

BSBI News

September 2017

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Edited by Trevor James & Gwynn Ellis

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Serapias lingua (Greater Tongue-orchid), habitat photo “taken near Tiptree, Essex”.
Photos Anon © 2017 (p. 11)



Delyth Williams “checking out my back garden”; locality: limestone slope, Graigfechan, Denbighshire in July 2017. Photo © M. King (see p. 74)

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Coordinator's Corner

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Atlas field meetings

By all accounts, the Atlas meetings that have taken place this year have been a great success – a big thank you to all who were involved. The records collected, and there have been many hundreds of thousands entered onto our database for 2017 thus far, have filled gaps in areas that were previously under-recorded and produced some very interesting finds, including a first for Wales (see below), and an amazing range expansion, following hot on the heels of Mike Wilcox's discovery of *Myosotis stolonifera* (Pale Forget-me-not) on Exmoor, for *Carex limosa* (Bog Sedge), now known from Bodmin Moor, thanks to the keen eyes of Natural England's Ian Diack. It seems incredible that there are now only two full field seasons left, but with the end now in sight, it is clear that, if the current levels of enthusiasm continue, the next Atlas will be a great success, presenting a valuable and detailed picture of our changing flora. As ever, if you are keen to get out there and record, please contact your local vice-county recorder, who will be able to best advise on where to visit and will be very happy to have your help. There is much still to be done!

Although full accounts of BSBI meetings will appear in the 2018 *Yearbook*, I wanted to highlight just a few 2017 events, and I will start selfishly with an English one which I gate-crashed, led by the 'new' VCRs in Cumbria. It was inspiring to see so many

attendees (15) coming along, from experienced square-bashers to first-timers. The large group split into three, and the team I was in, led by Mike Porter, found it impossible to get out of the first monad, such was its interest and diversity. After chalking off common species within earshot of the M6, we soon found habitats that produced exciting finds (at least to a southerner's eyes) including a lovely population of *Blysmus compressus* (Flat Sedge), *Arabis hirsuta* (Hairy Rock-cress) on a railway bridge, no less, and more *Carex pallescens* (Pale Sedge) and *Cirsium heterophyllum* (Melancholy Thistle) than you could shake a stick at. I could go on, but the overwhelming impression I came away with, aside from the impressive knowledge and dedication of BSBI volunteers, was one of both colour and tranquillity. The river banks were awash with flowering Betony and Yellow-rattle, alongside every shade of green, and it was really refreshing to walk through an area that seems to have largely escaped so many of the threats to our flora that were picked up in the last major BSBI survey, the Threatened Plants Project (see pre-pub offer in this edition of *BSBI News!*).

Over to Ireland, and more specifically Kerry, where Rory Hodd led an action-packed five-day meeting in spectacular countryside. Highlights included a new location for *Trichomanes speciosum* (Killarney Fern), alongside a wealth of botanical treats. Jessica

Hamilton has written an excellent account of the event that you can read on the BSBI's 'News & Views' webpage: <http://bsbipublicity.blogspot.ie/2017/06/the-kerry-bsbi-event-short-report.html>. It is a great insight into how rewarding attending a BSBI event can be. We visit some truly epic locations, and Jessica's blog should certainly tempt those yet to attend a meeting. In Wales, outings by Steph Tyler, Elsa Wood, Steve Williams and others in Monmouthshire resulted in a multitude of exciting finds, including new county records for *Diphasiastrum alpinum* (Alpine Clubmoss) and *Oenanthe silaifolia* (Narrow-leaved Water-dropwort), not only new to Monmouthshire but also a first for Wales! I must also mention the regular (verging on legendary) field events at Glynhir (Carmarthenshire) and Caerdeon (Merionethshire), organised by Richard and Kath Pryce and Sarah Stille respectively. I hear such great things about them, and I am determined to get along to one next year. You can read about the 2017 events by visiting Polly Spencer-Vellacott's blog: <http://bsbicymru.blogspot.co.uk/2017/07/glynhir-carmarthenshire-2017.html> and <http://bsbicymru.blogspot.co.uk/2017/07/caerdeon-merionethshire-2017.html>.

In Scotland, Jim McIntosh has let me know, via Ian Strachan's very informative Scottish Plant Report published in the latest *British Wildlife* magazine, that an enthusiastic botany group in Lanarkshire, led by the new recorder, Michael Philip, has found *Filago minima* (Small Cudweed), only the third record for the county and the first since the 1960s. This amply demonstrates that even in an historically meticulously well-recorded county, with a recently published flora, there are still exciting plants waiting to be discovered.

If you would like to attend a meeting, you can plan ahead by looking at the 'meetings diary', available on our website (bsbi.org/field-meetings). But you may wish to go one step further and organise a day or weekend event in 2018. If so, please get in touch with your Country Officer (or me, with

regard to England) as soon as possible, so that we can pass on the details to the BSBI's Field Meetings Secretary, Jonathan Shanklin.

The end of the 2017 field season?

Traditionally, botanists in search of higher plants considered the end of summer to be, more or less, the end of the fieldwork season; but, without wishing to sound like a stuck record, there is still much fruitful recording to be done in the autumn and winter months. With a bit of knowledge concerning vegetative characteristics (thanks especially to John Poland and Eric Clement) you can identify perhaps as much as 80%, possibly more, of the species that are out there; and, from previous experience, you are almost certain to find plants previously hidden by taller, lush vegetation in late spring and high summer. Although urban areas can be particularly fruitful, due in part to the 'urban heat-island' effect, really anywhere is worth exploring. Wonderfully bright and crisp days in these seasons are made for being outdoors (the rainy ones designed for data entry, obviously), so why not take out a recording card or your preferred digital app. You might be surprised just how much is waiting to be found.

Under-recorded aliens

Elsewhere in this edition of *BSBI News* you will read of Clive Stace's list of 'missing' aliens (p. 62), essentially a list of taxa that have no post-1999 records in our database. Whilst some may well have been ephemeral occurrences, surely there are some populations that persist, or have established elsewhere but are overlooked? Perhaps you have seen one or more of the species listed, but have not sent in the record? Or maybe you feel the urge to attempt to track down what would be a first record for the 21st century? Please do get in touch, either with me or your VCR, if you know of a recent location.

Record resolution

As you will know, when we find a rare/scarce/threatened plant, the recording guidelines ask for it to be recorded at 100m preci-

sion or greater, although, with a hand-held GPS, it is just as easy to record to 10m accuracy. This enables us to have a detailed picture of the distribution and health of such species when we come to produce maps for the Atlas and analyse data for Red Lists, but it is also very useful in other ways. For example, the BSBI is currently involved with Kew in collecting seed for the Millennium Seed Bank (see: <https://www.kew.org/science/collections/seed-collection> for more information on this amazing project), and many of the species on Kew’s list fit the criteria mentioned above. Searching for plants in seed in the field is so much easier with the high precision data that you provide, and the seed collected is of great potential benefit to future conservation efforts; so thank you, keep up the good work, and do not forget to pack extra batteries for your GPS when out recording!

Goosefoots and Oraches

Now is the ideal time, assuming you are reading this as soon as it has dropped through your letterbox, to identify those pesky *Chenopodium* and *Atriplex* plants that were perplexing you (I say ‘you’, but I clearly mean ‘me’) when found in leaf earlier in the year. The common Chenopod around my local area appears to be *Chenopodium polyspermum* (Many-seeded Goosefoot), which is actually fairly distinctive when not in fruit, owing to its red-bordered leaves that are more-or-less entire, but the seeds with rounded, un-keeled edges are also necessary to examine when keying out using Stace, and most of these species require fruiting material to be certain of identification, so why not take advantage of the wealth of identification advice available and have a look at what is growing in your local patch?

IMPORTANT NOTICES

From The President

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As a scientific body, knowledge is at the heart of the BSBI’s business. I have been doing my bit lately, by adding to knowledge of the flora of an under-recorded vice-county close to home. Trying to record throughout most of a county, albeit a small one, in one year means the coverage is rudimentary, but nonetheless it has been frenetic at times. The temptation is to focus too strongly on the number of taxa recorded per hectare, rather than on how much the records contribute to an understanding of the flora. So, it was timely to read an article by our local bishop on the difference between knowledge and wisdom. He was suggesting that we should use the remaining weeks of summer to consider what we need to let go of in order to grow in wisdom and maturity.

A few days before, my wife and I had been botanising in a small rural churchyard

overlooking the Irish Sea. In an intensively agricultural landscape, churchyards often produce a very different flora from the surrounding fields, hedgerows and verges. There, on his own, we came across one of the bishop’s flock, an elderly man, gazing out to sea, wrapped up in his thoughts. Engaging him in conversation, it transpired we had one or two acquaintances in common. As if to explain his distractedness, he told us some of his family history and that his wife had died, aged 91, the previous year. He pointed out her grave, inscribed with her name. Immediately, beside the grave, I spotted a possible new vice-county record, *Oxalis exilis* (Least Yellow-sorrel), growing in the mown grass. At the time, the record itself seemed important. But in truth, it was just an item of knowledge, not to be compared with the privilege of

sharing in the mourning of a dignified gentleman in an idyllic setting, where, no doubt, he anticipated being laid to rest himself in due course. I like to think he was following the bishop's advice: continuing to gain in wisdom as factual knowledge began to slip away.

Both knowledge and wisdom have long been hallmarks of the BSBI. In time, I hope the Review which took place last winter will prove to demonstrate the second of these; (incidentally, one or two members have reported having difficulty finding the Review Report on the BSBI website: it can be found through a link at the foot of the password-protected members' page). Some of the most obvious outcomes from the Review will be changes to the BSBI's publications. This will be the last issue of *BSBI News* in its current format. Andrew Branson is helping us to get a new-look version up and running from the start of next year and he outlines his plans on page 10. We hope it will have as much, if not more, appeal to members, but its contents will of course depend on what you send him for inclusion. Meanwhile, I must acknowledge the enormous debt of gratitude which the Society and its members owe to Gwynn Ellis and Trevor James for their able and conscientious editing of *BSBI News* over many years. If my researches are correct, Trevor has been doing it for 10 years, which is a long time for such a substantial task. Gwynn, however, has been at the editorial helm for 30 years. No, that is not a misprint! 30 years takes you back to those distant days when mobiles were almost unknown and word-processing was hardly out of infancy. What a remarkable record of service to botany in Britain and Ireland!

