is a long term BSBI and Coventry University recording project for ornamental plants spreading in gardens. If you have such plants in your garden, please go to our website. We would be grateful for you to recommend the project to your friends and neighbours. To get in touch with us please use the email address below and follow us on Twitter: @Plant_Alert.

April Webb
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www.plantalert.org

1	24	*Fallopia japonica* "Japanese Knotweed"
2	19	*Impatiens glandulifera* "Himalayan Balsam"
3	12	*Leycesteria formosa* "Himalayan Honeysuckle"
4	10	*Pentaglottis sempervirens* "Green Alkanet"
	10	*Lamiastrum galeobdolon* subsp. *argentatum* "Felen Arianddail Marddanhadlen"
6	8	*Allium triquetrum* "Three-cornered Garlic"
7	6	*Pilosella aurantiaca* "Fox-and-cubs"
	6	*Houttuynia cordata* "Fish-plant"
9	5	*Symphoricarpos albus* "Snowberry"
	5	*Equisetum arvense* "Field Horsetail"
11	4	*Crassula helmsii* "New Zealand Pigmyweed"
	4	*Erigeron karvinskianus* "Mexican Fleabane"
	4	*Rubus spectabilis* "Salmonberry"
	4	*Anemone x hybrida* "Japanese Anemone"
	4	*Lysichiton americanus* "American Skunk-cabbage"
	4	*Geranium macrorrhizum* "Rock Crane's-bill"
	4	*Acanthus mollis* "Bear's-breech"
	4	*Calystegia* "Bindweed"
19	3	*Akebia quinata* "Five-leaf Akebia"
	3	*Euphorbia amygdaloides* "Wood Spurge"

Top 20 species reported on the Plant Alert website at August 2020. The middle column shows the number of reports.

Leycesteria formosa (Himalayan Honeysuckle). *April Webb*

NOTICES

EVENTS

BSBI Annual Exhibition Meeting and AGM 2020; Scottish Botanists' Conference

Due to the Covid-19 restrictions the AEM, AGM and SBC will be online only events – see the flyers included with this issue for further information. The AEM and AGM are to be held on Saturday 21 November and the SBC on the weekend of 31 October and 1 November 2020.

BSBI locked down and online

Back in April, BSBI started putting together a range of activities to engage and entertain botanists under lockdown. We launched a Garden Wildflower Hunt recording app and encouraged people to record native wild flowers growing in their gardens. By mid-August, almost 800 surveys comprising more than 23,000 records of 1,700 species had been submitted, i.e. around half the British and Irish flora. Supporting webpages were created to help hunters and first-time plant recorders, including a page giving definitions of such terms as 'native', 'naturalised' and 'archaeophyte'; more resources were also added to the 'Plant ID: Getting Started' webpage. The Garden Wildflower Hunt will continue to run through the autumn and we would encourage you all to take part: *www.bsbi.org/garden-wildflower-hunt*.

Online training courses were held throughout the summer to get people started with identifying dandelions, ferns, grasses and sedges; supporting webpages were set up with a range of ID resources for botanists at all skill levels. Videos of many of the training webinars were then made available via a new BSBI YouTube channel, which also features several in-house videos by England Officer Pete Stroh and playlists of videos by BSBI members and partner organisations. Playlist themes include short plant ID videos, herbaria, biological recording and the history of botany, and more videos are being added all the time: *www.youtube.com/channel/UCzrY3V3QJFciZsS_JYpVe6w*.

New Year Plant Hunt 2021

BSBI's tenth New Year Plant Hunt will run from Friday 1st to Monday 4th January 2021. We don't know at this stage how restrictions on social gatherings might affect things, but we intend that the Hunt will go ahead in some form or other! A total of 1,714 people took part last year; they spotted 615 taxa in flower in midwinter and submitted a grand total of 14,724 records. It will be interesting to see how 2021's results compare. More details to follow here: *https://bsbi.org/new-year-plant-hunt*.

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ENGLISH BOTANICAL NEWS

At the local level botanists have been out and about making thousands of records – in my own county we had achieved the highest annual total ever by the end of July! Some of the more exciting discoveries were reported in *English Botanical News* (EBN), the new periodical for members from England, which I hope has items of wider interest. The first issue, published in May, included a report from the annual meeting, discussions between the vice-county recorders, vice-county reports, new county records, some hints and tips and many pictures. EBN is only being published in electronic form, so you will need to go to the England web page to download the PDF. If you have suitable contributions for the next issue, or would like to get involved with the Committee for England, do get in touch. It seems probable that the next England Annual Meeting will have to be a virtual one and if so we will publish details in a future *BSBI News*.

Jonathan Shanklin
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OUTGOING TREASURER

I would like to thank Susanna Reece who recently stepped down from the Board and her role of Honorary Treasurer. Although Susanna only joined the Board in the Summer 2019 she immediately made a significant contribution to our meetings and the Strategy development process through to its conclusion. She helped the financial planning that has taken place to underpin our work under the Strategy going forward and through the disruption

to our work that the Covid-19 pandemic is throwing up. Susanna has offered her expertise in other work the Board will be engaged with in the future and we will take up her offer.

Chris Miles
Chair, Board of Trustees

BSBI CONSERVATION POLICY

As mentioned in the September 2020 issue of *eNews* (*bsbi.org/enews/2020-09*) BSBI has issued its Policy on Nature Conservation (see link on that page for a downloadable PDF). More details to follow in future issues of *BSBI News*.

BSBI NEWS INDEX AND LIST OF MEMBERS

An index to *BSBI News* 121–130 (c. 48 pp) is now available as a downloadable PDF on the publications section of the BSBI website: *archive.bsbi.org/bsbi_news.html*. Printed copies are still available from me on receipt of a stamped (£1.40) addressed label or envelope (*BSBI News* size).

An updated List of Members will be posted on the members only section of the BSBI website: *bsbi.org/members* (password protected) at the end of each quarter. If any member without internet access would like a printed copy of the end of year List, please send me a stamped (£1.40) addressed label or envelope (C5 size or larger).

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PANEL OF VICE-COUNTY RECORDERS

In Scotland, Wigtownshire (v.c. 74) has a new VCR, with Michael Jeeves replacing Alan Silverside. Many thanks to Michael, who I assume knows the ropes, having spent 23 years as Recorder for Leicestershire from 1991–2014.

In Ireland, Robert Northridge is stepping down as VCR for Cavan (v.c. H30) after heroically taking on Atlas recording for the county over the past five years. He continues as joint recorder for Fermanagh (v.c. H33). In other vice-counties new recorders are stepping up to learn the VCR ropes. In Tyrone (v.c. H36) Sharon Spratt is working with retiring VCR Ian McNeill, while in Clare (v.c. H9), following the retirement of Stephen Ward and Sharon Parr, three new trainees are trying out the VCR role: Phoebe O'Brien, Donncha Ó Catháin and Hannah Mulcahy.

In England, Roy Maycock and Andy McVeigh have stepped down as VCRs for Buckinghamshire (v.c. 24) after 34 years and 7 years in the post respectively. Roy co-authored *A Checklist of the Plants of Buckinghamshire*; Andy co-authored the recent BSBI Gentians Handbook, and in recent years Roy and Andy have made a brilliant team, contributing enormously towards coverage for the current Atlas. Indeed, as a field botanist Roy has contributed records for all three Atlases! Thank you to both for your help and generosity over the years.

Vacancies

The retirement of Roy and Andy means that the post(s) of VCR in Buckinghamshire (v.c. 24) is currently vacant. In England, there are also vacancies for East & West Sussex (v.cc. 13 & 14), Dorset (v.c. 9), alongside Robin Walls and Hertfordshire (v.c. 20), alongside Ian Denholm. In Scotland, there are vacancies in Argyll (v.c. 98), alongside Gordon Rothero, Banffshire (v.c. 94) and Dunbartonshire (v.c. 99). And in Ireland, Co. Cavan (v.c. H30), Co. Longford (v.c. H24) and Co. Waterford (v.c. H6) are currently without a VCR in post.

If you, or someone you know, are interested in taking up the role of VCR (or perhaps first trying it out as a trainee VCR), and would like to discuss what is involved, then please do get in touch with me, or the relevant Country Officer, using the contact details given on the inside front cover.

Although there will be obituaries in News, I must briefly mention three VCRs who have passed away in recent months. Trevor James, Recorder for Hertfordshire for 38 years, has died after a lengthy illness. Even when very unwell, Trevor was somehow able to complete the remarkable *Beetles of Hertfordshire*, published in 2019, which will serve as a lasting legacy alongside his *Flora of Hertfordshire* (2009). He was a brilliant naturalist and a lovely person and will be greatly missed. Vincent Jones spent 14 years as VCR for North-East Yorkshire but was active as a botanist in the county for much longer. He is probably best known as an authority on Hawkweeds and is author of the acclaimed *Yorkshire Hawkweeds*, published in 2015. I was fortunate enough to meet Vincent a couple of years ago on his 'patch', spending a lovely day in the field and will remember him as someone who clearly loved his

plants, Yorkshire and cricket (not necessarily in that order). George Ballantyne, VCR for Fife & Kinross, was one of our longest serving VCRs, taking up the role in 1969. He was a highly respected botanist, an expert on Brambles and author of *Wild Flowers in Fife and Kinross: A Concise Checklist*, published in 2002. He had been working on a Flora of the county for some time, but regrettably failing health meant that it was never finished, although there is a possibility that it might be completed by others and published posthumously. Joint Fife & Kinross Recorder for the past 10 years, Sandy Edwards, officiated as humanist celebrant at his funeral.

Pete Stroh
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BRITISH & IRISH BOTANY 2:2 & 2:3

Two more issues of the 2020 volume of *British & Irish Botany*, BSBI's open access, online scientific journal, were published in May and August (see lists of contents opposite). You can view or download papers from both issues and all previous issues here: *https://britishandirishbotany.org/index.php/bib*. For members without internet access, print copies of individual papers can be made available for a small cost. Please contact Gwynn Ellis to discuss – his contact details are listed on the inside front cover of this issue.

Guidelines for submitting a manuscript to British & Irish Botany are available here: *https://britishandirishbotany.org/index.php/bib/about/submissions* or send your manuscript to the Editorial Office at the email address below and we'll do it all for you. You can also phone us on 07725 862 957 to discuss a proposal.

Louise Marsh & Ian Denholm
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Correction

In the last issue of BSBI News (no. 144, April 2020) in the article on the Teesdale special flora there was an extra 'dot' in the contact email given at the end (p. 47). This should have read: **enquiries@teesdalespecialflora.uk**. Margaret Bradshaw also advises that the donation option on the main website (*https://teesdalespecialflora.uk*) which was not working at the time of publication is now fully functioning.

COUNTRY ROUNDUPS

ENGLAND

The restrictions on movement and social gatherings this year due to Covid-19 have been a difficult experience for many of us, but there are always silver linings to be found, and the exceptionally dry and sunny spring was certainly one. For those who were able to escape the house for their daily hour of exercise this time offered, if but briefly, the chance to appreciate our local environments and really get to know the flora within walking distance. In north Northamptonshire, where I live, new populations for the locally uncommon *Carex paniculata* (Greater Tussock-sedge) and *Valeriana dioica* (Marsh Valerian) were found near to several small tufa springs within previously unexplored wet woodland, as well as several new sites for *Ophioglossum vulgatum* (Adder's-tongue) and *Juncus compressus* (Round-fruited Rush) in wet meadows, and new places for *Astragalus glycyphyllos* (Wild Liquorice) on woodland rides and road verges. Across the country many BSBI members have been busy exploring places near to their homes. Due to limited space it is only possible to give a flavour of what has been discovered, but do seek out county newsletters later in the year for more information. Nothing seems to stop botanists, not even a pandemic!