The other big change will be to our main academic publication. In place of the *New Journal of Botany* (NJB), we plan to produce an on-line journal with a somewhat wider scope. The current state of play is outlined in a joint article on page 6. Particular thanks are due here to Ian Denholm, not only for his work as the last editor of NJB, but also for his

determination to sustain the Society's academic standing through the move towards a new modern-format journal.

It is right to be thankful for all the efforts put in by members acting in a voluntary capacity, but it would be wrong to overlook the role of staff. Their jobs are sometimes taken for granted or treated as less glamorous. All our staff work hard for the benefit of the BSBI, but two merit individual mentions. Bob Ellis, our MapMate guru among many other accomplishments, has now retired as a staff member, and you can read a well-deserved appreciation of his achievements by David Pearman on p. 67. Fortunately, we are not saying "goodbye" to Bob, as he remains the vice-county recorder for East Norfolk. Tom Humphrey should take pride in his achievement as the winner of the current year's Presidents' Award. His award also relates to databases, in this case the Society's Distribution Database (DDb), which he created more or less single-handedly. See p. 68 for more about Tom's, award.

A modest change that has nothing to do with the Review is that I will be standing down as President from the forthcoming AGM in November. The President-elect, Chris Metherell, is well known throughout the Society. Among other things, he is the vice-county recorder for North Northumberland, and an expert and referee on *Euphrasia* (eyebrights). Until very recently, when we welcomed Delyth Williams as his successor (p. 74), he was the Society's Honorary General Secretary (HGS). In welcoming his imminent Presidency, I note his retirement as HGS and, on behalf of the Society as a whole, thank him for his unstinting diligence in that role. He has given me much invaluable support and advice over the last two years, and as President will not need to follow as steep a learning curve as I did. I wish him well in his new role when it starts. Meanwhile, he has a few months break. While I certainly do not wish to imply that it is any way necessary, maybe he too is following the bishop's advice?

The BSBI's use of appeal and legacy funds

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In 2003, members of the BSBI very generously responded to an appeal made by the Treasurer at the time, Michael Braithwaite, asking for donations to help strengthen the Society by building our financial reserves and allowing us to meet the challenges a small charity operating across many countries faces. These contributions have allowed the BSBI to grow and strengthen, beyond what was anticipated at the outset of the appeal, and, once again, we would like to express heart-felt thanks to those who donated. We also thought that all members might appreciate a summary of what these donations enabled us to achieve.

Long-standing members of the Society will remember that, at the publication of the *New atlas of the British and Irish flora* (2002), the BSBI found itself at a cross-roads. It had produced this atlas, in conjunction with the Biological Records Centre (BRC), yet had only one part-time staff member, no databasing facilities of its own, and a yearly expenditure of around £110,000. At that time, our reserves were about £300,000.

The Society had a five-year strategy, whose main aims were to further studies into plant distribution, to encourage younger botanists and expand the scope of its publications. The existing reserves were not judged to be adequate to support this and consequently the appeal was launched, which was very successful and resulted in around £80,000 being raised by the end of 2004 through various means, including donations and voluntary increases in membership subscriptions, many of which continue to this day. This enabled us to have the confidence to:

- Make permanent the post that had arisen from the Local Change project (held by Bob Ellis). In retrospect, this was the most far-reaching decision of all, since the adoption of MapMate recording software

by vice-county recorders (VCRs) and their helpers has utterly transformed our ability to collect, analyse and disseminate plant distribution data and has accounted for well over half of new records each year.

- Build up support for VCRs in areas where there were fewer members. Our first Country Officer (Jim McIntosh in Scotland) was appointed in November 2004.
- Commence a project to document the occurrence of hybrids in the British and Irish flora, entirely funded by ourselves.
- Continue with our Co-ordinator post (Alex Lockton), which was by then unfunded.

In 2006, we received notice of a substantial legacy (from Alan Hammerschlag), which enabled us to move to the next stage and appoint a Director of Development (Gabriel Hemery) to supplement and support our volunteer Council. This post morphed into a Director of Science (Kevin Walker) in 2007.

Throughout this time, we were in constant discussion with the three Country Agencies in Great Britain (then English Nature, Scottish Natural Heritage and the Countryside Council for Wales), but although each individually was always helpful, the job of raising money for a post covering all countries was much harder and the Society's reserves were invaluable in enabling us to move forward. Throughout this period, the Society embarked on a number of projects engaging members and others in co-ordinated recording activities, such as the Local Change initiative and work on developing Rare Plant Registers.

By 2013, these steps had borne fruit to the extent that we had a plant distribution database of our own (initiated by Alex Lockton and developed by Tom Humphrey, who was appointed as BSBI's Database Officer in 2010). This was created largely from our own resources, moving away from a situation

where the BRC processed and entered everything for us to a position where we were responsible for the whole process. We also had much better contacts with the three GB Country Agencies and with other potential users of our data. We created an Administrative Officer post (Clive Lovatt – 2011), posts in Wales (Polly Spencer-Vellacott – 2011) and Ireland (Maria Long – 2012) and an extra scientific resource in a Scientific Officer (Pete Stroh – 2012). We were also able to award a part time Publicity and Outreach contract (Louise Marsh – 2012) to publicise our work to the outside world and engage its support. Above all, we had reserves that we judged adequate to move to the next stage and appointed a Head of Operations (Jane Houldsworth – 2013), to oversee the activities of staff and their interactions with our volunteers and committees, whilst ensuring the financial and legal compliance of the business side of the organisation. In 2016, Louise Marsh joined the staff as BSBI’s Communications Officer.

So, what has been achieved?

The donations and legacies received, and other sources of funding they have managed to unlock, have allowed BSBI staff and volunteers to:

- Construct and maintain an active network of skilled volunteer recorders, all submitting records to a centralised system owned and controlled by us.
- Build and maintain a secure, online database, now holding 36 million plant records, increasing at a rate of around 1 million a year.
- Organise and coordinate national monitoring schemes aimed at providing detailed information on the status of plant species and their habitats, *e.g.* Local Change, the Threatened Plants Project, the New Year Plant Hunt, the Irish Species Project and the National Plant Monitoring Scheme, the latter run as a partnership project with the Centre for Ecology and Hydrology, Plantlife and JNCC.
- Assess the conservation status of plant species at GB, Ireland and individual country levels, and at a county level through the publication of County Rare Plant Registers (<http://bsbi.org/rare-plant-registers>).
- Provide authoritative information on the distribution and ecology of species, through individual accounts published for threatened species on the BSBI’s website (<http://bsbi.org/species-accounts>) and for non-native invasive species via the GB’s Non-Native Species Information Portal (<http://www.nonnativespecies.org/factsheet/>).
- Coordinate a national network of over 200 taxonomic referees and produce handbooks and specialist guides covering a wide range of difficult species and hybrids.
- Produce the acclaimed and authoritative *Hybrid flora of the British Isles*.
- Do our own scientific research, which has led to the publication of over 20 peer-reviewed papers and reports by staff since 2000.
- Collaborate with a wide range of academic partners, culminating in the publication of over 100 scientific papers based wholly or partly on BSBI data since 2000, covering taxonomy, systematics, ecology, genetics, biogeography, and addressing key environmental concerns (*e.g.* non-native invaders, climate change, habitat loss, pollution and widespread changes in land use).
- Maintain a checklist of all native and non-native plant species recorded in the wild in Britain and Ireland.
- Award numerous grants for training and research purposes, to a value of around £13,000 a year, and to assist with the production of county floras.
- Ensure that the BSBI’s managerial and administrative systems are accurate and compliant with relevant legislation.
- Strengthen our investment portfolio, the income from which makes a useful contribution to our finances.

So, what next?

Despite the achievements listed above, we continue to have difficulty in co-ordinating approaches to the Country Agencies and elsewhere to continue the level of financial support needed to sustain our operations. The

funding the BSBI receives from statutory sources has reduced by 50% over the past five years. Securing funding from them has been adversely influenced by the prevailing economic climate, by devolution and by uncertainties at government level over the NBN and the political and practical difficulties of making data freely available. For this reason, the BSBI must broaden its funding base to continue its vital work.

You will notice a leaflet giving details of a BSBI appeal with this edition of *BSBI News*. The BSBI is looking to our members to help us raise around £75,000 in order for us to lever further income from sources such as charitable trusts. We would like you to consider this appeal and respond if you feel able.

An update on BSBI publications

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JANE HOULDSWORTH (Head of Operations) (jane.houldsworth@bsbi.org)

CHRIS METHERELL (President-elect and Trustee) (chris@metherell.org.uk)

JOHN POLAND (Chair of Publications Committee) (jpoland197@yahoo.co.uk)

In his preface to the April issue of *BSBI News*, our President, John Faulkner, drew attention to the report prepared by a group of members commissioned by the BSBI Council to review many aspects of the BSBI’s structure and activities. One of the major topics covered by the review group was the future of the two publications – *New Journal of Botany (NJB)* and *BSBI News* – that are provided to all members but absorb a considerable proportion of income from membership subscriptions. Previous canvassing of the membership had disclosed considerable dissatisfaction with or disinterest in *NJB* in its current format. *BSBI News*, in contrast, received much stronger support, although many saw a need to modernise and modify the content to ensure interest and relevance to all our members, and also attract a readership from outside the society.

Based on this evidence, the review group recommended the termination of *NJB* (a move that was already underway), and that research outputs be merged with *BSBI News* to produce a single new well-designed periodical. This proposal was broadly endorsed at a subsequent Council meeting, although the wisdom of including formal research papers in a publication intended to have maximum popular appeal was questioned. The Council agreed that a small Working Group should be delegated to investigate options, including costs and timing of a new publication and to recommend how it should be run. This group met in May this year,

with the President-elect, Chris Metherell, in the chair.

The principal recommendations of the Working Group, which have been circulated to and supported by Council members, are as follows:

1. *Scientific peer-reviewed material should not be included in a single new publication but will be published on a new electronic platform that the BSBI will create.*

In the April issue of *BSBI News*, Ian Denholm summarised a number of reasons why *NJB* in its present form is no longer viable, and, as previously stated, production of this journal will cease at the end of 2017. We are now proposing to launch a novel platform for the online publication of research by members and non-members relevant to the British and Irish flora. This platform will differ from *NJB* in a number of respects. It will be more inclusive in its scope and will welcome articles based on observational as well as hypothesis-testing science, even if confined to a single taxon or a single geographical locality. Formal peer review will be replaced by ‘light-touch’ review if needed to validate methods or conclusions. Its appeal to amateur authors in particular should be enhanced by much more user-friendly procedures for submission and processing. Finally, papers, once published, will be freely downloadable by anyone at no cost to the author or the reader. Final details, including the composition of an editorial team,

are under discussion, but it is hoped to launch the platform, provisionally named *British and Irish Botany*, early in 2018.

2. A new publication will be produced to replace and widen the scope of *BSBI News*.

The aim is to use a professionally designed template with maximal use of colour (within cost constraints). When surveying publications from other societies for inspiration, it was felt that *Field Bryology* (produced by the

British Bryological Society) demonstrated a suitable stylistic approach. We are delighted that Andrew Branson, former editor of *British Wildlife*, has offered to take on the role of editor for this publication. In a separate article in this issue of *BSBI News* (see p. 10), Andrew presents some thoughts on the structure of this publication that we hope will also commence publication early in 2018.

***BSBI News* – the end of an era?**

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BSBI News first dropped through members' letterboxes in January 1972. The September 1986 issue was the first that one of us (GE) edited (No. 43); while TJ only appeared on the scene with issue 107, ten years ago – a mere newcomer. During that time, we have had several changes of form and format, the most recent being a major shift in January 2006, when issue 101 surprised everyone with its snazzy colour cover and wadge of colour photos inside. Until then, we had had to make do with black-and-white line drawings (many of which, though, were of the highest order and very useful illustrations of obscure plants). The first colour pages appeared in issue 85 (Sept. 2000) to commemorate the 100th birthday parade of our then Patron Her Majesty Queen Elizabeth the Queen Mother.

BSBI News was initially intended to be just that – news about what the Society was up to, with a few snippets of interesting information about plants tacked on. Over time, the snippets grew larger. We have had many major contributions about newly recorded aliens, studies of habitats, identification challenges, new interpretations and reviews of taxonomic changes, all aimed at helping members to get to grips with an ever-changing subject – British and Irish botany.

Over the last year or so, the Society has undergone some major shifts in the way it works. We now have a whole team of full- and

part-time paid staff; our scientific work has grown enormously, with the Plant Unit; and now new methods of communication have supervened to make at least some of what *BSBI News* was aimed at redundant to some extent. In addition, the way the Society looks and feels needs to move with the times, and so its journals, also, need to change. We have come to the point where members were expressing a need for a 'new look' – one with full-colour, and a new form; added to which, the Society's publication of a scientific journal, *New Journal of Botany* (formerly *Watsonia*), is also needing review.

One outcome of these deliberations has been that *BSBI News* is to be replaced with a new journal (name yet to be agreed). This will appear in January 2018, and is to be edited by Andrew Branson (of *British Wildlife* fame). The Society is very fortunate to have Andrew's skills and expertise at its fingertips. The new journal will be different (see the note by Andrew about this on p. 10, and, as a result, it needed to be edited and produced with new methods. Both of us wish Andrew well with his venture, and have offered to help where we can.

In the meantime, we would like to say to all of our stalwart and loyal contributors, across the Society and beyond, thanks for all your efforts. Without your contributions, we could not have produced what we have.

New BSBI publication

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Over the last few months, whilst the flowering season has rolled by, there has been a great deal of deliberation within the organisation regarding the shape of the BSBI's publications.

Trevor James and Gwynn Ellis have been, for many years (Gwynn since 1986), the backbone of *BSBI News* and have consistently produced an engaging forum for the membership, for which we are all immensely grateful. It is felt, however, that now is the right time for the BSBI to make a clear step change in its publications.

I have been asked to help develop and edit a new version of *BSBI News* (name as yet to be decided) that will better reflect the current range of activities and interests of the BSBI in a rapidly changing world of social media and membership expectations. The changes will also take on board the way the BSBI publishes articles for its journal output. The new-look

BSBI publication will have integrated text and colour images throughout, but will keep the same format. It is planned to include some of the elements that in recent years have appeared in the *New Journal of Botany* and the *BSBI Yearbook*, such as reports of field meetings, book reviews and obituaries. It will also contain some elements that we hope the membership will find engaging, such as articles on identification for both beginners and improvers. The core of the material, however, will be, as always, down to what you the membership send in and want to see published. The first issue of this new publication will be in January 2018 and I very much welcome contributions for this and future issues. Please send them to me at: andrew.branson@bsbi.org before the **deadline of November 12th**.

Notes from the General Editor

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The editorial is always the last item to be completed and it's length is dictated by the amount of space that has to be filled; which accounts for the sometimes short and terse and sometimes long and waffley offerings. Unfortunately this time when I could do with more, space is limited!

I have taken the liberty of appending my name only to this my ninety third and last 'editorial' so that I can thank those who have helped me during this 31 year period.

First I would like to pay tribute to Jeff Davison, the printer of every issue of *BSBI News* I have edited. I owe him and his family an immense debt of gratitude for their help, patience and willingness to make last minute changes, without which my job would have been much more difficult.

My first fellow editor was Leander Wolstenholme, who helped with issues 92 (Jan 2003) to 105 (Apr 2007) and then with issue 107 (in

Jan 2008) Trevor James joined the editorial team as Receiving Editor.

I cannot emphasize how much I, and the BSBI, owe to Trevor for his work on *BSBI News*. I was always more of a compiler and formatter than an editor and Trevor's skills in that department soon became apparent and the division of labour was easy. Trevor did all the hard work; receiving all contributions, knocking them into shape, checking scientific and vernacular names, consisting the references (often the most time consuming task) then sending them to me as a Word document. All I had to do was import them into my Serif PagePlus programme, send out proofs and then produce the final copy for printing. Thank you Trevor, for everything!

Last but not least I must thank my wife Maria, for her extreme patience in putting up with me, and 'it' for so many years!.

See also page 79!

NOTES

Serapias lingua discovered in Essex

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On 19th June, photos posted in the popular *Wild Flowers of Britain and Ireland* Facebook group caused a stir. The group hosts 15,000+ members and is a place to discuss and enjoy British and Irish wild flowers. The majority of posts involve members requesting identifications and this post was no exception. The post comprised three images (see Front Cover and Colour Plate 1), clearly showing close-ups and a single landscape of at least 40 *Serapias lingua* (Greater Tongue-orchid), with the caption: “Taken near Tiptree, Essex”. The surrounding vegetation comprised several identifiable species, including *Helminthotheca echinoides* (Bristly Oxtongue), *Vicia hirsuta* (Hairy Tare), *Bellis perennis* (Daisy), *Trifolium repens* (White Clover), *Trifolium dubium* (Lesser Trefoil), *Cirsium arvense* (Creeping Thistle) and *Salix cinerea* (Grey Willow) saplings. This species composition is typical of a sandy/gravelly substrate subject to disturbance in the British Isles, suggesting these were not hoax images originally taken in continental Europe. However, before further inquiries could be made, the post was removed by the poster for fears of attracting unwanted attention to the area.

In order to confirm the veracity of the sighting and to ascertain the potential origin of the plants, MW and SC followed several lines of inquiry which led to a selection of potential localities. The species composition and the presence of low-growing *Salix cinerea* was distinctive. After some careful searching, the plants were located on the evening of the 28th June. By this stage, they had clearly finished flowering and had turned brown, with only a couple of plants bearing fresh flowers. A total of 61 flowering spikes was counted, alongside several non-flowering rosettes. Plants ranged in height from 9-26cm. The size distribution was as follows (height in cm followed by number of plants in brackets):

9(2); 10(3); 11(1); 12(3); 13(3); 14(3); 15(5); 16(5); 17(1); 18(5); 19(5); 20(6); 21(2); 22(11); 23(1); 24(2); 25(1); 26(3).

Range and pollination

Serapias lingua is principally a Mediterranean species, which stretches from the Iberian Peninsula through to Turkey, reaching as far south as North Africa and north to northern France. Favoured habitats include open grasslands, scrub and light woodland, but with a distinct preference for marshy meadows and mountain flushes, where it can occur on both acid and alkaline soils.

The primary pollinator of *Serapias lingua* is the bee *Ceratina cucurbitina*. The bee is attracted to the flower through sexual deception, where the orchid releases chemical compounds that mimic the pheromones of the female bee. The male is seduced into copulation with the tactile surface of the labellum (lowermost petal) causing the pollinia to be glued onto the abdomen or head. *Serapias lingua* also takes advantage of a secondary pollination mechanism. The tubular flower structure offers a small night-time hiding place in which small bees rest and sometimes dislodge the pollinia in the process (Claessens & Kleynen, 2011). However, *Ceratina cucurbitina* is not present in the British Isles, meaning *Serapias lingua* cannot effect cross-pollination. In areas devoid of this pollinator, *Serapias lingua* routinely reproduces vegetatively, creating dense clonal groups. This is a default mechanism to ensure short-term survival, but may be a genetic hindrance over longer periods. Clonal groups are common in satellite populations on the continent, where smaller groups are ineffective at attracting pollinator attention (Pellegrino *et al.*, 2015). No ripe ovaries were observed on any of the Essex plants, indicating no successful pollination had taken place.

Where have they come from?

As with all rare plant discoveries (particularly orchids), confirming their origin is difficult with minimal information, often subjective and riddled with hopeful assumptions. In order to explore this question, it is important to describe the context of their location.

The colony is situated within a lightly flushed area (a habitat typical of the species in Europe), with a neutral soil pH of 6.83 (confirmed by Dr Fred Rumsey, Natural History Museum), in a field which is used by local residents to walk dogs. The plants were well away from the nearest path and concealed amongst low *Salix cinerea*, so had remained undiscovered.

The vegetation on the site has arrived naturally and was not seeded after its last use as a strawberry field, approximately 20 years ago. It was then rented out to a local farmer as a permanent set-aside and has been mown annually in late June or early July since (local residents, *pers. comm.*). There was no evidence of garden escapes or other introduced species across the site, despite the close proximity of residential homes.

However, *Serapias lingua* is common in cultivation and quite capable of surviving the UK climate (provided winters are not too cold), and willingly reproduces vegetatively. Furthermore, the species can be bought very cheaply and easily from numerous online suppliers, and the specific variety is not usually specified. Elucidating origin is further complicated by the species' morphological consistency across its range. There is hope that genetic testing may provide some clarity on their provenance and, at the time of writing, Fred Rumsey is pursuing this at the Natural History Museum with a sample he has obtained.