In Taunton, near-deserted roads offered a chance to investigate the verges where new inland records were found by Simon Leach for *Sagina maritima* (Sea Pearlwort), *Catapodium marinum* (Sea Fern-grass), *Trifolium ornithopodioides* (Bird's-foot Clover) and *Trifolium subterraneum* (Subterranean Clover). In Leicestershire, Jean Emeny discovered a stand of the very lovely *Carex vesicaria* (Bladder Sedge) at Saddington Reservoir SSSI, a species not previously recorded at this site, and the first record in the county for a decade. In Cambridgeshire, new locations were reported by Jonathan Shanklin for *Astragalus danicus* (Purple Milk-vetch), *Trifolium ochroleucon* (Sulphur Clover) and *Himantoglossum hircinum* (Lizard Orchid), with the last of these also turning up in N. Wiltshire at a new site in a county with only one other record in the past 80 years, as well as in Hertfordshire and Leicestershire after an absence of almost 100 years; plus there have been county 'firsts' for it in Huntingdonshire and S. Essex.

A large population of the Endangered and nationally scarce *Torilis arvensis* (Spreading Hedge-parsley) was spotted by Oli Pescott in a fallow field in Crowmarsh Gifford, Oxfordshire. The species was thought to be extinct in the county, although unfortunately the site of the discovery is earmarked for development. Oli and David Morris also found *Vicia parviflora* (Slender Tare) at two new locations, as well as new sites for *Carduus tenuiflorus* (Slender Thistle), a very rare casual in Oxfordshire, *C.* × *stangii* (the hybrid between *crispus* and *nutans*), the first record for many decades, and *Valerianella dentata* (Narrow-fruited Cornsalad), now very rare in the county. In Kent, *Carex* × *turfosa* (the hybrid between *elata* and *nigra*) was spotted by Stephen Lemon at Dungeness, a first for the county, and at a site at Betteshanger which is under threat of development Sue Buckingham found an abundance of *Apera interrupta* (Dense Silky-bent) and *Lythrum hyssopifolium* (Grass-poly). *Platanthera* × *hybrida* – a very uncommon hybrid (not surprisingly, perhaps) between *bifolia* and *chlorantha*, and another first for Kent – has been confirmed for the county by Richard Bateman, seen by Sue Buckingham in a colony of *P. bifolia* reported by Steve Coates.

Over to Surrey, where Ann Sankey has let me know about a new locality for the nationally 'Endangered' *Ajuga chamaepitys* (Ground-pine), recognised by a member of Butterfly Conservation whilst on a visit to inspect a scrape made in 2019 for the establishment of locally sourced *Anthyllis vulneraria* (Kidney Vetch), the larval food plant of the Small Blue butterfly. The one large *Ajuga* plant was present on the edge of an uncultivated chalk bank. Until recently, no one had recorded in this pasture as it is not open to the public. The 'lockdown' also provided great opportunities for access to golf courses without the risk of being brained by a golf ball, and a number of species that had not been recorded for several decades at one Surrey course were re-found, including *Genista anglica* (Petty Whin), *Carex echinata* (Star Sedge) and *Anagallis tenella* (Bog Pimpernel).

As Surrey has over 130 courses, it is probable that many more species are out there waiting to be discovered. If you consider how many golf courses there are nationally, perhaps we should all be practising our golf swing (or not – the short rough usually has the best finds).

In Devon, just north of Braunton, Mary Breeds discovered a new site for the nationally scarce *Orobanche rapum-genistae* (Greater Broomrape), growing with its usual host plant, *Ulex europaeus* (Gorse). And in Jersey, a National Trust Ranger turned up *Epipactis palustris* (Marsh Helleborine), not recorded there since the 1960s. In the 'not-so-good-news' camp, Jon Walton was unable to refind *Melampyrum pratense* (Common Cow-wheat), *Cirsium dissectum* (Meadow Thistle) or *Oreopteris limbosperma* (Lemon-scented Fern), all within areas that appeared to still be well-managed, with *C. dissectum* now perhaps extinct in the county. Jon wonders whether our rapidly changing climate is impacting on the ability of such species to persist in small and isolated localities, especially for those present on the edge of their biogeographic range. In stark contrast, thousands of plants of the Endangered *Scleranthus annuus* (Annual Knawel) were recorded on the Isle of Wight by Colin Pope, growing on an arable headland in the south of the island. This site was first discovered by Geoff Toone in 2002, when it contained only a handful of plants, and it may well have profited from a wet winter followed by a very dry spring.

Moving north, Dave Barlow has been busy drafting a Rare Plant Register for N.E. Yorkshire and has been looking for several locally uncommon plants. *Cornus suecica* (Dwarf Cornel) was re-found at Hole of Horcum, although it appears to be in trouble, being shaded out by young Rowan trees which may have been planted, and an old record for *Neottia nidus-avis* (Bird's-nest Orchid) was searched for in species-rich woodland on the north-east coast. This can be a notoriously difficult plant to find, and so it proved using the grid reference provided, but on his way out of the valley Dave spotted two spikes at the side of the path in a new location, a happy ending and just reward for his persistence and observational skills. This rather lovely orchid has appeared in large numbers this year in S. Northumberland at known localities, and at a new site at Shepherd's Dene, above Riding Mill, discovered by Tom Charman. There have also been new sites in S. Northumberland for *Saxifraga hypnoides* (Mossy Saxifrage) and *Myosotis stolonifera* (Pale Forget-me-not), the latter accompanied by its hybrid with *M. secunda* (Creeping Forget-me-not), *M.* × *bollandica*. In Lancashire, Joshua Styles spotted several thousand plants of *Crassula tillaea* (Mossy Stonecrop), new to the county, in unimproved, decalcified dune grassland. The distribution of this species has expanded dramatically over the past two decades, not only across its 'core range' in East Anglia, southern and south-western England, but also along the Welsh coast, in north-eastern Scotland and in Ireland.

There have been the usual wealth of alien plant finds, of which a few are mentioned here. In S. Somerset, *Cynodon dactylon* (Bermuda-grass) and *Trifolium tomentosum* (Woolly Clover) were discovered by Steve Parker while exploring road verges and waste ground in Bridgwater, both at only their second localities in the vice-county. There were new county records for *Rostraria cristata* (Mediterranean Hair-grass) in Cambridgeshire and S. Wiltshire, the latter site found by Darrell Harrison, and *Corydalis cheiranthifolia* (Fern-leaved Corydalis) in Shropshire, found by Mark Duffell in the car park at The Gateway, Shrewsbury, possibly via seeds washed in from the dramatic floods earlier this year (that seems like a long time ago!). The stand-out alien discovery was by Martin Stead, his sharp eyes noticing *Cota tinctoria* subsp. *australis* (a Yellow Chamomile), new to Britain and Ireland, on a road verge south of Chester, Cheshire. Subsp. *tinctoria* is the common plant here – see Stace Ed. 4, p. 795 for the differences.

It is worth mentioning that there have been several recent finds of the alien *Trifolium pannonicum* (Hungarian Clover), with some recorders initially confusing it with the native and 'Vulnerable' *Trifolium ochroleucon* (Sulphur Clover). *T. ochroleucon* is almost always associated with species-rich unimproved grassland over chalky boulder clay and, less often, loamy clays or sandy loams over chalk. *T. pannonicum* occurs in wide arable margins as a crop-contaminant or as part of a seed mix, and in sown grassland. It is a larger plant with larger flowers (often twice the size of *T. ochroleucon*), flowers earlier, has a more erect habit than *T. ochroleucon*, and is not as hairy. Additionally, the leaves

of *T. pannonicum* are subtly different, being narrower and more pointed. Flower stems often have no bracts for 15 cm or more, and most flowerheads are clearly stalked (*T. ochroleucon* flowerheads are either unstalked or have a very short stalk). At first glance the two species appear similar, so first bear in mind both the habitat and geographic distribution of *T. ochroleucon* – it is very rare to find it outside of the east and south-east of England and the east midlands – and then work your way through the differences if necessary. For both species, it is not advisable to try to identify them without flowers. And remember that vegetative *T. ochroleucon* can look horribly like vegetative *T. pratense* early on in the season!

With thanks to Ken Adams, Ann Sankey, Jonathan Shanklin, David Broughton, Geoffrey Hall, Jon Walton, David Morris, Colin Pope, Bob Hodgson, David Barlow, John Richards, Geoffrey Kitchener, David Earl, Sarah Whild, Sharon Pilkington, Graeme Kay and Anne Haden for contributions, and apologies to those who sent in records that could not be included here.

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WALES – CYMRU

Barbara Brown's post as Wales Officer ended on 31 March but she kindly continued doing some work for the BSBI. Sarah Stille has retired as Recorder for Merioneth (v.c. 48) after nine years in that post; she joined the Wales Committee back in 2003. Jo Clark, assisted by Sally Peacock, has been appointed in her stead. Julian Woodman in Glamorgan (v.c. 41) east will also be assisted in future by two new Joint Recorders, Karen Wilkinson and David Barden.

Sadly because of Covid-19, all meetings including the AGM and associated field meetings, ably organised by John Palmer (which were to be held from 27 to 29 June in Bangor) were cancelled. Hopefully John's work won't be wasted and we will hold the AGM there next year.

Although lockdown in late March 2020 did restrict fieldwork in Wales, nonetheless many botanists managed to continue finding plants on daily local walks and when restrictions were eased, further afield. We note below some discoveries from several vice-counties; apologies to those Vice-county Recorders who sent us data too late to be included.

Exciting finds in Monmouthshire (v.c. 35) included a new hectad record for *Schoenoplectus lacustris* (Common Club-rush), found by SJT in a pond in the Afon Trothy catchment, a new colony of about 200 *Epipactis palustris* (Marsh Helleborine) that Lee Gregory found at Garn Lakes in the west of the vice-county, over 1,100 *E. palustris* seen by Martyn Jones at a known site at an old steelworks near Newport, a plant of *Osmunda regalis* (Royal Fern) seen by Steve Williams in acid flushes on coal tips on Mynydd Varteg and at Canada Tips, Blaenavon (SO2410) and numerous plants of *Centaurium pulchellum* (Lesser Centaury) in King's Wood near Monmouth found by Anne Griffiths in a different area of the woodland from where EW and SJT recorded it in abundance in 2018. A visit on 30 July by EW, SJT and AG revealed a minimum of between 450 and 500 plants over an extensive area along forest tracks in three monads. Lauri Maclean re-found *Eleogiton fluitans* (Floating Club-rush) in a drying pond in Chepstow Park Wood (10 years after it was found there), a surprisingly rare plant in Monmouthshire. Heather Colls has been identifying *Hieracium* (hawkweeds) and refound plants of *H. cambrense* (*stenstroemii*), *H. consociatum* and *H. exotericum*.

In Glamorgan (v.c. 41) Julian Woodman reported that *Epipactis leptochila* (Narrow-lipped Helleborine) has done well in one of its colonies with 71 flowering spikes counted this year; nearby was some *Hypopitys monotropa* (Yellow Bird's-nest) in a new location. Faith William has confirmed some healthy colonies of *Sibthorpia europaea* (Cornish Moneywort) on the Garth, north of Cardiff and Tim Rich has found some more colonies of *Hieracium radyrense* (Radyr Hawkweed) in Cardiff, including one in association with probable *Hieracium pollichae* which is new to Wales.

John Crellin (Recorder for Breconshire, v.c. 42) had 15 notable finds. The most exciting of these included *Allium trifoliatum* (Hirsute Garlic) found by Joan Millard on 18 May in Llandefalle Churchyard – a county first; *Orthilia secunda* (Serrated Wintergreen) that Tim Rich refound on 20 July on cliffs at Craig Cerrig-Gleisiad near Llangattock (this was first found in 1955); *Epipactis palustris*, *Eriophorum latifolium* (Broad-leaved Cotton-grass) and *Gymnadenia conopsea* (Fragrant Orchid) noted by John Crellin on 17 July at new sites at Parc Bedw;

Hornungia petraea (Hutchinsia) – a dead plant found by Anne Griffiths on 24 June at Craig y Cilau. And around Llangorse Lake on 24 July JC, AG and others found *Catabrosa aquatica* (Whorl-grass) and *Berula erecta* (Lesser Water-parsnip), rare in the vice-county.