Historical records

A small colony of *Serapias lingua* is extant in Sussex, at Wakehurst Place, among planted *Anacamptis laxiflora* (Lax-flowered Orchid). However, numbers have diminished there over time. Other records are of a single plant discovered on Guernsey in May 1992, which unfortunately has not reappeared (Harrap, 2005). Perhaps more widely known was the

appearance of a plant in a South Devon farm meadow, discovered as a triple spike in June 1998 (Lang and Spalton, 1998). This plant was determined by David Lang as being of the North African taxon ssp. *duriaei* (incorrectly spelt '*duriuei*' in the original article) from a sample obtained, but no photographs of it *in situ* have ever been published. It persisted here until 2003, by which time it had seven flowering spikes, but has not been seen since. The widely accepted theory for its arrival was with 'Saharan sand', which is occasionally deposited (noticeable on cars) as fine red sand on winds from North Africa. Although plausible, it seems unlikely to the authors.

The origin of the three previous records has never been discussed in detail, but all are of course open to some doubt, given the frequency of the species in horticulture and the circumstances and/or location in which they have occurred. *Serapias lingua* is primarily a Mediterranean species, but does occur further north in France. Of course, the origin of the Essex plants will never be known for certain, but the colony appears to have arrived naturally and is apparently thriving.

The future of the site is, at present, unknown meaning the long-term survival of *Serapias lingua* here is precarious at best. The presence of the plants may or may not have an impact on future land-use but without statutory protection, this seems unlikely.

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A flax in peril? *Linum perenne* L. ssp. *anglicum* (Miller) Ock., the case for a change in conservation status

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Even though we are now 12 years on from the publication of the first vascular plant red-list for Great Britain (Cheffings *et al.*, 2005) and have more recently reviewed the English flora (Stroh *et al.*, 2014) using even more refined analyses and algorithms, sometimes things still fall through the net. One such case I would suggest, and rather embarrassingly an endemic taxon to boot, is Perennial Flax, *Linum perenne* L. ssp. *anglicum* (Miller) Ock.

Currently, we have this listed as Least Concern at both GB (Cheffings *et al.*, 2005) and English levels (Stroh *et al.*, 2014). Although it is flagged by the former as being an endemic subspecies, for which we would therefore have an international responsibility, because of its presence in Scotland it was not treated as of English responsibility in the latter and was unaccountably not listed as a taxon for which England held >75% of the GB distribution. Stroh *et al.* (2014) do identify the taxon as an “historical decliner”, *i.e.*, if we include all the historical records, as opposed to just making a comparison between the two atlas survey data sets, then we see a significant decline (in this case 45%). In most of these cases, habitat losses in the Victorian period account for declines which, with greater site protection *etc.*, have seen numbers stabilise in the latter part of the twentieth century. But is that really the case for this plant? A combination of taxonomic confusion, spurious records and an increased pace in decline since the 1987-1999 recording period mean the true situation is, I suggest, very different.

The endemic ssp. *anglicum* is tetraploid (*vs.* diploid for ssp. *perenne*) and distinguished primarily on pollen morphology, although it is usually distinct in its decumbent to ascending (*vs.* erect) growth form (Ockendon, 1968; 1971). Godwin (1975) interprets it as a glacial relict in this country, its seeds having been found in a number of glacial deposits, particularly in eastern England.

The taxonomy of the wider aggregate (incl. *L. alpinum*, *L. austriacum*, *L. ockendonii*, *etc.*) is still controversial. See for example Tison & Foucault (2014) *Flora Gallica* p. 825, who note that the Perennial Flax cultivar ‘Blue Sapphire’ (usually attributed to *L. austriacum* ssp. *austriacum*) may be of hybrid origin. It is likely that some of the “introduced or status unknown” plants ascribed to *L. perenne sensu lato* on the BSBI database may be attributable here, particularly those falling outside the accepted native range and ephemeral in occurrence, as they would key to here in Stace (2010).

However, I can see no reason to question the value, or distinctness of our native plant, even if the chief differences, cytology and pollen morphology, are difficult for the field botanist to check. Indeed, following recent taxonomic trends, a good case could be made for the resurrection to full specific status, which would make any decision on conservation status that undermined this endemic’s future even more regrettable.

My interest in this plant initially, as so often, stemmed from a desire to see it. Contact with various vice-county recorders rapidly indicated that this was not necessarily going to be as easy as I had thought, as most came back with tales of woe and concern. It became clear a re-assessment was needed.

As noted by Foley (1994) in *Scarce plants in Britain*, while most populations are small “there are at least three large populations containing many hundreds of plants, in Cambridgeshire, Co. Durham and Kirkcudbrightshire”. Investigation reveals this remains true.

Cambridgeshire (*v.c.*29) undoubtedly is the taxon’s epicentre and supports the greatest number of post-1990 sites. However, population sizes for many are of single individuals, or of very few plants, and in several historical sites it has not been seen recently because of

over/under-grazing. That said, there are several populous extant sites. Alan Leslie (*in litt.*, 2016) said: “From what I saw of the population on the Gogmagog golf course last year [TL4954] I would suggest that there must be many thousands of plants, and whilst the site above Babraham [TL5151] is much smaller it must still have many hundreds of plants.” The same may be true of Varley’s Field, Wandlebury [TL4953], where the plant was deliberately introduced (Shanklin, *in litt.*, 2016).

In Co. Durham (v.c.66), John Durkin (*in litt.*, 2016) gave the following population counts: “The Harton Downhill SSSI [NZ3865] is quite small in area, and the population is very stable, between 100 and 150 plants. The adjacent Durham Coast SSSI [NZ39 65] has no plants in some years, maximum 10 in others. Thrislington NNR [NZ3132] has between 200-300 plants, quite variable from year to year, with slightly more in the adjacent Rough Furze Quarry LWS [NZ31 32-3] and less than 10 in the working quarry area; say 600 max. here.” While, in Kirkcudbrightshire (v.c.73) David Hawker (*in litt.*, 2016) says of Brighthouse Bay [NX6345]: “I’ve known this population, the only one in v.c.73, since the early 1980s, when I was employed by the old NCC. It’s always been difficult to estimate numbers as the plant grows on the fringes of, and partly under, the blackthorn scrub of the site. In addition to there being several shoots from one individual, I would hazard a guess that the population numbers less than 1000 plants. NCC and then its successor SNH implemented a management scheme whereby wild camping on the site was eliminated, limited scrub control carried out and the site fenced from grazers – apart from rabbits that is, which manage to keep the vegetation relatively short to benefit the flax. The population seems to flower prolifically each year, but I can’t comment on annual fluctuations. SNH must monitor this population under the SCM regime, as the plant is specifically mentioned in the SSSI citation ... It does not appear to be under any threat on this particular site. There’s been a long debate about its status there, some arguing that it is the

remnant of an introduced crop and others saying it might be native. There’s no proof either way that I’m aware of”.

The species has not recently been seen in v.c.65 (last record on the BSBI Distribution Database: 2003); v.c.54 (last record on DDB: 1991); and has perhaps gone from v.c.53 (last seen 2010). In v.c.61, there is only one post-2000 record of few non-flowering plants in a native site (R. Middleton, *pers. comm.*), although plants attributed to *L. perenne s.l.* were seen in an urban setting in 2016. In v.c.63, there is one post-2000 record without location or population number details (Louise Hill, *pers. comm.*); while in v.c.69 the three sites held just six plants between them, and two of those were lost between survey visits (M. Porter, *in litt.*, March 2016).

Given all of the figures sent to me by vice-county recorders, the total UK population is by my estimate currently likely to be c.6-8,000, with c.75% present on one site, GogMagog golf course.

What status should we therefore accord the plant?

The species cannot qualify as EN under criterion C (Population size), as there are >2,500 mature individuals, with several sub-populations containing >250, and, while a large proportion of the UK population is in one site, it is <95%.

It could qualify as VU under criterion C1 (<10,000 individuals), if we accept as likely a continuing (10%) decline in 10 years, which does not seem unreasonable, but the size of the GogMagog golf course population rules out qualification under C2a (i.), as it is >1,000 individuals. This also rules out status VU D1 and so we cannot use population size (C criteria) to generate a threatened status.

The difficulties of using both criteria A (Population reduction) and B (Geographic range) relate to the separation of errors: totally incorrect ID, other non-native infra-specific taxa, *i.e.* records just attributed to *L. perenne s.l.*, casual occurrences and benign introductions of native stock from the long-known native sites.

Because population sizes have been +/- maintained in the three core areas, it is perhaps also difficult to argue numerically using IUCN A criteria, although clearly the number of populations (see below) have declined far more markedly than the overall total number of individuals. I would argue it is more meaningful in conservation terms for calculations to be based on the percentage decline in locations rather than numbers of individuals. The number of individuals is, however, still of critical biological importance and clearly indicates potential threat through stochastic events, genetic problems, *etc.* facing the taxon over its distribution. Historically, it is likely that, throughout the native range, populations, while fluctuating, would have been present at much greater numbers than the critically low (mostly <5 individuals) currently recorded at the majority of the taxon's sites. Almost all sites demonstrate a clear decline since the 1987-99 recording period and also have demonstrable threats to continuing survival.

When arguing for re-assessment using the decline in geographic range (Extent of Occurrence – EOO and Area of Occupancy - AOO), it is most instructive to look at the tetrad level map on the DDb (*n.b.*: records in southern England are errors for other taxa and not ssp. *anglicum*). The finer the scale mapping the more obvious is the plant's true situation. Lack of data by which to make comparisons prevented our using this tetrad data when assessing for the England red list (Stroh *et al.*, 2014) but I think this shows the likelihood that the taxon could fall within the EN EOO (<5000km²) and AOO (<500 km²) categories. It would then qualify as EN under criterion B2b (i-v). However, with the (evenly) scattered nature of this plant's occurrences, it will test the algorithms generating the polygons to prove this!

Using population/site number as the measure under the A criterion, I would also argue that the taxon qualifies as EN, as, taken very simplistically and using the BSBI dataset at a hectad level, we get:

>2000 11 native, 5 introductions (prob. ssp. *anglicum*) and 6 of unknown status within

what I would accept as the native range/habitat.

1987-1999 23 native, 11 introductions and 4 of unknown status (as above).

1970-1986 25 native, 5 introductions and none of unknown status.

Depending on how one treats the introductions and unknowns alters the decline in the two most recent date classes from *c.*52% (23 to 11 native) to *c.*42% (38 to 22 if considering all records). Even so, the level of decline is such that, if not EN (>50%), we have to consider it VU (>30%)!

I believe that, were we to count site level losses as opposed to hectad occurrences, the decline would be greater. It is clear to see why we accorded it LC status, based on the distribution data in both UK and England red-lists when comparing the two Atlas date classes, but the DDb data show the plant to have been in serious trouble, with considerable site losses mid-way through the 1990s, and this is ongoing.

All of the relevant vice-county recorders (David Hawker, v.c.73, aside) I have contacted have expressed concern and have witnessed local declines and losses. Various aspects of this plant's distribution and local abundance make it difficult to give it a threat status using the criteria that the situation on the ground would seem to suggest. As an endemic taxon for which we therefore additionally have international responsibility I believe an even stronger case can be made for invoking the use of precautionary principles. My proposal would therefore be to revise the status of *Linum perenne* ssp. *anglicum* to EN A2a, c (B2bi-v). We certainly can not leave it at LC!

Acknowledgements:

I am extremely grateful to all the vice-county recorders who have helped with this compilation and others who have contributed valuable observations.

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BSBI guidelines on plant introductions

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As a BSBI member, I often feel surprised the BSBI has no guidelines/policy on plant introductions, and I would like to see this developed, perhaps as part of the current review. As a possible starting point, I offer some suggestions, which might be welcome for discussion. I am not suggesting some authoritarian guidelines, nor do I imagine people following them slavishly, but I do hope some generally agreed practice might arise.

The subject is potentially a wide one, relating to the import trade (including disease introduction), invasive species and garden escapes, habitat re-creation, both professional and amateur, tree and hedge planting, the 'future natural' idea, etc. Taking an assortment of topics, I offer a few suggestions for good practice, and I welcome other points of view:

- Controls on new plant imports are needed to avoid at least some of the pathogens we hear of abroad.
- There should be more accessible information on tree diseases.
- Non-natives that are clearly undesirable should be removed on sight, *e.g.* cacti and non-native aquatics; or, if too numerous, there should be discussion of an official effort.
- It should be recognised, both that introduced plants can suddenly turn rampantly invasive after many years, and also that species which seemed a threat can dwindle again.
- Garden escapes *etc.* should be welcome on derelict urban sites, but not usually on more natural sites.
- Planting and sowing should be welcome on some new sites, *e.g.* ex-arable, ex-industrial, which, after time, still lack native species; but not on more natural sites. Even on very damaged sites, the original flora can suddenly re-appear (is there a role for mycorrhizal fungi in facilitating this?). If there is strong reason to introduce species, *e.g.* invertebrate food-plants or genuine habitat creation, they should be restricted to a sign-posted part of the site (although spreading may then be welcome), and a list displayed.
- Hedging plants are the exception, as their purpose is structural and any clear distinction between local and non-local provenance has been lost. However, the mix should be local in character and exclude plants that do not belong: Wayfaring Tree, Small-leaved Lime and Wild Service are likely examples.
- Tall trees should be planted only on north sides of sites, where they will not shade out the rest of the site, and an advance decision made about coppicing or pollarding. Invasive seed-shedding trees like Alder may particularly need such control, or should not be introduced.

An exceptional population of *Teesdalia nudicaulis* (Shepherd's Cress) in v.c.59 (South Lancashire)

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A winter annual of acidic, well-drained, disturbed soils, *Teesdalia nudicaulis* (Shepherd's Cress) has greatly declined throughout its British range, but especially in England (Pearman, 2002; Stroh, 2015). Populations have disappeared due to vegetation succession, scrub encroachment, agricultural intensification, extractive industry and urban development (Stroh, 2015). As a result, the plant is listed as Near Threatened in both the UK and England Red Lists (Cheffings & Farrell, 2005; Stroh *et al.*, 2014). It is also a Species of Conservation Importance in North West England (Regional Biodiversity Steering Group, 1999).

Smith & Lockwood (2011) reviewed the history and status of *T. nudicaulis* in v.c.59 (South Lancashire), showing that it had declined drastically during the 20th century from occurrence in 21 to only two tetrads, the latter being on the eastern fringe of Ainsdale Sand Dunes National Nature Reserve (NNR) in the Sefton Coast sand-dune system. A survey in 2011 found that this species was restricted to only one site in the NNR, a 0.24ha strip of acid grassland, where a population of a few hundred individuals was estimated (Smith & Lockwood, 2011). The following year, another colony was discovered on an adjacent grassland area in the NNR known as Pinfold Meadow. This population was similarly small and vulnerable.

The future of *T. nudicaulis* in South Lancashire therefore seemed uncertain. However, in early June 2013, the vice-county recorder, David Earl, unexpectedly found a new colony about 1km to the south-east of the existing site, along the eastern boundary of RAF Woodvale airfield. Here the plant was "locally abundant" in a 3m-wide strip of disturbed ground between two parallel security fences, which flank the A565 road for about 1.5km. Following up this report, we visited the new

site on 11th June 2013, confirming the presence of hundreds of *T. nudicaulis* plants in seed over a linear distance of 205m along the northern section of fence line. On 14th May the following year, we attempted to count the number of plants, achieving a total of 2,575 over a distance of about 193m. Associated species on the open sandy habitat included *Geranium pusillum* (Small-flowered Crane's-bill), *Myosotis discolor* (Changing Forget-me-not) and *Lepidium heterophyllum* (Smith's Pepperwort). A further visit in May 2015 was curtailed by the intervention of RAF security guards, who thought that two botanists with cameras and hand-lenses on the Queen's highway were acting suspiciously. By now, the population had increased further to uncountable thousands. In places, flowers were so numerous as to produce large white patches, resembling an unseasonal snowfall (Fig. 1, Colour Section Plate 1). It appeared that the open habitat along the fence-line was being maintained by herbicide spraying in late summer to kill off colonising vegetation. Evidently this did not adversely affect the annuals, which had set seed and died back before the spray was applied.

Unfortunately, the fence-line was sprayed in early spring 2016, killing off the annuals. We were concerned that the population of *T. nudicaulis* might not recover, as Newman (1964, 1965) found a negligible seed-bank in the soil, maintaining that population survival depended on satisfactory seed production and germination in every year. However, Pakeman & Marshall's (1997) findings suggested that *T. nudicaulis* may have a more persistent seed-bank than previously thought and could become re-established after ground disturbance. In the event, in spring 2017, *T. nudicaulis* appeared again and in such abundance that the white strip of flowers was easily visible from a car driving past on the

adjacent dual carriageway (Fig. 2 Colour Section Plate 1). As before, the greatest concentration was on the northern 220m section of the fence-line, but scattered plants were present further south. The population was estimated to run into the hundreds of thousands.

A list of 47 associated vascular plants was compiled in late April and early May 2017 (Table 1, p. 19), the most frequent being *Aira praecox* (Early Hair-grass), *Cochlearia danica* (Danish Scurvy-grass), *Equisetum arvense* (Field Horsetail), *Festuca ovina* (Sheep's fescue), *Myosotis discolor*, *Sherardia arvensis* (Field Madder) and *Vulpia bromoides* (Squirreltail Fescue). Regionally or nationally notable taxa included *Aphanes australis* (Slender Parsley-piert), *Ornithopus perpusillus* (Bird's-foot), *Vicia lathyroides* (Spring Vetch) and *Viola canina* (Heath Dog-violet), all in small quantity. Comprising mainly ruderal plants of sandy, often non-calcareous soils, this association does not match any of the UK National Vegetation Classification's open habitat vegetation types described by Rodwell (2000). Indeed, none of the OV communities is stated to support *T. nudicaulis*. However, there are affinities with a disturbed version of U1: *Festuca ovina*-*Agrostis capillaris*-*Rumex acetosella* grassland, which is the dominant sward type on the nearby airfield. This widespread vegetation is characteristic of base-poor, oligotrophic and summer-parched soils in the warm and dry lowlands of southern Britain. *T. nudicaulis* is one of a number of ephemerals that can take advantage of bare areas in the often rather open sward typically caused by spring and summer drought (Rodwell, 1992), although here the bare ground is a result of herbicide treatment.

The Woodvale population of *T. nudicaulis* may be one of the largest in Britain and has evident conservation importance. Its survival depends on appropriate management to prevent overgrowth of competitive vegetation. Usually, this would involve mowing or grazing, together with occasional soil disturbance (Stroh, 2015). However, due to restricted site access, traditional grassland

management is impracticable. While use of herbicides would not normally be recommended for conservation of biodiversity, it has been effective in this case, providing suitable habitat for an increasing and spectacularly large population of *T. nudicaulis*, together with a wide variety of other open ground species. Timing of the treatment is clearly an issue and should ideally take place in late summer, after the annuals have flowered and set seed.

Acknowledgements:

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Table 1. Associates of *Teesdalia nudicaulis* at Woodvale, Sefton, April/May 2017.

(r = rare; o = occasional; f = frequent; l = locally; v = very; * = non-native; VU = Vulnerable; NT = Near Threatened. Italics = England Red List. SCI = Species of Conservation Importance in North West England.

Taxon	English name	Freq.	Status	Taxon	English name	Freq.	Status
<i>Achillea millefolium</i>	Yarrow	r		<i>Lepidium didymum</i>	Lesser Swine-cress	r	
<i>Aira praecox</i>	Early Hair-grass	lf		<i>Lepidium heterophyllum</i>	Smith's Pepperwort	r	
<i>Aphanes arvensis</i>	Parsley-piert	r		<i>Lotus corniculatus</i>	Common Bird's-foot-trefoil	r	
<i>Aphanes australis</i>	Slender Parsley-piert	r	SCI	<i>Luzula campestris</i>	Field Wood-rush	o	
<i>Arabidopsis thaliana</i>	Thale-cress	o		<i>Montia fontana</i>	Blinks	o	
<i>Arenaria serpyllifolia</i>	Thyme-leaved Sandwort	r		<i>Myosotis discolor</i>	Changing Forget-me-not	lf	
<i>Atriplex</i> sp.	Orache	r		<i>Ornithopus perpusillus</i>	Bird's-foot	r	SCI
<i>Capsella bursa-pastoris</i>	Shepherd's-purse	r		<i>Papaver</i> sp.	Poppy	o	
<i>Cardamine hirsuta</i>	Hairy Bitter-cress	o		<i>Plantago coronopus</i>	Buck's-horn Plantain	o	
<i>Carex arenaria</i>	Sand Sedge	o		<i>Plantago major</i>	Greater Plantain	o	
<i>Cerastium fontanum</i>	Common Mouse-ear	r		<i>Reseda luteola</i>	Weld	o	
<i>Cerastium glomeratum</i>	Sticky Mouse-ear	o		<i>Rumex acetosella</i>	Sheep's Sorrel	o	
<i>Cirsium vulgare</i>	Spear Thistle	r		<i>Sedum acre</i>	Biting Stonecrop	o	
<i>Claytonia perfoliata</i> *	Spring Beauty	o		<i>Senecio jacobaea</i>	Common Ragwort	r	
<i>Cochlearia danica</i>	Danish Scurvy-grass	la		<i>Sherardia arvensis</i>	Field Madder	lf	
<i>Dactylis glomerata</i>	Cock's-foot	r		<i>Stellaria pallida</i>	Lesser Chickweed	r	
<i>Equisetum arvense</i>	Field Horsetail	lf		<i>Taraxacum</i> agg.	Dandelion	o	
<i>Erodium cicutarium</i>	Common Stork's-bill	r		<i>Veronica arvensis</i>	Wall Speedwell	o	
<i>Erophila verna</i>	Common Whitlow-grass	o		<i>Vicia lathyroides</i>	Spring Vetch	r	SCI
<i>Festuca ovina</i>	Sheep's-fescue	lf		<i>Viola arvensis</i>	Field Pansy	r	
<i>Geranium molle</i>	Dove's-foot Crane's-bill	o		<i>Viola canina</i>	Heath Dog-violet	r	NT VU SCI
<i>Holcus lanatus</i>	Yorkshire-fog	o		<i>Viola tricolor</i>	Wild Pansy	r	
<i>Hypochaeris radicata</i>	Cat's-ear	o		<i>Vulpia bromoides</i>	Squirreltail Fescue	vlf	
<i>Lamium purpureum</i>	Red Dead-nettle	o					