In Carmarthen (v.c. 44) Kath and Richard Pryce on 30 July came across a large population of several groups of *Brassica nigra* (Black Mustard) plants on the Carms bank and inside-meander shingle of the Afon Teifi about 2 km downstream of Newcastle Emlyn, only the 15th post-2000 record for the vice -county. In their garden at Pwll on a small area of newly top-soiled ground most of the first colonisers were *Lepidium coronopus* (Lesser Swine-cress) but a single plant of *Thlaspe arvense* (Field Penny-cress) was the first record for the garden and the second Carms record since 2012. Other species that have appeared are single plants of *Fumaria bastardii* (Tall Ramping-fumitory) and the pink flowered form (f. *carnea*) of *Lysimachia* (*Anagallis*) *arvensis* (Scarlet Pimpernel) – only the fourth recorded site in the v.c.

In Cardiganshire (v.c. 46) activity has been focused on updating records for the county scarce sedges *Carex dioica* (Dioecious Sedge) and *C. lasiocarpa* (Slender Sedge) in remote and often hard to reach places in the Molineetum uplands above the Cwmystwyth valley area. Interesting plants so far for the year include a second site for *Cortaderia selloana* (Pampas-grass) and a towering plant of *Verbascum densiflorum* (Dense-flowered Mullein), the 1st v.c. record, in the local churchyard at Capel Bangor. On Cors Fochno, Julian Lyons (Natural Resources Wales) monitoring the reappearance of *Spiranthes romanzoffiana* (Irish Ladies-tresses) reported an increase in numbers on last year. Local explorations in the Coed Rheidol NNR yielded new sites for *Circaea* × *intermedia* (Upland Enchanter's-nightshade) and *Gymnocarpium dryopteris* (Oak Fern), together with an unusual epiphytic record for *Drymochloa sylvatica* (Wood Fescue) growing on the trunk of a fallen Oak tree.

Kate Thorne in Montgomeryshire (v.c. 47) reports that she has revised and updated the Mont RPR; it includes a few 2020 records as well, but the botanists have not been able to do much recording this year. Kate wrote "One plant found by Graham Griffiths this year that caused excitement was an *Epipactis helleborine* (Broad-leaved Helleborine) without chlorophyll in woodland (see photo on front cover of this issue). Ian Denholm confirmed this but asked for another photo when it was in flower. Unfortunately it withered to just a stump. Sue Southam saw *Cardamine amara* (Large Bitter-cress), one of our scarce plants, along the Montgomery Canal. Sylvia Backhouse took some more photos of her *Dactylorhiza purpurella* × *D. maculata* (*D.* × *formosa*) which grows in her fields with the parents and also with *D. fuchsii* – I. Denholm verified this (although not 100% as there was not a good view of the leaves) in 2019. We only had this one site for it in the 2000–2019 recording period and only one site for *Dactylorhiza* × *venusta* in the same period."

In v.c. 48 Barbara Brown on a foray into the Rhinogydd found some great records on the steep north face of Y Llethr, which is broken with many small ledges. There was *Thalictrum minus* (Lesser Meadow-rue), a ledge site for *Trollius europaeus* (Globe-flower), *Sedum rosea* (Roseroot) as well as *Selaginella selaginoides* (Lesser Club-moss). A streamlet was full of *Saxifraga hypnoides* (Mossy Saxifrage). There were two 'onions' identified thanks to Paul Green – Heather Garett's was *Allium vineale* var. *compactum* (Wild Onion) and Roger Cope's was confirmed as *Allium ampeloprasum* var. *babingtonii* (Wild Leek).

In v.c. 49 Wendy McCarthy managed to fit in one recording meeting before lockdown, at Abersoch where she updated a site for *Hornungia petraea* (Hutchinsia). Ian Fraser concentrated on RPR species and recorded several near his Conwy home, including *Cynoglossum officinale* (Hound's-tongue), *Epipactis helleborine* and *Orobanche hederae* (Ivy Broomrape). Julian Driver found new sites for *Gymnocarpium dryopteris*, *Equisetum sylvaticum* (Wood Horsetail) and successfully updated, on his second attempt in difficult terrain, the only known record in SH77 for *Hymenophyllum wilsonii* (Wilson's Filmy-fern), last seen here by Derek Ratcliffe in 1988. Robbie Blackhall-Miles climbed Snowdon on July 6th and reported that the summit cairn, usually trodden by thousands of feet, was awash with hundreds of flowering *Saxifraga hypnoides*. It must have been a wonderful sight, probably last seen by Victorian botanists before the advent of the Snowdon train. On the Great Orme Wendy McCarthy found an extensive

colony of *Carex spicata* (Spiked Sedge) on a bank adjacent to the ski slope.

In Denbigh (v.c. 50) Delyth Williams reported several vice-county firsts including *Amsinckia micrantha* (Common Fiddleneck), two plants on bank of Dee; *Angelica archangelica* (Garden Angelica), a single large plant by farmyard at Sinet and *Scilla forbesii* (Glory-of-the-snow) seen by Ian Fraser naturalised in grass in an SSSI at Bryn Euryn. Delyth noted third sites in the vice-county for *Brassica oleracea* (Wild Cabbage), several plants of which had been found on banks of the River Dee, *Oenothera stricta* (Fragrant Evening-primrose) found along the coastal path and also for *Berberis vulgaris* (Barberry) in a hedgerow on St Meughan's Lane. New sites were also found for *Neottia cordata* (Lesser Twayblade) by Paul Day and *Butomus umbellatus* (Flowering-rush) by N.J. Osley.

Richard Pryce, Sally Whyman and Katherine Slade continue to edit and produce interesting issues of the *Welsh Bulletin*, that for April 2020 containing various articles as well as part 1 of all notable records in Wales in 2019. There were so many records generated by the last year of atlas fieldwork that part 2 will be in the next bulletin.

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SCOTLAND

Scottish recorders have been busy validating records for their vice-counties for the Atlas. In addition some 25,000 records for 2000–2019 were added to the database in the first quarter of 2020–2021. Of these, more than 10,000 were extracted from SNH Site Condition Monitoring reports for Standing Water SSSIs/SACs. This should make a big difference to the Atlas maps, especially for aquatic species. Particular thanks are due to Stephen Bungard, Matt Harding and Nick Stewart for helping me with this project. Another key project, led by Jim McIntosh, has seen the extraction of about 4,000 detailed records of Nationally Rare and Scarce species from 101 Vascular Plant SCM reports, with the help of a contractor.

Despite the necessary cancellation of field meetings, there are plenty of interesting finds to report for Scotland so far this year. One of our rarest and most attractive mountain plants is *Astragalus alpinus* (Alpine Milk-vetch). It is restricted to just a few sites in the eastern Highlands, so it was very exciting to hear in June that a new site has been found in East Perthshire. Lewis Donaghy, a new BSBI member, discovered a large population at about 750 m altitude in Glen Tilt. He recorded several hundred plants growing on basic crags and in eroded grassland below. This site lies 10 km north of the nearest known site (near Ben Vrackie) so represents a significant extension to the range of this vulnerable species.

Exciting news from Lanarkshire – a large population of *Hypopitys monotropa* (Yellow Bird's-nest), a very scarce saprophyte in Scotland, has just been discovered near Glasgow. There are well over three hundred plants in just a small part of a post-industrial site, forming distinct sub-populations around seven host trees, which unusually are all *Salix caprea* (Goat Willow). Unfortunately, the area is to be bulldozed next month to create football pitches – it is hoped that some of this remarkable colony can be saved. Watch this space!

Matt Harding made a remarkable find near Kincardine – *Scandix pecten-veneris* (Shepherd's-needle) growing in an arable field margin on the Brucefield Estate, apparently the first sighting in West Perthshire since 1850. This archaeophyte virtually disappeared from Scotland after the 1960s, until a sighting last year near Crail by Sandy Edwards.

This year Sandy has been looking at 'pavement plants' in St Andrews, which are benefitting from the absence of spraying by the council, and has recorded about 40 species including *Vulpia bromoides* (Squirrel-tail Fescue) which is not often seen. He also notes that *Erigeron canadensis* (Canadian Fleabane), which he first recorded two years ago in St Andrews, is now appearing in places such as car parks and bus stations. Likewise in Fort William, with the lack of spraying, Jim McIntosh and I have spotted two county rarities, *Mycelis muralis* (Wall Lettuce) and *Vulpia myuros* (Rat's-tail Fescue), growing plentifully around the town.

Other notable finds in Fife this year include a first site for *Galega officinalis* (Goat's-rue) and new sites for local rarities *Lactuca virosa* (Great Lettuce) and *Campanula glomerata* (Clustered Bellflower). In East Lothian, Caspian Richards found a patch of *Scabiosa columbaria* (Small Scabious) at

Dunbar, only the second county record. It was also refound in abundance near North Berwick by Marion Moir and Sue Jury.

A puzzling buttercup found last year at Auchencairn, Kirkcudbrightshire, has been confirmed as *Ranunculus sardous* (Hairy Buttercup). There is a thriving population in an area of rotational pasture intermittently flooded by salt water during the highest tides. Now scarce in Scotland, its only previous county record was from 1860. On Mull a second site for *Scrophularia auriculata* (Water Figwort), was found by Tony Jeffree, in a wet ditch near Bunessan. By coincidence I found a second Westerness site for this species in June near Spean Bridge. It is scarce but apparently increasing in north-west Scotland, I suspect as a garden escape or throw-out.

On the east coast of Raasay Stephen Bungard has found two sites for *Hieracium silvaticoides* (Wood Hawkweed). This is a rarity in Scotland, being more common on limestone in the north of England. In Rothesay on Bute two new hawkweeds, *H. grandidens* and *H. gentile*, were confirmed by referee Brian Burrow, the latter being especially notable. Another microspecies, the bramble *R. echinatoides*, was also found on Bute by Angus Hannah for the first time.

I have been searching for the Nationally Scarce *Melampyrum sylvaticum* (Small Cow-wheat) close to home in Glen Roy for many years. This elusive species was recorded there at the end of the 19th century by Shoolbred but without much detail of location – and there is a lot of 'wooded river bank', much of it very steep, to search! I have had no success again this year, though plenty of other good finds while looking, such as *Drymochloa sylvatica* (formerly *Festuca altissima*, Wood Fescue) and *Melica nutans* (Mountain Melick). So I was delighted, while walking the dog in June, to come across a new population beside the River Arkaig, 12km NW of Glen Roy. I counted more than 150 plants growing under bracken with an open canopy of birch and an abundance of *Melampyrum pratense* (Common Cow-wheat). It stood out from its commoner relative due to its much brighter yellow, short, open flowers. This is only the second known site this century for Westerness.

In January I reported that a new site for *Schoenus ferrugineus* (Brown Bog-rush) had been found in Westerness. It seems that this may have been incorrect, for which my apologies.

John Crossley, County Recorder for Orkney, has taken advantage of 'lockdown' to complete a new plants checklist for the island group (v.c. 111). It is a significant update to the last one (2013), as a result of surveying for Atlas 2020 and research into older records in literature and herbaria. In Ayrshire, Dave Lang have produced an updated Rare Plant Register for this large and varied county. These and other such useful documents are available on the BSBI website.

We all recognise the importance of encouraging younger botanists. So I was delighted to hear that the Committee for Scotland, following wide advertising, has co-opted two enthusiastic individuals, one with the remit of enhancing links with students, the other with young people in the horticulture sector.

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IRELAND

It has been a year unlike any other, and that means that many of the plans we reported in April's BSBI News have had to change. It was disappointing to cancel our field meetings and training workshops this year, but we didn't let that stop us! Irish botanists are an adaptable lot, so while I focused on developing remote training opportunities, our recorders focused on local projects and solo recording. For such a challenging year, we've had some amazing results!

Our biggest project this summer was the Irish Grasslands Project. Developed in conjunction with NPWS Grassland Ecologist (and former BSBI Ireland Officer) Maria Long and funded by NPWS and CEDaR, this project included five online training webinars led by Lynda Weekes and Fionnuala O'Neill: Introduction to Grass ID, Vegetative Grass ID (parts 1 and 2), Introduction to Sedge ID, and Introduction to Annex I Grassland Habitats. 500 different people joined the live sessions, with around 70% attending more than one of the sessions. Recordings of the sessions were posted on the BSBI YouTube channel and together have had 3200 views so far. In addition to the training, we've also been developing downloadable resources around indicator species of Annex I grassland habitats. Look out for them on our project webpage: *bsbi.org/irish-grasslands-project*.

Other projects still underway at time of writing include an extension of last year's Aquatic Plant Project, which will include online training and individual recording of aquatic plants throughout September with identification support from aquatics expert Nick Stewart, and a webinar on Botanical Recording for Beginners, as part of the Ellen Hutchins Festival. Keep an eye on the BSBI YouTube Channel for recordings of all our webinars.

Our VCRs have kept very busy as well. For example, during lockdown, Limerick VCR Sylvia Reynolds took advantage of confinement to compile and submit over 2500 first and historical Limerick records to the DDb. Previously such records were missing, had errors or were incomplete. When restrictions began to ease, Sylvia and husband Julian ventured into the field and discovered the first record of protected species *Logfia minima* (Small Cudweed, previously *Filago minima*) for Co. Limerick!

As restrictions have lifted, a number of VCRs have used this post-Atlas period to focus on refinding rare or under-recorded species in their counties. David McNeill, Antrim VCR, took advantage of the opportunity to try to refind some historic records. He reports:

"A frustrated field botanist was finally allowed to leave home and wandered alone in the Belfast Hills. It seemed as if the botanists of old were sent to keep him company. At Windy Gap on Black Mountain, he saw *Rubus saxatilis* (Stone Bramble) where it had been recorded by Jack Moon in 1943. *Drymochloa sylvatica* (Tall Fescue, previously *Festuca altissima*) and *Neottia nidus-avis* (Bird's-nest Orchid) were also there. Nearby, he spotted a few plants of *Trisetum flavescens* (Yellow Oat-grass) as last seen by Richard Hanna prior to 1888. A few days later, the same grass turned up beside the Cavehill quarry, as last recorded on an outing of the Belfast Naturalists' Field Club in 1871. Two patches of *Trifolium medium* (Zigzag Clover) were possibly the first seen on Cavehill since before 1864.

Further from home, but still alone, the botanist made pilgrimage to Fair Head. Here, he saw a single plant of *Orobanche alba* (Thyme Broomrape) at the foot of the cliffs, last seen hereabouts by Sylvanus Wear before 1923. More amazingly, whilst striding out along the top of the cliffs, he spied an intriguing plant ahead. Although just out of reach, he was able to creep close enough to the cliff-edge to identify the crowded glossy upturned leaves of a bearberry mat – one of two just below the top of the cliff. *Arctostaphylos uva-ursi* (Bearberry) was first seen on Fair Head by John Templeton in 1814 but has been lost since 1837, when George Hyndman saw it by Lough Doo."

While we have faced some unexpected challenges this year, that has not necessarily been the case for plants. Orchids in particular seem to be thriving across Ireland, thanks to a combination of favourable weather at key periods and better management of verges in some places.

Starting in the south, East Cork made headlines in June with 363 *Ophrys apifera* (Bee Orchid) appearing on road verges in Midleton during the very first year of their reduced mowing regime. Other reports of Bee Orchids in new places thanks to more sensitive management include a new roadside site in Tralee, North Kerry, discovered by Gosia Horajska, and at the Waterford Institute of Technology campus where not just any Bee Orchid, but the rare *Ophrys apifera* var. *atrofusca*, found by Sean Keane.

Elsewhere in East Cork, VCR Edwina Cole reports that Youghal boasted hundreds of *Anacamptis pyramidalis* (Pyramidal Orchid) on the GAA pitch and dunes at Pillmore this summer.

In the midlands, a colony of *Anacamptis morio* (Green-winged Orchid) was found growing in a Portlaoise housing estate when mowing was suspended during Covid-19 restrictions. Recorded by Brian Gaynor, this rare species was last reported in the area by Praeger 120 years ago and has only been found in three other sites in the county in recent years.

Further north, and much further from any roads, Eamon Gaughan found *Neotinea maculata* (Dense-flowered orchid) on Knocknarea, Co. Sligo, thought to be a county first at the time. However, just a few days later, Sligo recorder Don Cotton discovered that the species had been found at a different site in Sligo in 2019 by Laszlo Kenderesi. Great news for this rare orchid, and a good reminder to send any plant records (especially for rare or unexpected finds) to your county recorder as soon as possible!

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OBITUARIES

MARTIN JOHN BARBER (1954–2019)

Martin Barber, who died in November 2019, for many years championed the study of plant aberrations in Britain. Martin was interested in many aspects of natural history but most especially in plant teratology, the study of those weird and wonderful plant oddities which often turn up but are usually hard to explain. He was one of the few people actively dealing with such things. He paid frequent visits to the Royal Horticultural Society at Wisley with plant oddities, donating interesting specimens to their herbarium and discussing with the horticulturists new cultivars which he raised from those teratological specimens which were stable and bred true and that he registered for sale. From November 1993 he published the little journal *That Plant's Odd*, with three issues annually, full of oddities and interesting observations, from his own discoveries as well as those from many contributors amongst the 70 or so subscribers that the journal enjoyed. Though initially issued in A4 format, it became an A5 publication from No. 10 in 1997, with colour introduced from No. 24 in 2001. It ceased publication in June 2017 (No. 61).

Martin Cragg-Barber at the British Plant Gall Society AGM, Bewdley, Worcestershire, September 2015. *Alan Rix*

As well as the journal, Martin wrote and published a range of informative booklets on various aspects of the subject, including original commentary on early works such as Thomas Hopkirk's *Flora Anomala* published in 1817, analysis of Gerard's native plant aberrations as well as an introduction to the subject of plant teratology, an appreciation of lawn weeds and others. Martin also established, in 1992, a *Register of Stable Aberrant Forms of Native Plants*. This was outlined in *BSBI News* in 1992 and was intended to update the early lists of Maxwell Masters and maintain them over time. In 1999 he initiated a project on aberrant plantains, having been impressed with apparently long-stable aberrations in this genus, some of which were documented in the 16th century by John Gerard. He recognised the genus *Plantago* as the richest source for native plant teratology, the basis for a 'teratological millennium project' which would serve as a suitable tribute to it! The following year, special recording sheets were issued, announced in *BSBI News*, and the project was also outlined in the pages of *Cecidology*, the journal of the British Plant Gall Society. Another project, entitled *Floraurea* and also initiated in 1999, involved the collection and documentation of yellow forms of plants. Martin was a frequent contributor to the Annual Exhibition of the BSBI, providing annual updates and discoveries which, in 1999, included various pigment aberrations that prompted the *Floraurea* project. He also mused on the possible effects of global warming which he saw as prompting out-of-season flowering and leafing and, in an article in *BSBI News* in 2003, wondered what new forms might occur as a result. Martin was also a long-term member of the British Plant

Gall Society, appreciating that some plant oddities may be induced by other organisms and that some teratological developments in plants are akin to galls. He attended the Society's AGMs at times, most recently that at Ashford, Kent, in 2017.

Martin was born on 27 May 1954 in Windsor, and attended King's College School, Wimbledon. He had a particular interest in botany and it was at a botany evening class at Southwark College in 1985 that he met his future wife, Jane Cragg, and changed his name then to Cragg-Barber. They were married in 1986 at Beaumaris, Anglesey and had two sons, Edmund and Kester. Until then Martin lived at Hersham in Surrey where he developed his interest in plant teratology and was a member of the local Natural History Society, thereafter moving to Hullavington in Wiltshire. He was by profession a gardener, working in various private gardens in the Chippenham area, such as Fosse Farm Barns, where he worked for 28 years from 1986, transforming and greatly enhancing the site. Martin had an amazingly keen eye for plant aberrations, such things that most would overlook completely, finding them almost wherever he looked. Many of these aberrant plants, including a surprising number found at Chedglow Manor Farm near Malmesbury in Wiltshire, where he was employed for 30 years, he successfully grew and marketed as new cultivars. Chedglow aberrations often featured in the journal or were shown as annual exhibits as, for example, *Chelidonium majus* 'Chedglow', a variegated form that flowers but does not set seed, which was highlighted at the 2003 Annual Exhibition. The Chedglow aberrations were the subject of a whole booklet published in 2004.

Martin had a great sympathy for the environment and conservation, clearly demonstrated by his love of gardening and the great outdoors. One notable local conservation success concerns the red-listed Barberry Carpet moth (*Pareulype berberata*), a species confined now to a few populations in Wiltshire and Dorset, whose larvae feed on wild Barberry (*Berberis vulgaris*). The moth is a Priority Species in the UK Biodiversity Action Plan. In 2017, Martin identified Barberry at Hullavington, the stimulus for a search of the site and discovery of a population of the moth at what was an important new locality.

Martin's interests extended well beyond botany and teratology. He was much interested in music, especially the more esoteric aspects, often attending concerts and festivals. He was fascinated by traditional and primitive instruments, perhaps most notably the didgeridoo. He was for many years a member of a didgeridoo club in Bristol and often attended didgeridoo festivals. There was much else that attracted his attention, for example attending conferences of the Society of Existential Analysis and practicing yoga. He also attained a Diploma in psychotherapeutic counselling. Martin died on 17 November 2019, aged 65. His tragic early passing leaves a big gap in the world of teratology and his unique approach to life will be missed by all who knew him. He was a great character, eccentric undoubtedly, and one of a kind, always with a different and thought-provoking perspective on things. He was a kind and thoughtful person, always willing to explain to others weird plant developments and his fascination for them. He touched and influenced the lives of very many people, family, friends, colleagues, other acquaintances, and indeed all who knew him, attested to by the many tributes that have been received. All will hold lasting memories of a unique character, a gentle person, always helpful and interesting, and he will be much missed by all of them. Sincere condolences are extended to all the family.

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Brian Spooner

GIGI CROMPTON (1922–2020)

Gigi Crompton, BSBI Recorder for Cambridgeshire for 30 years (from 1972 to 2002) and an honorary member of the Society since 2011, died at her home on 12 January 2020. She was 97. Poor physical health had latterly kept her house-bound, whilst macular degeneration had gradually robbed her of much of her sight, but she dealt with all this with a characteristic determined spirit. Her botanical career alone makes for interesting reading, but Gigi's long life had been a rich and varied one even before she turned to plants. She was born at Feldafing, near Munich in southern Germany, on 16 April 1922, the only child of the American-born art historian, art dealer and publisher George Martin Richter and his German-born wife, Baroness Amely Zündt von Kenzingen. Richter had earlier studied in both the USA and Europe and had come to live in Munich in 1905. His daughter was christened Irmingard Emma Antonia Richter, but apparently had trouble pronouncing Irmingard and was known as Gigi from an early age. The German author Thomas Mann, who became her godfather, had been present in the house at her birth and indeed had loaned money to her father to buy the house so that he had a quiet place to write, away from his own family. Gigi inherited a considerable volume of material relating to Thomas Mann, much of which has now either been sold or passed on to museums.

The family moved to Settignano above Florence in 1924, where her father was continuing his research and where she learned Italian. With the rise in fascism in Italy, they moved again, in 1929, to England. Here Gigi struggled at first to learn English and hated the first day school she attended at Purley (Surrey), where she was known as 'Wormy Irmy', but subsequently moved to a boarding school (Hayes Court) in Kent which she enjoyed. There she met two daughters of Humphrey Gilbert-Carter (then Director of Cambridge University Botanic Garden). The head mistress, Katherine Cox, introduced her to the Latin names of plants and remained a friend after her retirement to Cambridge. Summer holidays were sometimes spent in Venice, where her father rented a house on Giudecca, and was then working on a major book on the Italian artist Giorgione, which was eventually published in the USA in 1937. Gigi recalled she and her mother became 'bored to death' by Giorgione and by the 'endless Tintorettos'! After her general schooling she studied at Westminster Art School and then in Berlin where she lived with her mother's brother, whom she described as a 'horrid Nazi'. She never rated her own skills as an artist.