Orchids – conservation versus wildness

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Recent articles by Kevin Walker (2016) and Donald MacIntyre (2017) considered the appropriateness of using seed mixtures to re-create wild flower meadows, focusing on the need for such an approach. They consider the arguments against re-seeding, particularly those involving deleterious genetic interactions with neighbouring plant communities, and both concluded that, provided appropriate seed and management are used, the objections are relatively insignificant and that re-seeding will reliably create species-rich meadows. They argued that the destruction of our native grasslands has been so extensive that an active programme of re-seeding is essential as regeneration by natural means is mostly unlikely and will be inadequate. In this article, I wish to focus on our wild orchids, not specifically in relation to re-creating wild flower meadows, but in relation to the wider countryside, including roadside verges and even what is happening in our gardens.

Many orchids are ‘local relics’

Trevor James (2016) proposed that >10% of the flora of Hertfordshire are local relics, confined to a handful of sites and/or incapable of spreading. He suggested species might be relics because they do not reproduce effectively or because of limited habitat availability. He listed three orchids amongst the 64 species he regarded as indisputable relics in Hertfordshire. As orchids produce relatively huge numbers of seeds, except where populations have become very small, it seems unlikely reproductive potential is a major problem and more likely that limited availability of suitable habitat is the primary reason for their inability to spread. In the next section, I explore whether this is so, or whether the reasons are more complex.

Dynamics of orchid spread – Marsh Helleborine

Several years ago, my wife introduced into our garden a plant of *Epipactis palustris* (Marsh

Helleborine) that she had bought from a local garden centre. In the following year, it flowered and subsequently produced several seed capsules. I spread the seed from five or six (a maximum of 12,000 seeds?) of these capsules on a small (c.0.2ha) wild-flower meadow we were developing next to our garden. Part of this meadow must have been suitable for Marsh Helleborine as, five years later, there were four separate plants (*i.e.* about one in c.3000 seeds produced a plant), all growing in damp conditions close to a pond we had dug. This pond is fed from the local river that has a high pH (c.8.0), creating the equivalent of an alkaline ‘flush’ around the pond. All the plants have continued to flourish.

Marsh Helleborine is, by any definition, a relic species in Scotland. Previously, it occurred at several sites, but in mainland Scotland it is now confined to only one site near Killiecrankie, 30km north-west of where we live, near Blairgowrie. Below I explore how likely is it that Marsh Helleborine would have spread naturally from Killiecrankie and established itself in our meadow.

Modelling the spread of Marsh Helleborine

To explore the impact of distance on rates of orchid seed deposition, I previously used a very simplistic ‘model’ (Trudgill, 2016) that assumed that the proportion of seeds that remained air-borne halved with the square of the distance from the seed source. Hence, 50% of the seed will be deposited within the first 2m from the ‘mother’ plant, an additional 25% within 4m, and a further 12.5% between 4m and 16m. Beyond 256m (*i.e.* 16²), only 6.25% of the seeds initially released will remain air-borne, half of which (3.125%) will be deposited over the next 65.5km (*i.e.* 256²). The circular area between 256m and 65.5km from the seed source is huge (13,484 sq. km).

This simplistic model provides a framework for thinking about the dynamics of orchid spread. In this paragraph, I use it to examine

the likelihood of seed from Killiecrankie reaching our meadow 30km away and producing a plant. Let us assume that a Marsh Helleborine plant at Killiecrankie produces several flower stalks and releases 100,000 seeds. Of these, 3,125 will be deposited over the range between 256m and 65.5km, an area of 13,484 sq. km. Assuming these seeds are deposited evenly across the whole area, this equates to an average of 0.23 seeds per sq. km. As our meadow is *c.*0.002 sq. km, it can be calculated that there is less than a 1:2000 chance of a Marsh Helleborine seed from Killiecrankie landing on our meadow. When the proportion of seed that is likely to grow and produce a mature plant is factored into the equation (from our experience *c.* 1 in 3,000) the likelihood of a new Marsh Helleborine plant becoming established 30km from their source becomes vanishingly small. Using these values, and even assuming there are 1,000 plants at Killiecrankie that release 100,000,000 seeds, the probability of a Marsh Helleborine plant naturally becoming established in our meadow is *c.* 1 in 6,500.

In reality, between 256m and 65.5km, rates of orchid seed deposition will progressively decrease with increasing distance and, additionally, will be influenced by many other factors, including topography and wind speed, direction and turbulence. Also, there is a finite amount of seed available and increasing the rate of seed deposited in one area will result in less elsewhere. In any modelling exercise the values we obtain are dependent on the parameters we use, but any realistic parameters will always produce a very small probability of Marsh Helleborine spreading naturally from Killiecrankie to our meadow.

Donald MacIntyre (2017) reported on a large (1.8ha) seed plot of *Leontodon hispidus* (Rough Hawkbit) that progressively became naturally colonised by seven species of orchids. After 13 years the abundance of each orchid species reflected the distance from, and abundance of, potential sources of seed. For example, *Ophrys apifera* (Bee Orchid) and *Dactylorhiza fuchsii* (Common Spotted-orchid) were found locally and were very

numerous in the plot of *L. hispidus* (*c.*26,000 and 12,000 plants respectively), whereas there were only occasional plants (<6) of *Anacamptis morio* (Green-winged Orchid) and *Platanthera chlorantha* (Greater Butterfly-orchid), of which there were no sources of seed within 2km.

Is there a place for hand-spreading orchid seed?

The above analysis indicates that there is only a small probability of potentially suitable sites several km from a source of seed being colonised by all except the most abundant species of orchids. In contrast, if seed is spread by hand the probability of establishing an orchid species at a conducive site is greatly increased. Returning to the analysis above, if all 100 million seed produced by the hypothetical 1,000 Marsh Helleborine plants at Killiecrankie were spread by hand on our meadow near Blairgowrie then, if one seed in 3,000 produced a plant, they would be 'expected' to produce >3,000 new plants!

Although hand-spread seed may have the potential to greatly increase the likelihood of an orchid species becoming established at a new site, there are practical problems, including identifying suitable sites and ensuring appropriate agreements and management. In newly-created wild flower meadows, where the soil fertility is high, initially grass and herb growth will probably be too vigorous and overwhelm most orchids sown or planted. Orchids also differ in their soil and site preferences and these must be identified and appropriate species used. Some species seem easier to establish from seed than others. Richard Brown (Emorsgate Seeds, pers. comm.) has readily established Common Spotted-orchid, Marsh Helleborine, and *A. pyramidalis* (Pyramidal Orchid) from seed, but was unsuccessful with Bee and Green-winged Orchids. However, we have sown seed of nine species of orchids in our meadow and all have produced flowering plants (Trudgill, 2016). Obtaining seed and permissions is another requirement and these, and other factors, probably limit the potential sites to amenity land, nature reserves, orchid enthusiasts with a

suitable piece of land and possibly roadside verges. Where seed and sites are available and permissions granted there needs to be a management plan in place and proper recording and flow of information, *e.g.* to the local vice-county recorder. Realistically, this is likely to greatly limit the numbers of sites where any hand-seeding occurs.

Origin – is the cat already out of the bag?

One of the concerns some have regarding hand sowing is the origin (provenance) of the seed used. I cannot understand this concern, as, unlike orchids that have arrived naturally, we should know and be able to select from where our seed is obtained. I suggest there are more pressing concerns regarding the genetic ‘purity’ of our native orchids, as several retailers offer hardy orchid plants for sale in the UK. One advertises 22 species of orchids native to the UK; more than one-third of all native species. They include both common and rare species. Also on offer are several exotic species and various hybrids able to grow outdoors in the UK. The origin of these plants is often unclear and there is no control over where they are grown. It seems likely, as with our Marsh Helleborine, that some will have already spread beyond where they were planted. Recently, we bought three plants of *Cypripedium calceolus* (Lady’s Slipper). As with the Marsh Helleborine, we were unable to establish the origin of these plants, but it seems unlikely that they are British.

Conclusions

Not all orchids are in decline in every part of the UK. Since the 1980s, Bee Orchid has been spreading in Northumberland (John Durkin, pers. comm.) and it is extending its range northwards. It has now been found near Port Seton, close to Edinburgh (BSBI distribution maps). But, based on my simple model, I suggest that hand-sowing seed is probably essential as a means of introducing orchids to new sites, where 1) populations of an orchid

species are widely separated; and (2) sites suitable for colonisation are also small and remote from potential sources. Hand-sowing is both much more effective than natural spread and makes much better use of the available seed. Identifying ‘suitable’ sites requires a deep understanding of an orchid’s ecology, and introducing an orchid is both a technical and logistical challenge. Many involved with orchid conservation are opposed to using seed, but I suggest there are situations where it is appropriate. Seed has several advantages over plants: there is no risk of spreading orchid diseases, any plant that develops is, almost by definition, in a suitable place, and it is much less expensive. Orchids can provide pleasure to many, but rare orchids provide pleasure only to a very few. However, almost all orchids have the potential to provide spectacular displays of flowers and I know of two roadside sites where *Dactylorhiza purpurella* (Northern Marsh-orchid) (Colour Section Plate 1), and two where Pyramidal Orchid produce impressive displays. Recently, my wife and I visited Bishop Middleham Quarry and were amazed by the beautiful display of hundreds of flowering *Epipactis atrorubens* (Dark-red Helleborine). There are probably more of them at this one site than in the rest of the UK put together. I suggest there are many more suitable sites available, only waiting for sufficient seed to be deposited.

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The last *Gagea lutea* (Yellow Star-of-Bethlehem) in Leicestershire?

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Gagea lutea (Yellow Star-of-Bethlehem) is a bulbous perennial herb with bright yellow flowers, distributed across Europe and Asia as far as Japan. It grows in damp, base-rich woods, hedgerows and rough fields, and flowers in early spring. In the British Isles, it is a relatively scarce species, with a scattered distribution, and is rare outside central and northern England. Although its conservation status in England is given as LC (Least Concern), this status is at odds with the magnitude of its overall apparent decline (Stroh *et al.*, 2014). *G. lutea* is native in Leicestershire & Rutland and has been found at eight sites (Fig. 1), but is believed to have declined markedly in the last century.



Fig. 1. Location of known sites of *Gagea lutea* in v.c.55, Leicestershire

Gagea lutea was first recorded in 1805 by Rev. Dr John Power at Cloud Wood in the north-west of Leicestershire, now a Site of Special Scientific Interest and a nature reserve, owned by the Leicestershire and Rutland Wildlife Trust (LRWT). A flowering specimen of *G. lutea* (as *Gagea fascicularis*) deposited by Rev. Power, and noted by Salmon (1909), was located with the help of Carol Hemsley and Andy Sandford in the herbarium of the Holmes-

dale Natural History Club (Reigate, Surrey). The original location ‘lower end towards Breedon’ was in the part of the wood that has since been quarried, and an extensive search in the area bordering the quarry by Andy Lear (*pers. comm.*) was unsuccessful.

Some more recent records are from Rutland. The site of a record from Exton in 1933 (Messenger, 1971) is unknown, and it has not been re-found there. It was first recorded at Stretton Rectory in 1912, then again in 1955. Leicestershire Museums Herbarium (LSR) has two flowering specimens from Stretton, dated 13th April 1955 and 16th April 1956. It was successfully translocated to a nearby hedge in 1969, to save it from the widening of the Great North Road, and was last recorded in 1989, but a search of this site in 2016 by Brian Laney was unsuccessful. Plants were introduced at Stocken Hall in 1975, in lawn under trees, and were still present in 1990, although it is thought that the plants were victims of landscaping when Stocken Hall was turned into flats. A search of the area in 2016 by Brian Laney and Geoffrey Hall was unsuccessful. Stoke Dry Wood has several records, the last in about 1935 (Messenger, 1971), and there is a flowering specimen in LSR (Bell, April 1914). Horwood states: “I have found these in other parts of Stoke Dry Wood than the place where it is known to grow” (Horwood & Gainsborough, 1933), but nobody alive knows the location. Unsuccessful searches of the supposed site were made in the 1950s before it was smothered by newly planted conifers (Messenger, 1971). Many of the conifers have been cleared now, so the wood is more open, but searches in the south-west corner, where there is still ancient woodland flora, by Andy Lear (*pers. comm.*), and of the whole wood in 2017 by Brian Laney and Geoffrey Hall, were unsuccessful.

In Leicestershire, surveys of the Chater Valley from Sauvey Castle to Launde by Andy

Lear (*pers. comm.*), and by Geoffrey Hall, Brian Laney and Russell Parry in 2016 were unsuccessful and it was not found in recorded sites at Withcote and Launde. The site at Withcote was heavily shaded by overgrown hedges, is mainly coarse pasture, trampled by cattle, and had an active badger sett. The last known site is a wooded gully at Sauvey Castle, where it was first found in 1950 (Primavesi & Evans, 1988), then again in 1969 (flowering specimen in **LSR** dated 26 April 1969), in 2009 and again in 2016 and 2017. There are about 50 visible plants of various ages in an area of $c.5\text{m} \times 2\text{m}$, on an unfenced, steep, moist clay bank under mature Ash, adjacent to pasture. It is difficult to estimate the population size accurately because of trampling by sheep. Plants are mostly small bulbs or bulbils. Usually, each produces a single leaf, but they are shaded and did not produce flowers in 2016 or 2017. The population is surviving here, but it is unprotected and is badly affected by overgrazing, so its long-term future is precarious. The land owner has agreed to put fencing around the population, but it not known how effective this will be against persistent grazing and continued trampling. The habitat in the Chater Valley is very suitable for its growth, and it is possible that some of the bulbs or bulbils may be washed out of the gully at Sauvey Castle and establish new populations along the valley at some time in the future. The nearest natural source for establishment of a new population in v.c.55 is Morkery Wood (Lincolnshire), near Stretton Hall, although this is unlikely, as the adjacent land is intensively farmed.

Species have been lost in Leicestershire & Rutland at an average rate of 1.5 per year since 1960 (Jeeves, 2011) and it is clear that *G. lutea* is on the verge of extinction in v.c.55. Although there is a strong case to be made for better protection of wild plants by means of habitat management, there is also a good argument for *ex situ* conservation, either by growing the plants in botanic gardens, or by storing seeds in gene-banks. *Ex-situ* conservation is highly appropriate in this case, as the

plants are on private land and the effectiveness of the *in-situ* conservation method is uncertain. A plan was devised to rescue the sole surviving population of *G. lutea* by removing individuals and growing them at the University of Leicester Botanic Garden. In March 2017, with the landowner's consent, twelve bulbs were removed from the site and transplanted to the Garden (Fig. 2).



Fig 2. *Gagea lutea* bulbs in cultivation at the University of Leicester Botanic Garden.

Given time, it is hoped that the cultivated material will flower and set seed. This will be collected and stored in the newly established Leicestershire and Rutland seed-bank (known as GeneBank55) to ensure long-term survival and allow the possibility of re-introduction. This venture was begun in the autumn of 2016 and aims to preserve those vascular plant species that are in immediate danger of extirpation. Many of them are down to their last remaining population or even, as in the case of *Genista anglica*, individual.

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Accurate measuring of plant specimens

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Absolute accuracy in observation and measurement is a prerequisite for the reliable identification of plants. In the preface to the first edition of his now standard *Flora*, Stace (1991) says: “When it is necessary to use a greater magnification than a hand lens, or to cut sections of an organ, in order to see the diagnostic features, I have never pretended otherwise. The lack of a means of magnifying objects above $\times 20$ in good illumination, or of the ability to measure accurately to within 0.1mm, not only prevents one from obtaining certain data but, more seriously, is a frequent cause of misinterpretation or mismeasurement of plants. The remedy is obvious, and no more expensive than are the essential tools of a photographer, ornithologist or golfer”. If the remedy is not obvious to you, Stace is (presumably) referring to a stereo microscope, equipped with an eyepiece graticule for measuring and inbuilt or ancillary high intensity illumination.

I use three measuring tools. My stereo microscope has been calibrated against a Meiji stage micrometer (a linear scale, 1mm divided into 0.01mm divisions and of guaranteed accuracy). I used this calibrated microscope to check the accuracy of the steel rule and loupe referred to below.

For measuring to 1mm (maximum 0.5mm) precision in the field, I use a Rabone Chesterman 15cm steel rule. This has scales with 1mm and 0.5mm divisions, as well as inch scales with a variety of divisions. It is no longer available, but similar products are. The metric scales are as close to completely accurate as I can measure, with no detectable

error. The zero mark of the scales is exactly at the end of the rule, unlike typical plastic or wooden rules, so it is much easier to measure the length of, for example, a leaf petiole. How precisely you can measure with the rule depends on how short-sighted you are. In this instance, the more short-sighted the better! But anyway, the rule’s accuracy far exceeds anyone’s eyesight.

When I need to be able to measure to an accuracy of 0.1mm, and am away from home and my stereo microscope I use a Peak $\times 10$ scale loupe that comes with an inbuilt graticule. The graticule is 30mm long (15mm either side of a centre line), marked in 1mm divisions, subdivided into 0.1mm divisions. In practice, you can only see 10mm either side of the centre line, with your eye centrally placed over the eyepiece. Accuracy is also very high, the graticule divisions being as close to completely accurate as I can measure, with no detectable error. In practical terms, the loupe is somewhat fiddly to use. It has to be focused; it can only measure flat, near flat or flattened objects; and the base of the loupe has to be pressed against the object to be measured. The best approach is to place the specimen on top of a stiff flat white card, and place a clear acetate sheet or similar over it. The loupe can then be held against the acetate sheet, and slid around without moving the specimen. The loupe has clear sides to the base of the unit, and requires good side illumination.

Most of the time, I use a stereo microscope for measuring parts of plants. The Meiji model I have was bought over 25 years ago, has $\times 10$

eyepieces and twin, turret-mounted objective lenses of $\times 1$ and $\times 3$ magnification, notionally providing $\times 10$ and $\times 30$ magnifications. One of the eyepieces has a graticule within it, a 10mm rule with 0.1mm divisions. Despite being about ten times the price of the (already quite expensive) Peak loupe, careful calibration has shown that, while the $\times 3$ objectives are indeed $\times 3$ magnification, the $\times 1$ objectives are actually $\times 1.0333$ magnification, such that an object 9mm long measures 9.3mm in length, an error of +3.3%. Therefore, all measurements I take using the $\times 1$ objectives have to be corrected, a simple matter with a calculator or spreadsheet, using a calibration factor of $\times 0.967742$. For critically accurate measurements of small specimens, I use the $\times 3$ objectives ($\times 30$ magnification) and divide the measurement by 3.

The great advantage of using a stereo microscope is not so much the additional magnification (although this may be essential on occasion), but being able to work with both hands free to manipulate a specimen, and having really bright illumination. At $\times 30$, the smallest divisions in the eyepiece graticule in my microscope equate to 0.033mm (33 μm) on the specimen. However, with good optics and good illumination it is remarkable how much you can see at $\times 10$ magnification, and that magnification is sufficient to measure accurately to 0.1mm.

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Accursed butter-plate

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A student having recently pointed out to me the discrepancy between the keys to *Ranunculus* in Stace (2010) and Rose (2006), the former counting *R. sceleratus* (Celery-leaved Buttercup) among the species with “sepals strongly reflexed at anthesis” and the latter keying it with “sepals not reflexed”, I thought I might spend a wet early May bank holiday afternoon at home seeing what texts or illustrations I could find that shed any light on the subject. The texts had to be ones that might conceivably be based on fresh observations of living or pressed plants and the illustrations had to be ones that actually showed the sepals (some of the photographs were taken from above the plant, and were of no help to me at all).