In 1939, on the day before the Second World War broke out, and all of them having American passports, the family left for New York on the liner Arandora Star. In New York the Richters were introduced to the New York art world by her mother's cousin, the artist Baroness Hilla von Rebay. Clearly influenced by her father she trained in art

conservation under Sheldon Keck at the Brooklyn Museum and then worked as a conservator at the Fogg Museum in Harvard. Her father had brought with him a remarkable photographic art collection, which eventually comprised over 60,000 images and numerous cuttings and contained a record of many works of art in museums and collections in Europe, some of which were to be lost, destroyed or stolen in the War. After his death in 1942 this collection was sold to the National Gallery of Art in Washington with financial help from Solomon Guggenheim, and the proceeds from this sale provided for Gigi and her mother. It is now treasured there as the Richter Archive. Subsequently Gigi and her mother drove over to the west coast to see relatives in California (where her father had been born in San Francisco in 1875) and Gigi recalled wonderful lunches given by Thomas Mann at the Pacific Palisades in Los Angeles.

Gigi by then was in her twenties, and clearly a lively, attractive and well-connected individual. She later recalled having many lovers and, by her own account, at least twenty proposals of marriage. However, she and her mother returned to England as soon as the War ended, initially on a 3-month residence permit, but eventually, through the assistance of the Director of the Tate Gallery (Sir John Rothenstein) and the Liberal MP Wilfred Roberts, she obtained a working visa. It was only later in life that she became a naturalised British citizen. She settled into the liberal artistic society of London, and for a time was employed by the London Gallery in Brook Street, where one visitor recalled the 'beautiful German picture restorer' who worked upstairs! Indeed at this time it is recorded she had a long affair with the Surrealist artist (and owner of the gallery) Roland Penrose, who before the War had championed the work of artists such as Henry Moore and was a friend and later biographer of Pablo Picasso. One account describes Gigi at this time as a 'quiet, refined and gentle' person, perhaps in contrast to the photographer Elizabeth ('Lee') Miller, with whom Penrose had previously been involved and whom he later married. Penrose had given her a gouache by Paul Klee, which she gave to the Fitzwilliam Museum in Cambridge in 2016, having earlier sold Penrose's Le Grand Tour to the Tate in 1964. At the time of her death there was still an original signed Henry Moore sketch on her

Plate 1. Gigi Crompton at 7 Mall Studios, Parkhill Road, Hampstead, in 1946, accommodation she was renting at the time from Henry Moore. *Photo © the estate of G. Crompton.*

study wall, an ethereal rendition of the potential forms of his famous reclining figures.

In 1948 Gigi was part of a small group invited to Berlin to report on the state of the arts in the immediate post-war period and wrote up an account in her 'Berlin Letter' in the arts magazine *Horizon* that year. On New Year's Eve the following year, she married the American-born David ('Buzzy') Crompton, to whom she had been introduced by Wilfred Roberts. Buzzy was then studying at the Architectural Association in London and was to develop a career in town-planning. They had a flat in London, which they later passed to Henry Moore, an artist whom Gigi clearly admired (and from whom she had previously rented a studio in Hampstead – see Plate 1). She had written about his work in the journal *Art in America* in 1947 suggesting that he was one of the few contemporary artists to maintain his artistic integrity and direction and not compromising to suit public taste. This approach clearly mattered to Gigi, as 50 years later, when I approached her with concerns about my undertaking a new Cambridgeshire Flora, but using a rather different approach to other recent county floras, she firmly suggested I should go ahead and 'do want you want to', advice I heeded.

Shortly after her marriage Gigi had a serious operation and as an aid to her recuperation Graham Greene had offered them the use of his villa in Capri, but after they drove down there it was so cold they left after two days to stay in Cap Ferrat. This further literary connection came about as Greene had a long and well-documented affair with Buzzy's sister Catherine, who before the war had married the Cambridgeshire landowner Harry (later Baron) Walston, whose Anglo-American father, Sir Charles Waldstein, later Walston, had been the second Director of the Fitzwilliam Museum and subsequently second Slade Professor of Fine Art in Cambridge.

For a time Buzzy worked with William (later Baron) Holford and H. Myles Wright, whilst they were developing their Report, published in 1950, on the development of Cambridge. This had proposed amongst other things a 'spine relief road' for the city and an eastern entrance to the railway station, neither of which was subsequently completed. During this time the couple lived in a small cottage at Heydon in the far south of the county, and it was here that Gigi began to take a serious interest in plants. Subsequently, when Buzzy was lecturing at the Department of Civic Design at Liverpool University, they lived above a greengrocer's shop in Liverpool and Gigi was a freelance conservator at the Walker Art Gallery in the city. When in 1952 Buzzy's work took him back to London they returned permanently to Cambridgeshire, having been offered the tenancy of a house in the complex of farm buildings on the Walston estate. Her mother, who had at first returned to Germany, joined them here in 1955 and lived with them until her death in 1988.

At Thriplow Gigi's knowledge of gardening and garden plants was fostered by the Walstons' gardener, Stanley Cooper. She had also made contact with John Gilmour (then Director of the Cambridge University Botanic Garden) who recommended she attended lectures on botany provided for the Garden students and it is clear that she quickly acquired a good knowledge of plants, aided by amongst others Max Walters (then Curator of the University Herbarium). By the mid-1950s she was clearly already an able field botanist and did a great deal of recording for the first BSBI Atlas in the 10 km square TL44 in which Thriplow is situated. In the 1960s and early 1970s she had taken a particular interest in some damp species-rich meadows on the Thriplow estate and wrote regular reports in *Nature in Cambridgeshire* on the effects of new management regimes. She summarised this work in a characteristic paper on the history and flora of the meadows in 1972. In fact her first publication in *Nature in Cambridgeshire*, in 1959, had been an historical account of The Peat Holes of Triplow (*sic*) and this interest in the botanical history of the county would become a feature of her botanical work. This culminated in her innovative *Catalogue of Cambridgeshire Flora Records Since 1538*, privately printed in three parts between 2001 and 2004 (with a searchable version made available online through the invaluable assistance of Martin Hodge and Buzzy's nephew Bill Walston).

This work drew together and ordered an enormous body of records from published and unpublished sources, annotated floras, herbaria and individual recorders. It will continue to be a vital resource for Cambridgeshire botanists in the future.

In 1956 Gigi had been a founder member of the local Wildlife Trust (originally styled the Cambridge and Isle of Ely Naturalists' Trust) and served on its Council for many years, with only a break in the mid-1960s when she was for a period Honorary Assistant Secretary and then Honorary Secretary. At least one annual report from the Trust in this intervening period suggested that 'with her gift for organisation she ensured that the office ran smoothly even when she was away'. This organisational skill was also reflected in the fulsome tributes from Max Walters and many others for the smooth organisation of two subsequent conferences in Cambridge – the BSBI Conference on Floristic Studies in Europe in 1974 and the last Flora Europaea Conference in 1977.

The Cromptons had moved from Thriplow to their final permanent home at Swaffham Bulbeck in 1965, where they created a garden which was a particular treasure trove for the lovers of home-grown fruit. The large orchard and the sides of most of the garden walls were planted with numerous cultivars of cooking and eating apples, and with pears, peaches, nectarines, plums and damsons, as well as figs, medlars, quinces, cherries, and various nuts, supplemented with a fruit cage full of soft fruit and vegetables. In pride of place, however, was a croquet lawn, maintained to a high standard by Buzzy. They both played the game with skill and serious competitive spirit, the lawn overlooked by a carefully chosen garden of white-flowered plants that ran along the back of the house. Extra help at fruit-picking time was always appreciated and surplus material dispersed to anyone who asked. This property was left to the Wildlife Trust by Gigi in her will, a telling demonstration of her long-term commitment to its aims.

Gigi had early on worked as an assistant to Max Walters in bringing together data on all the species of *Silene*, work which gave her confidence when working in libraries and herbaria, whilst in 1966/67 she had been secretary to the Teesdale Defence Committee. Through working with Dr Alex Watt on his long-term vegetation plots she also developed a strong interest in Breckland, especially Lakenheath Warren, and in 1972 prepared a long report on this area for the Nature Conservancy Council (*History of Lakenheath Warren: a historical study for ecologists*), having earlier compiled a comprehensive *Breckland Bibliography* in 1969. From 1972 to 1986 she was engaged by the Nature Conservancy Council to work on the Eastern England Rare Plants Survey, developing the standard methodology for recording rare plant populations. Her industry in tackling this work was phenomenal, not only in current field surveys, but also on the historical research. Ken Adams (BSBI Recorder for Essex), for instance, reports that she compiled a huge compendium of Essex rarities with detailed maps and site plans and that he has a 3-inch thick ring-file labelled 'Gigi Crompton'.

In her long stint as a BSBI Recorder, she provided 25 annual reports of new plant records for the county in *Nature in Cambridgeshire*, latterly often in conjunction with Chris Preston, or with Derek Wells who was for many years her Co-Recorder. Her assiduous gathering in of new records made by many local botanists resulted, in 1983, in the publication of *A Checklist of the Flora of Cambridgeshire* written with Harold Whitehouse who was responsible for the accounts of mosses and liverworts. This Checklist included the first clear delimitation of the vice-county boundary and brought up to date the 10 km square distributions for all plants recorded in the county. Gigi was exceptional in her ability and willingness to find positive comments on new records sent to her, so encouraging recorders to keep up the good work. When she opted to come and see a new find, you knew you had found something special!

Gigi's other contributions to botany, both local and national, included an unpublished detailed study of *Blysmus compressus* (for a time she was BSBI referee for the genus and *B. compressus* had been a feature of the Thriplow meadows), an account published in *Watsonia* in 2000 of the herbarium of the late eighteenth/early nineteenth century

Wisbech botanist William Skrimshire, written with Charles Nelson, as well as an interest in the flora of the Devil's Ditch. She had a particular interest in *Himantoglossum hircinum* (Plate 2), and in particular in the meticulous long-term monitoring of the population of *Himantoglossum hircinum* on the Ditch. She drew a long list of young and enthusiastic volunteers into this study and when for a period there was a spate of reported orchid thefts elsewhere in the country, she persuaded the Jockey Club to allow a 24-hour watch to be kept on the main colony. Many of the young wardens recruited have since gone on to work in ecology and conservation. Since 1970 she had been a member of a management committee concerned with the Ditch, with many meetings hosted at her house; the committee eventually evolving into a group of 'Friends' who still meet regularly to discuss its management and biological recording. Gigi eventually handed over to me her exhaustive unpublished checklist of all the botanical records from the Ditch, and following three years of further intensive field work I was able to augment this and it was eventually published in *Nature in Cambridgeshire* in 2011. It was characteristic of her that she had drawn me in to an interest in the Ditch flora whilst I was a graduate student. She seemed to have an eye for spotting potential projects for aspiring young botanists. Indeed many people have commented on her willingness and generosity in assisting others with their botanical endeavours and later in life she was always pleased to welcome visitors to hear about discoveries over lunch or tea and cake, although I often found it was impossible to leave the house without accepting a gin or vodka and tonic as well!

The welcoming rambling house at Swaffham Bulbeck was full of interesting books, maps, prints and paintings, a harpsichord made by Buzzy (who died in 2007), cases of stuffed birds and a remarkable collection of china and porcelain, which she maintained she had been able to collect using the money saved when she stopped smoking. It included some exceptional creamware and rare pieces by Eric Ravilious. There had also been a succession of cats, most recently a blue and then a chocolate British Shorthair, both called Pushkin, friendly animals whose feeding was a task Gigi insisted on doing herself right to the end.

Plate 2. Gigi Crompton at a *Himantoglossum hircinum* site, Sailly-Laurette, France, 15 June 1984. *Lynne Farrell*

Gigi's intelligence, determination and drive to get things done and to do them well, could sometimes make her intolerant of others who did not achieve these standards, and in later life she could sometimes seem a little imperious. However, she was always happy to discuss and argue a case, always keen to encourage and support initiatives. Other correspondents have reminded me of her slightly bohemian sense of dress (I think it was the range of coloured berets that did it) and remember her as charming, sociable, good-humoured and with a heart of gold. It was a long life, well spent.

In putting together this account I have drawn heavily on the moving account given at Gigi's cremation service by her friend and former tenant at Swaffham Bulbeck, Kirsty Findlay, as well as the account of her life prepared by Lynne Farrell for *Nature in Cambridgeshire*. Prof. Peter Grubb also provided some extensive notes he had made after a long conversation he and his wife had had with Gigi about her life, whilst Jane Bulleid, Chris Preston and Bill Walston have been generous with their advice and assistance.

Alan Leslie

MARGARET DOROTHY PERRING (1933–2020)

For me, as for many other BSBI members of a certain age, memories of Exhibition Meetings and the like are coloured by the presence of Margaret Perring, perforce in the background, selling books, in, how shall we say it, relatively controlled temper and order! It was she and her husband Frank's father, also Frank, who started the whole venture, in 1976 (Perring, 1983). This initially sold just BSBI's own publications and county floras, but it gradually branched out into second-hand books on botany too. She carried on the business after Frank senior's death in 1982, and only passed it over to Jon and Sue Atkins of Summerfield Books in 2000.

Margaret Perring (née Barrow) was born in Maesteg on 14 May 1933 and was head girl at Maesteg Grammar School before going on to read Biology at Leeds University. Here she developed an interest in botany and after several years working as a schoolteacher in the UK she moved to Melbourne, and eventually ended up working as a botanist in Western Australia. She co-authored several research papers based on her work there, but these were only published after she returned to Britain in 1967 (see References).

She then worked for the Nature Conservancy at Monks Wood Experimental Station, in the Woodlands Section. In 1970 she moved to be an Assistant Regional Officer in South Wales, but in 1972 she married the well-known botanist, Franklyn Perring, and they lived in Oundle. Frank was the author, with Max Walters, of the *Atlas of the British Flora* (1962) and pioneered the now familiar distribution 'dot maps' of species in 10-kilometre squares. He had subsequently become the first Head of the Biological Records Centre at Monks Wood, a post that he held from 1964 to 1978. Frank was also very interested in conservation and from 1979 to 1987 was General Secretary of the Royal Society for Nature Conservation, the umbrella body that coordinates the Wildlife Trusts in their current form.

All this time Margaret continued with 'BSBI Publications' (or 'Oundle Books'). After Frank retired he set up a company called Wildlife Travel, which offered expert-led wildlife holidays and donated its profits to the Wildlife Trusts. He and Margaret led many of the botanical trips including ones to Australia, where Margaret's knowledge and expertise came to the fore. Margaret had one daughter, Emma, who lived on Fair Isle, married Ewen Thomson, a Fair Isle luthier, and now works for the Shetland Islands Council. Frank died in 2003 and in 2007 Margaret decided to return to her original home in South Wales. She moved into a flat in Cardiff Bay, was much involved with the local Wildlife Trust, came to BSBI Exhibition Meetings in London and elsewhere, continued her great love of music (especially opera) and was still active until a few months before her death, from a stroke, on 5 April 2020.

Margaret Perring at Channerwick, Shetland, June 2018. *Emma Thomson*

I am very grateful to Margaret's daughter, Emma, for help in compiling this obituary.

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David Pearman

OBITUARY NOTES

Since we compiled the last Obituary Notes, news has reached us of the death of the following members or former members. Several are the subject of obituaries in this issue or will, we hope, be covered in future. We send our sympathy to all their families and friends.

Mr George H. Ballantyne of Kirkcaldy, a member for 60 years and Vice-county Recorder for Fife since 1969.

Mr M.J. Cragg Barber of Chippenham, a member between 1986 and 2008 (obituary in this issue).

Mr D.M. Barling of Wendover, a member for 66 years, an inspirational lecturer at the Royal Agricultural College, Cirencester and the author of papers on grasses and grassland species.

Mr R.A. Burberry of Bristol, a member for 20 years.

Mrs S.R. Cowen of Cockermouth, a member for 29 years.

Miss A. Jo Dunn of Charlbury, a member between 1984 and 2014, who had a particular interest in *Stachys germanica* and was a founder member of the Cotswold Rare Plant Group.

Mrs Pamela Hill of Reigate, a member for 39 years.

Mr Trevor J. James of Ashwell, a member for 29 years, Vice-county Recorder for Hertfordshire since 1985 and sometime co-editor with Gwynn Ellis of *BSBI News*.

Mr Vince Jones of Ingleby Greenhow, a member for 36 years, Vice-county Recorder for North-east Yorkshire since 2006 and an authority on the *Hieracium* species of northern England.

Mrs A.R. Locksley of Hebden Bridge, a member for 26 years.

Mrs Margaret D. Perring of Cardiff, a member for 50 years (obituary in this issue).

Prof. Dr Heinrich E. Weber of Achmer, Germany, a member for 43 years and best known to British botanists as an expert on *Rubus*.

Dr L.H. Williams of Gravesend, a member for 71 years.

Chris D. Preston, Obituaries Editor
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assisted by the Membership Secretary, Gwynn Ellis

REVIEWS

Hawkweeds of South-East England
Mike Shaw
Botanical Society of Britain and Ireland, BSBI Handbook No. 20, Durham, 2020; pp. iv + 250, over 400 illustrations and maps; hbk, £35.00.
ISBN 9780901158574

Brambles are horrid to handle; dandelions have too short a season; the majority of goldilocks buttercups are still unnamed. Faced with these issues, British botanists might find hawkweeds an attractive alternative for delving into the apomictic groups of microspecies. The monumental account in Sell & Murrell's Flora (vol. 4, 2006) is, however, daunting, with 412 *Hieracium* species and a key of 500 truly heroic couplets. The chances of emerging from that key with a specimen identified successfully are not good, and so there is great advantage in having an aid to identification focused on hawkweeds of a particular region, as with *Yorkshire Hawkweeds* (Jones, 2014) and the BSBI Handbooks *British Northern Hawkweeds* (Rich & Scott, 2011) and *British Alpine Hawkweeds* (Tennant & Rich, 2008).

Mike Shaw's book aims to provide this help for Hampshire, the Isle of Wight, Sussex, Surrey and Kent, covering 58 species, although 18 of these may well be extinct there. The characters important for identification, especially in relation to leaves and hair covering on peduncles and phyllaries, are fully discussed. If you have a plant to identify, you are first taken to a key to find which section it belongs to, and then each section has its own key to its species, followed by accounts for each species.

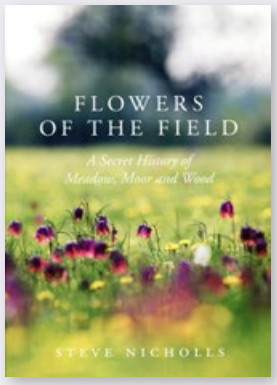
The accounts are generous in their information: even a locally extinct species may cover one to four pages; current species up to eight. Descriptions are laid out in a way which makes for easy comparison between species and include perceptive comment on separation from similar ones. There is an abundance of excellent photographs showing the plants as a whole in their habitat and in close-up, including macro-photographed peduncle and phyllary hairs and herbarium specimens. The leaf photographs in particular convey understanding which lengthy verbal description may struggle to do. Another good feature is the detail of places for viewing extant species: sample locations are described and given up to ten-figure grid references. Although there are a couple of locations where the grid reference belongs to another colony elsewhere and one where a nine-figure grid reference will cause problems, the site data are a real encouragement to view colonies with confirmed identity.

The author has covered name changes since Sell & Murrell and, while there is much information on type specimens and related naming issues, there is not a full coverage of synonymy such as would enable one to relate to familiar names such as *H. perpropinquum* used in earlier records. The S&M species descriptions are generally followed, but the author explicitly departs from them when his examination of numerous specimens suggests otherwise.

There are some typos, missing references and so on, but none is likely to affect enjoyment of the book, given that an errata slip already resolves problems with the keys. The research is thorough, only a little more being needed for a sentence regarding historic proper usage of the terms *Hieracium* and hawkweed.

Will this book achieve its objective in encouraging more botanists to try identifying hawkweeds in the region? I think it can and should. I've tried out some specimens with it and was greatly helped to conclusions, provided that adequate magnification was used for some diagnostic characters. Botanists in or visiting the south-east will be able to use the book to find the recommended roadsides, churchyards, bridges and walls for viewing; and they will have the keys, descriptions and wonderful array of photographs to compare with their own finds.

Geoffrey Kitchener



Flowers of the Field: A Secret History of Meadow, Moor and Wood
Steve Nicholls
Head of Zeus, London, 2019; pp. 487, c. 250 colour plates; hbk, £30.
ISBN 9781789540543

For the field botanist steeped in the appreciation of differences in structure and form this book unfolds as a delight, both in its accounts of the history of the discoveries of the biology, ecology and evolution of the species selected for inclusion, and in the 250 or so colour plates. A high proportion of the latter are full page, double page, or double half-page, including panoramic habitat shots and large close-ups of flowers. The 13-page preface recounts Steve's happy years at Bristol University culminating in a PhD on dragonflies, followed by his transition to plants and the BBC natural history unit just down the road, leading to 30 years of making wildlife films. The meat of the book is divided into three sections.

Woodlands, covering 'woodland lilies', ramsons, bluebells (did you know they rely on mycorrhizal fungi for phosphate?), daffodils (UK's most important commercial bulb), snowdrops (with their ultraviolet reflecting nectar-guiding stripes) and snowflakes (10–15 million tons of summer snowflake were harvested in Bulgaria in 1969/70 for the Alzheimer alleviating drug galanthamine – virtually wiping out the wild population).

Grasslands, outlining the many types of grasslands, followed by accounts of particular species: buttercups (bulbous buttercups prefer dry soils and in remnant medieval ridge and furrow are found on the ridge tops), fritillaries, gentians (gentians die after flowering and their seeds don't persist in the soil, so early grazing/cutting removes the flowers before they have a chance to open, while late meadow cuts let the competing grasses grow too long, whereas a July cut followed by light autumn grazing is just right), primulas and orchids.

Open ground, including butterworts, bladderworts, pitcher plants and sundews. Steve recounts how the early botanists suppressed their 'meat-eating' suspicions for fear of being accused of blasphemy, and recounts Darwin's elaborate feeding experiments to prove that it was nitrogenous substances that actually triggered their proteolytic secretions rather than touch. But Steve 'fell into the trap' of not following through with recent evidence that, as with bluebells, it's really the phosphorus that they are desperate for and that limits their growth. He does, however, mention experiments of his own on pitcher plants showing that they use mosquito larvae in their 'cooking pots' to digest the insects for them to absorb passively. The final three covered are saxifrages, alliums and lilies of open ground (Snowdon Lilies might appear to have separate male and female plants, but they leave a gap of several years between producing male and female flowers to conserve energy).

A particularly useful 9-page appendix to the book exhibits Steve's in-depth professional knowledge of the history and technology of photographing wild flowers. Although his many ultra-close-ups of flowers and their inevitable gradation in sharpness have an artistic draw, I would have welcomed greater use of focus-stacking to overcome the inverse relationship of sharpness and depth of field; although laborious, it might have repaid the effort. Nevertheless, it's a beautiful book.

Ken Adams

101 Rare Plants of Wales
Lauren Marrinan and Tim Rich
Graffeg Limited, Llanelli & Cardiff, 2019; pp. 223, with many illustrations and maps; hbk, £14.99.
ISBN 97819131313037

As soon as I handled this book I was struck by its compact format – one illustration and one page of text for each plant – and by its clear printing and layout, plus very strong cover and binding.

In the introduction, the authors tell us that their aim is to celebrate 101 of our rarer Welsh plants and to summarise what is currently known about them, and this they have succeeded in doing. There is a short, clear description of each plant, with helpful notes about its habitat and ecology, together with its distribution both in Wales and elsewhere. There is a map showing its occurrence in Wales, before and after 1987.

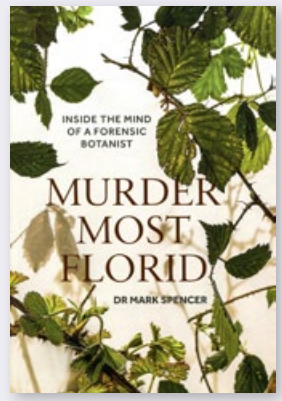
There follows a section entitled 'Threats and Conservation', with the status of each plant ranging from Critically Endangered to Least Concerned. For most plants, there are references given for further reading. The photographic illustrations are usually good close-ups of the plants, with a few habitat shots. Each plant is designated by its English, Welsh and Latin name, and (helpfully) some out-of-date but commonly used Latin names are included. There are some odd inconsistencies in the use of capitals in the Welsh name, so that we have 'Gweunwellt llwydlas' and 'Gweunwellt Oddfog'

I spotted a few minor errors: on p. 11 Clogwyn Garnedd should be Clogwyn y Garnedd; on p. 159 Heboglys Yryri should be Heboglys Eryri. The site of Purple Gromwell in North Wales is in Denbighshire, not in Conwy as stated on p. 127. Perhaps a few eyebrows may be raised when we read on p. 50 that the Eyebrights 'make their own energy'.

The authors explain that the plants chosen are those that need special protection, based on lists published by the Welsh Government and by Plantlife International. The result is that some genera receive much more attention than others. Thus we have *Hieracium* and *Euphrasia* with six entries each, but with no room in the total of 101 for many of the more 'glamorous' rarities such as *Paris quadrifolia*, *Parnassia palustris* and *Cirsium acaule*, which seems a pity.

These minor criticisms should not detract too much from what is a lively and very readable book, and whether you intend to put on your walking boots or to sit back in a comfortable chair, this is a book that you will enjoy.

Goronwy Wynne



Murder Most Florid: Inside the Mind of a Forensic Botanist

Mark A. Spencer

Hardie Grant, Quadrille, London, 2019; pp. viii + 165; hbk, £16.99. ISBN 9781787134003

Starting with a phone call while at his desk in the Natural History Museum, Mark Spencer spends 13 chapters outlining his life, his experience as a professional botanist and the discomforts and complexities of work on forensic cases. At first, I wondered whether the target audience might be someone other than me. Some of the botanical explanations were very basic. However, I read on and soon realised that this was not the popular science book on forensic botany I was expecting, but something quite different. What he has achieved in writing this is an autobiography from around age five through to his current position as a well-established and well-respected (he would probably intervene here to say 'except by people who know me') botanist and mycologist of 45 years' experience.

Chapter by chapter Spencer leads us through from his first case of a decayed body by a river to the deployment of environmental DNA sequencing almost 10 years later. This is a window into the mind of a human with a true passion for plants, an enthusiasm for communicating and a real appreciation of the fact that most people, especially hard-pressed police, don't have time to think about plants. His own cases and commentaries on others are interspersed with botanical education for beginners including an explanation of the Linnean binomial system. One sad omission is the lack of page 130, due to a printer's error. I understand that the publishers (*editorial@quadrille.co.uk*) will provide a full corrected PDF on request.

I've done some forensic botany and examined PhD dissertations on forensic science sufficient to convince me that the author has painted a very true and honest picture of the current state of forensic biology in the UK. His devotion to forensics extends to the idea that he might bequeath his body to forensic research and promote the establishment of a UK body farm. His frustration that so much more could be done in

forensic botany is a heartfelt plea. But, I'm also hoping he will not try to raise research money by setting up a shop selling castle-soap to his own secret recipe, a sort of LUSH for ghouls.

Spencer's written style is enthralling as it dashes among topics. At times when reading this book I felt that the author must have been the secret love child of Percy Thrower and Agatha Raisin. The mix of gardening snippets and sleuthing kept me turning the pages. I'd recommend this book as an enjoyable light read with a smattering of dead and rotting bodies to add the aroma of jasmine and rubber. He mixes murder with the taste of his dad's foraged tomatoes (from a sewage outlet), insipid instant coffee with a side order of botanical history and taxonomy. If nothing else, it will change the way you look at potato salad. Buy this book and read it.

Alastair Culham

Heukels' Flora van Nederland (24th edition)
H. (Leni) Duistermaat
Noordhoff Uitgevers, Groningen/ Utrecht, 2020; pp. 841, many line drawings; hbk, €54.95.
ISBN 9789001589561

We are now at last in the happy position where the British Isles (2019) and its three closest neighbours, France (2014), the Netherlands (2020) and Belgium (2012), all have a complete Flora published within the past decade, all but the last utilising the molecular APG classification (this exception will disappear with the next edition of the Belgian Flora, planned for 2022). The texts of the three continental floras are written in the form of keys, without a separate description for each species, hence rendering the volumes more easily portable.

In 1883 Hendrik Heukels wrote *Schoolflora voor Nederland*. Over the next 137 years, through three changes in title and four successive compilers, the current 24th edition of what in 1983 became *Heukels' Flora van Nederland*, the standard Flora, has evolved. This edition has 23% more pages than the 23rd edition (2005), and according to the back cover its 2000+ species are almost 500 more than in that edition, which was incidentally the first Flora in the world to use the APG classification. The Netherlands occupies less than one-seventh of the area of the British Isles, and lacks any mountains or boreal aspect, so its flora is, as expected, less rich, perhaps in terms of native species about 82% of ours. But this, and our woeful lack of knowledge of the Dutch language, in no way diminishes the value to British botanists offered by the latest Heukels; much can be learned from a study of its pages, of which the following exemplifies that noted by this reviewer.

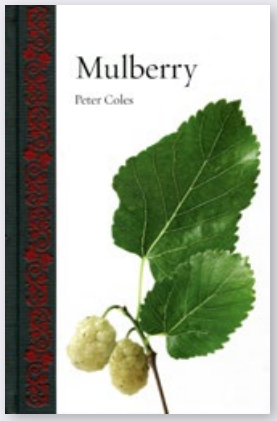
The absence of such plants as *Sison amomum, Tamus communis, Rosa stylosa* and *Polygala calcarea* is countered by the presence, for example, of *Anthericum liliago*, two species of *Vincetoxicum, Rosa elliptica* and *Polygala comosa*. The presence of such species as *Cornus suecica* and *Viola rupestris* is perhaps more surprising. Of the various splits recently proposed and widely accepted following molecular analyses, some are adopted (e.g. in *Sedum, Senecio* and *Chenopodium*) while others are not (e.g. in *Gnaphalium, Filago, Vicia* and *Scilla*). Similarly with the recent proposed lumpings: accepted in *Malva/ Lavatera*, not so in *Lysimachia/ Anagallis,* etc. Other taxonomic judgements will also come as a surprise to British botanists. For example, *Ervum gracile* and *E. tetraspermum* are reduced to subspecies, *Centaurea nigra* and *C. debeauxii* are sunk into *C. jacea* (the illustration labelled *C. jacea* is misleadingly what we would call *C. nigra*), *Ficaria verna* subsp. *fertilis* is raised to species level as *F. ambigua*, *Salicornia* is reduced to two species, and the enigmatic maritime ecotype of *Elymus repens* is raised to specific level as *E. arenosus*. In fact a comparative study of the four above country floras reveals a wide divergence in taxonomic treatment, and clearly a consensus even among such close neighbours is not imminent.

Most of the 500 extra species in this edition must be aliens. Many well known in Britain (e.g. *Quercus ilex*) are not included, but they have others such as *Mazus* and *Lindernia* in families apparently never recorded in Britain. Overall, a logical, albeit always indefinable, list of aliens has been treated.

The 24th Heukels is a most welcome addition to the floras of western Europe,

and Leni Duistermaat is to be congratulated on skillfully updating it to such a high standard.

Clive Stace



Mulberry
Peter Coles
Reaktion Books, London, 2019; pp. xvii + 278, c. 100 illustrations, 10 maps; hbk, £16.00.
ISBN 9781789141429

Mulberries, in the minds of so many, are the trees that feed silkworms, but Peter Coles expands that concept beyond measure. From palaeobotany to medicines to computer games Coles leads his readers through the breadth of the mulberry's cultural history 'to honour their inherent beauty – individually and collectively – and their claims to a place alongside other champions in the universe of trees.'

Thus this is a world-wide study, always respectful of the culture concerned, that will absorb the general reader and feed the academic with the thoroughness of its sourcing. Even when Coles distinguishes the different species, he concentrates upon the visual characteristics without resort to microscopes or genetic fingerprinting. The joy of the book is the lightness of touch in the prose deployed by Coles, writing in everyday speech rhythms that retain the interest of his readers and maintain momentum.

The text is divided into six sections and with these being inter-disciplinary a few brief definitions of terms are occasionally given. There is a valuable Timeline that integrates these various disciplines. Coles is ardently disciplined himself, so that when presenting the history of mulberries as silkworm feed, he resists all temptations to deviate into the colourful history of silk itself and concentrates instead upon the cultivation of the mulberry, from China across Asia to the Middle East and Europe, to England and across the Atlantic.

How deftly and succinctly Coles leads readers through ancient cultures and their territories and through centuries of legislation governing the growing and spreading of the mulberry. He succeeds in making legislation interesting. Some readers will want for more maps but the book as a whole is liberally illustrated, mostly in colour, covering the full range of topics. Although the silk connection necessarily creates a large proportion of the text, Coles does give full attention to lesser themes such as the usage of the fruit and the timber. From literature he dwells a while on Shakespeare and his sources and from the visual arts looks at textiles and less familiar paintings such as one by Van Gogh. The revelations are brought up to the present with reference to contemporary novelists and artists.

It can be tedious when books are published as the 'complete' work on a subject, but Coles certainly strives to cover the lot and the publishers have converted his material into a handsome volume commensurate with the quality within.

Chris Howkins

Fern Albums and Related Material
Michael Hayward and Martin Rickard
British Pteridological Society, Special Publication No. 15, London, 2019; pp. x + 226, 209 illustrations; pbk, £25.00.
ISBN 9780992612047

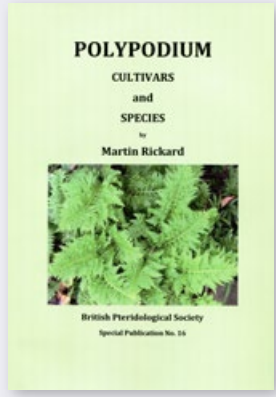
Fern albums, bound collections of pressed fronds, combined botanical and decorative interest. They flourished in a time which brought together a Victorian love of ornamentation, the Fern Craze and the mass emigration to the British Empire, especially that to the antipodes. They usually contained botanically interesting specimens displayed in artistic arrangements. The subjects are usually the true (leptosporangiate) ferns but sometimes include other pteridophytes such as horsetails and lycopods. Fern albums are not easily categorised, being somewhere between a book

and a collection of herbarium sheets. Accordingly, they have not been as well documented as they might. The way they were produced, individually or in small numbers, means that no two albums are identical.

Fern Albums and Related Material contains a general description of the features of fern albums at the beginning and a chapter on their care at the end. The rest of the book comprises chapters on their regional history, covering Great Britain, New Zealand (by far the largest section), Australia and Pacific Islands, India, the West Indies and finally a chapter on the rest of the world. Each chapter lists the main producers of fern albums, along with often fascinating biographical information, and describes and illustrates the albums themselves.

The book is generally well presented and laid out. It is attractively illustrated with whole pages and detail from the albums. The pages are perhaps a little too full of text and illustrations and the use of multiple fonts and various shades of blue in headings is rather jarring. However, these are minor points and unlikely to bother the reader. Overall, it's a very comprehensive reference to the subject and obviously the result of many years of careful research. It builds on some earlier publications but should provide the most up to date and wide-ranging reference on the subject. This is obviously a 'must-have' for any fern album enthusiast. It will also appeal to those interested in fern memorabilia and artefacts, students of Victorian design and probably fern enthusiasts generally.

Anthony Pigott



Polypodium Cultivars and Species

Martin Rickard

British Pteridological Society, Special Publication No. 16, London, 2019; pp. vi + 320, c. 400 illustrations; pbk, £25.00.
ISBN 9781916261709

There are just three species and their three hybrids of *Polypodium* in the British Isles, and yet it is a genus which was at the forefront of the Victorian 'fern craze' (e.g. C.T. Druery, *Choice British Ferns*, 1888) due in part to the extraordinary variety of forms and cultivars found in *P. cambricum*. Indeed the specimen first named by Linnaeus was itself a sterile dissected-leaved variant, with the resulting nomenclature sitting uneasily with Rickard (p. 33).

Martin Rickard is a fern enthusiast and in this volume he draws upon his extensive first-hand experience to combine both botanical and horticultural aspects of the genus. Following an introductory chapter on horticultural aspects of growing *Polypodium* there follows a chapter on the recognition of the British species and their hybrids. Chapter 3 deals extensively with the cultivars of *P. cambricum*, and this is then followed by chapters covering *Polypodium* elsewhere in the world.

It is, though, the central sections on the cultivars which set this book apart, with excellent photos of both living and herbarium material. Just under half of the book is given over to detailed descriptions of the forms of *P. cambricum*, including some now lost. One perhaps has to be a devotee to appreciate all the finer differences between the cultivars (but then taxonomists can argue about finer anatomical differences too).

This book is a labour of love; you can tell it is written by someone who is passionately interested in his subject. Do not look here for a dry, scientific account of the genus, as the author includes his personal opinions, and there will be better species accounts elsewhere in floras. However, I am not aware of any volume which brings together the *Polypodium* of various floras into a single volume, and for that alone this book is worth reading. Add to that the comprehensive treatment of the cultivars of *P. cambricum* then this book is well worth purchasing. It is primarily of interest to horticulturalists, but will also be of interest to botanists and those interested in the origins and history of some of our most stunning fern cultivars.

Rob Cooke

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LETTERS

LOOK FORWARD SCOTLAND, EMBRACE ALIEN SPECIES

Whilst preparing the article on *Betonica officinalis* (Betony) in this issue (p. 18) I became aware, and increasingly surprised to find that the Betony populations in northern Scotland, and of most of the other species covered, were classified as non-native (= alien). This is because under the Wildlife and Natural Environment (Scotland) Act 2011 they are not 'indigenous to that locality'. Furthermore, 'anyone who causes a species of plant to grow, in the wild, in a locality outside its natural range is committing an offense'. This Act aims to 'promote best practice' (Robin Payne, pers. comm.) and 'to prevent the introduction of invasive, non-native species' but, as a bi-product, 'it currently makes a significant part of the existing wildflower seed market in Scotland (technically) illegal' (Chris Blandford Associates, 2011). It aims also to preserve our flora as it is today, as is indicated by the following quote from the guidance notes: 'these plants… and the habitats within which they live, have developed over thousands of years'. The notes then go on to list a number of threats including 'climate change' and 'release of non-native… plants'.

The more I learned, the more concerned I became that the Scottish legislation was over-zealous and a potential obstacle to conservation. Perhaps my concerns were because my background is agriculture-related, so I have a different perspective to the 'Botanical Establishment'? Part of my problem with the Scottish legislation is that it applies equally to both plants and animals, even though only 8% of alien plants cause problems compared with 63% of animals (Roy et al., 2012). Being involved in a programme to eradicate Himalayan Balsam from the Lunan Burn (Trudgill, 2019) I understand the concern regarding such truly invasive aliens but, surely, we should not be thinking of Betony in the same way? The main problem with alien species, as I understand is, that they decrease biodiversity. But this perception was undermined when I learned that, very misleadingly, alien species are not included when assessing biodiversity (Schlaepfer, 2018). Reading 'Where do Camels belong' (Thompson, 2014) further heightened my concerns as Thompson (and Thomas, 2017) argued that the introduction of alien species generally increased diversity, the harm they do has been exaggerated, and that their positive aspects ignored. The latter is at least partly true. Himalayan Balsam is a superb source of pollen and nectar. Sycamore is one of the species categorised by Roy et al., (2012) as an alien and 'having a negative impact on humans'. However, the Future Trees Trust suggested it should be valued for its wood, as a source of aphids as food for other species, for its soil ameliorating value, and for supporting a wide variety of lichens. It is also a valuable source of nectar in the spring. Other species that were categorised as harmful aliens were Corn Marigold and Daisy!

It is my perception that, as our climate is changing, and it is predicted to continue to do so, the extirpation of vulnerable species may be further increased. Many such species are local relics (James, 2016). They are isolated and unable to spread, and already at risk due to random destructive events and inbreeding depression (Stroh et al., 2019). Thomas (2017) suggested that 'perhaps a quarter of all species will (need to) become climate refugees'. Preserving such species is an obvious priority and one option may involve translocation to sites with a more favourable climate. Stroh et al. (2019) in a wide-ranging review highlighted the decline in lowland grass habitats and associated species, and one of their conclusions was that consideration should be given to 'the potential… for the introduction of threatened species to unoccupied sites'.

Another consequence of global warming is that the favourable climatic zone for each plant species will tend to shift northwards, creating problems at their southern limits, and opportunities at their northern limits. To quote Thomas (2017) 'Attempting to prevent the establishment of alien arrivals… so

as to maintain our species and ecosystems in some idealised state is not possible', and 'humans must adapt to and help change'. Most of Scotland is less botanically diverse than other parts of Britain (Stroh et al., 2019). Stace & Crawley (2005) list more than 2000 plant species that are alien in Britain and many more have been added since. In Scotland can be added those that are native in other parts of Britain but absent from Scotland. This includes nearly 50% of British orchids. It is inevitable that, in the future, more species will colonise Scotland and, as a consequence, the proportion of species in Scotland classified as alien will increase. Also, some native species close to their southern limit may be lost.

The foregoing makes it difficult for me to share the concerns expressed by Plantlife regarding the creation of wildflower meadows because of their potential impact on the local flora (see 'Plantlife – Keeping the wild in wildflowers'). The Plantlife policy aims to re-create a particular, local flora at a moment of time in the recent past by relying on the seed bank and colonisation from the surrounding flora. This policy, and the Scottish legislation appear not to recognise that our flora has always been in a state of flux and now, and even more in the future, will need to be able to respond to environmental changes. Also, they are effectively biased in favour of those species whose seed/propagules are spread by birds or the wind, as exemplified by the near world-wide distribution of *Pteridium aquilinum* (Bracken). In contrast, those species that, in the past, tended to depend on agricultural practices to spread their seed are now dependent on other vectors (e.g. vehicles) to spread their seed. Nor do they recognise that the numbers of seed available for recolonisation have greatly diminished and distances to other favourable habitats have greatly increased, both of which are important determinants of colonisation success (Thompson, 2014; Trudgill, 2015). Smith et al. (2002) concluded that 'when increased diversity is a target there is a need to introduce additional species as seed'.

I could go on – indeed in an earlier draft I did. I expressed concerns about the words used in the Scottish legislation (locality, wild, natural, native) each of which, as Humpy Dumpty said to Alice,' mean just what I choose it to mean'. 'Archaeophyte' is another such word – when I learned of the distinction between, and particularly the relevance to conservation, of 'archaeophyte' and 'native' (a distinction based on the mode of introduction into Britain of a plant up to 8000 years ago) I was bemused. Rumsey (2019) commented that the 'Orwellian' classification of native/archaeophyte equated to good/bad, and Preston et al. (2004) observed that 'in Britain there is a tendency to restrict efforts to conserve to native species'. 'Alien' is an even more pejorative term and 'invasive alien' is the ultimate in pejorative terms. However, in Cornwall and Devon, invasive native species pose a greater problem than invasive alien species (Pearman et al., 2019). But, even though invasive native species may be more of a problem than alien species, which gets the attention and the money?

In conclusion, very little of our countryside can truly be described as natural, so why is there so much emphasis on natural spread of plants in what, for some species, is an increasingly alien environment? I suggest a more pragmatic approach is required to conserving our flora, and that the BSBI should be more involved.

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SHOULD VICE-COUNTIES BE METRICATED?

In terms of biological recording, I am very fond of the vice-county system as a unit. I am similarly attached to using the mile (when travelling) stone and pound (for my weight), gallon (for my petrol) and pint (for my milk and beer – the latter in particular). But, I have been accustomed to metres, centimetres and grams for a long time and I don't really want to use inches, ounces and acres again. And definitely not pounds, shillings and pence! (I was born in 1952 and metrication began in my late teens but the changeover is long drawn out).

The vice-county system was established for very good reasons: county boundaries were obvious recording entities but their areas differed and their boundaries were prone to change. In order to normalise and stabilise the system, the vice-county system was adopted.

And then along came the National Grid, used by the Ordnance Survey since the 1960s and adopted for biological recording by the BTO in the early 1970s and by others since.

It seems that the BSBI is as attached to the vice-county system as I am, but is this a sentimental relic that has gone unquestioned? Has the time come for vice-counties to be metricated?

The present system causes me confusion as my own county of Nottinghamshire has lost bits to Leicestershire and lost and gained bits to Derbyshire and Lincolnshire but these exchanges are hard to trace and I believe there is confusion between county recorders as to who covers what: Does a county Flora cover the vice-county or the modern county? And as a recorder, should I be keeping to my modern county, or venturing across the border into my (often hard to trace) vice-county?

It should be simple for a new metric county system to become agreed and adopted, where the boundaries are the national grid 1 km square in which the county with more than 50% claims the entire square. Someone would have to decide whether the vice-county or the modern county is the 'county' for this purpose and I propose that it is the vice-county.

Such 'biological county boundaries' will therefore be 'pixellated' but easier to transpose onto our mapping system and more future-proof (as far as anything can be).

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MEMORIES OF *PILEA MICROPHYLLA*

I write in response to Alexis Fitzgerald's article on *Pilea microphylla* in *BSBI News* 144, (April 2020) pp. 58–59. The picture of this plant nestling in the top of a house plant pot was not a surprise to me at all but rather a little nostalgia of work times past. I knew this plant well in the 1970s and 1980s when I worked at Moredon Nursery in Swindon. This nursery served all the horticultural needs for the local Council and included tree and shrub production. As well as bedding plants we grew foliage and flowering pot plants for display at a temperate showhouse at the town's Queen's Park. In addition, the nursery supplied and maintained semi-permanent displays

to local offices or temporary displays for private and civic functions.

Although not grown in any vast quantities, the *Pilea*'s use was as a 'filler' in displays, either planted as ground cover, or as a temporary item when as a pot plant, semi-inverted, could be popped in between other plants to close a gap or to hide plastic pot rims or soften display container edges.

It grew very easy from cuttings and could be 'struck' direct into its final pot; either as a single plant in a 3½-inch pot, or three cuttings in a 4-inch pot. The plants were set out in a Stove (Tropical) House in dappled light and as long as kept moist and sprayed with water periodically, would root and grow rapidly. The single plant would grow out fan-like to perhaps 9 inches width and probably no more than 4 inches high.

Pilea microphylla does not take to drying out. Before use, plants would be soaked in a bucket of water but if subjected to artificial heat or just allowed to dry out when off the nursery, the plants would rarely recover and so were seen as dispensable. If this plant had one problem, it was that it was too brittle. Pieces would readily break off when lifting wide plants, or squeezing them into spaces, and drop shoots into other pots and root in. They would also seed themselves around into the gravel benches and the floor substrate so to see the photograph in the article was typical to me.

An Encyclopaedia of Gardening by T.W. Sanders (2nd edition, 1897) suggests this plant was introduced in 1793 and classified it as a 'stove, perennial herb'. I classify it as a memory-jogger. Many thanks to Alexis.

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