Stace (2010) defines reflexed as “bent down or back” and many of the illustrations show sepals that descend at an angle of up to about 80° away from the horizontal petals, which could perhaps be said to be bent down, but then appear to bend back towards the horizontal. However, Tutin & Akeroyd (1993) say that *R. sceleratus* has “sepals deflexed”. *Deflexus* is defined by Stearn (1992) as “deflected, bent or turned abruptly downwards”.

One might think that there is little difference between deflexed and reflexed, but I think that “retrofectido” (Coutinho, 1939), “strongly turned downwards” (Harrap, 2013), “ribattuti” (Pignatti, 1982) and “zurückgeschlagen” (Nebel, 1990) all suggest that there are people who believe that this plant is like *R. bulbosus*, where the apex of the peduncle is hidden from view by the strongly deflexed sepals. There are also people who believe that *R. sceleratus* has spreading sepals, as shown in the texts of Coste (1901) and López González (1986). The drawing by Roles (1957), drawn from a fresh specimen, shows the sepals spreading parallel to the petals, with a separation of about 1 mm. Butcher (1961) has a drawing from a living specimen from Stapleford, Notts., which includes a lateral section of a flower, and a description of the plant, which includes the words “sepals small, boat-like, reflexed”. Taken together, the section and the text make it clear that the line of the bottom of the boat is the one descending steeply and then curving away, to rejoin the almost straight lines of the sepal margins.

The online sources I found extend the range of material seen to Montana and Saskatchewan in the west, and to India in the east. At these extremes, the species can have only four or even three sepals and petals. There are helpful close-up photographs of a flower by Glen Lee in Saskatchewan Wildflowers, showing the shape and posture of the sepals and petals. A distinctive feature of the petals evident in all the photographs seen online is that they are almost flat, not up-curved to form a (butter)cup. I have not seen this mentioned in any of the texts. David Fenwick's picture (Colour Section Plate 1), taken near Plymouth, of a flower in side view in APHOTOflora matches the drawing in Butcher (1961) very well.

What is one to make of all this? The texts that suggest *R. sceleratus* has strongly deflexed sepals, like those of *R. bulbosus*, *R. sardous* and several other (not British) species, are perhaps all copying from other descriptions rather than looking at the plants, but only Stace (2010) uses this character in his key to species. This is quite unnecessary, as the tall head of very small and smooth achenes is a unique character in British *Ranunculus*. The rest of the variation can be described in terms of the opening of the flower bud. Unusually long sepals are needed to cover all of the immature achenes in the bud, and they have to move a long way in order not to obstruct the petals as they grow rapidly during the opening of the bud. Maybe during this process there can be a stage where both sepals and petals are spreading, as drawn by Roles (1957). If there is a reader who has *R. sceleratus* on his doorstep, and there are still flower buds developing at the season when this is published (both unlikely conditions, I accept), perhaps my interpretation could be confirmed.

I still have to explain the first word of the title of this article. Did the person who coined the name 'Celery-leaved Buttercup' think that my subject really has leaves like those of *Apium graveolens* (Wild Celery) (it hasn't), or

did he think that the sound of '*sceleratus*' indicated a resemblance to 'celery' (it hasn't)?

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American wind-blown seed?

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I recently watched an episode of Chris Packham's 'Nature's Weirdest Events' on BBC2. The particular event which took my interest was red water in the Zomera region of north-west Spain. Fern'andez-Lozano *et al.* (2015) established that the reason was a green alga, *Haematococcus pluvialis*, which turns red under stress. The authors analysed meteorological data, including the North Atlantic jet stream, and suggested that the origin of this alga could have been North America. Jet streams are relatively narrow bands of strong wind in the upper levels of the atmosphere. The winds blow from west to east but the flow often shifts to the north and south. Jet streams follow the boundaries between hot and cold air (Google). Fig. 1 shows this jet stream at 24 September 2016. This jet stream is new to me. This same figure immediately made me think of the amphi-Atlantic asymmetrical distribution of the following plants:

Spiranthes romanzoffiana (Irish Lady's-tresses)
Hypericum canadense (Irish St John's-wort)
Potamogeton epihydrus (American Pondweed)
Limosella australis (Welsh Mudwort)
Eriocaulon aquaticum [American] Pipewort.
(I am aware that fossils are to be found in Ireland).

I suggest that these plants arrived in Europe by wind dispersal from North America.

There is no reason to think that seed of these plants arrived in Europe by an exclusive method. In Horsman (2017: 7-8) I discussed the theory that the Greenland White-fronted Goose brought the seed of *Spiranthes romanzoffiana* to the British Isles and Ireland. Harrap (2017:49-50) dismissed this theory in a manner which was o.t.t.

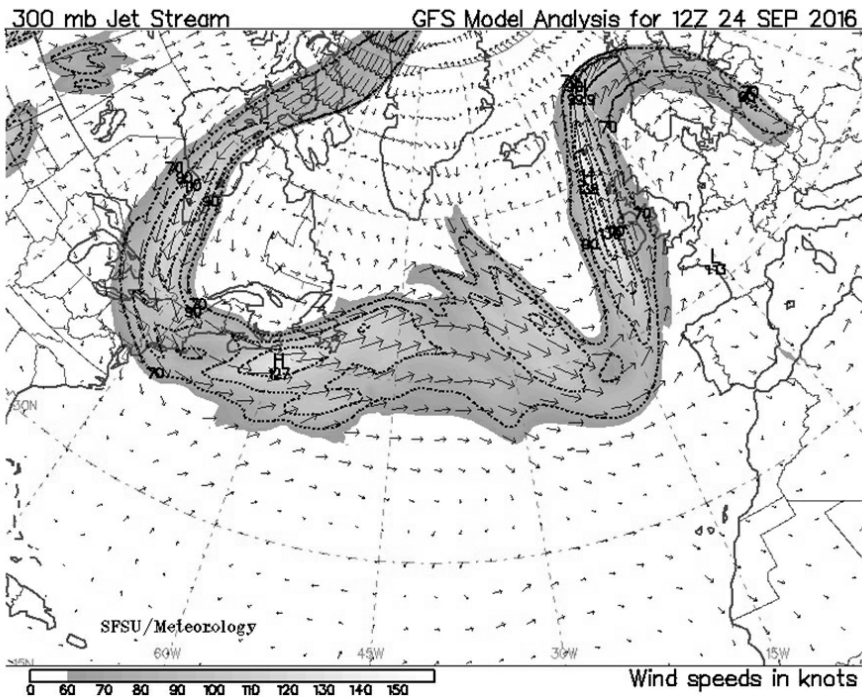


Fig. 1. North Atlantic jet stream, 24 September, 2016. Courtesy California Regional Weather Server.

My response is as follows.

I first encountered *S. romanzoffiana* when I was shown it by Ro Scott at the Loch Shiel site in 1985. I subsequently read about John Heslop-Harrison FRS's (1953) Greenland White-front Goose theory. I corresponded with him about this theory. The Greenland White-front Goose occurs at the western end of Loch Shiel.

From 1985 to date I have visited many of the sites for *S. romanzoffiana* in Scotland looking for correlations between this orchid and this goose. Harrap (2017:49) states that "...the claimed coincidence of Greenland White-front's wintering area with the range of Irish Lady's-tresses is in fact marginal..." I disagree. I have noted this coincidence at the following sites: Benbecula; South Uist (three sites); Coll (extensive sites for both); Tiree; Colonsay; Oronsay; Islay (very small numbers of the orchid compared to very large numbers of the Goose); Kintyre; Loch Shiel.

My story of how I discovered the orchid new to South Uist is, I think, of some interest. I spent several holidays in the Uists in the Western Isles looking for the Irish Lady's tresses. This interest was primarily responsible for my moving here in 2002. On a visit prior to 2002 I spoke to a local ornithologist, Bill Neill, who lives in South Uist. I asked him for a list of the Greenland White-fronted Goose sites on South Uist. He gave me a list of four sites (one in front of his house!). Two were unsuitable. I found three plants of Irish Lady's-tresses, new to South Uist, at Kilphedar. I also found two

plants at Loch Hallan. Some time shortly after 2002, I showed Richard Gulliver and his wife, Muriel, these two sites. They found a dozen more plants at Kilphedar in the same immediate area. None were found at Loch Hallan: the grassy sward was much more rampant.

There are too many correlations to simply write off this theory, even if it does not fit all the facts. In conclusion, whatever the outcome, Irish Lady's-tresses has given me a great deal of pleasure.

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Update on the status of native and introduced populations of *Scleranthus perennis* ssp. *perennis* and *Trifolium strictum* at Stanner Rocks National Nature Reserve, Radnorshire

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Scleranthus perennis ssp. *perennis* (Perennial Knawel)

Scleranthus perennis ssp. *perennis* was first recorded from Stanner Rocks in 1850 by Anne Gardener. It is restricted to a single spur of rock on the eastern side of the old quarry floor. This subspecies is found nowhere else in the British Isles. The size of the population can

fluctuate widely from year to year in response to seasonal weather conditions. Historically, numbers have ranged from over 100 plants to single figures. It typically grows in fissures of rock and bare ground, where competing species are eliminated by summer droughts. *Scleranthus perennis* has a long-lived seed bank and large numbers of plants can appear in

favourable years. In cultivation seeds were still viable after fifteen years in storage.

In 2010, a new *Scleranthus perennis* population was founded using seed from Stanner material that was cultivated off-site. The introduction site comprised an old quarry bench that over many decades has naturally developed a community of plants similar to those found on Stanner's undisturbed rocky outcrops.

At the native site, a total of 48 plants was found in 2016. These comprised 13 tiny, non-flowering plants and 35 flowering plants of various sizes. The 2016 population count falls well within the mid-range of historically recorded numbers, but the population is naturally restricted to a very localised area.

The introduced population on the quarry bench has continued to expand in size and extent since it was seeded in August 2010. In 2016, there was such prolific growth of *Scleranthus* plants that some areas comprised a thick carpet of interlocking plants (Fig. 1 Colour Section Plate 1). As a result, it proved impossible to count individual plants, but a conservative estimate would put the 2016 population on the quarry bench at approximately 500 individual plants. At least a quarter of the population is located outside the original introduction zone and represents a significant natural spread into suitable areas of adjoining habitat (Fig. 2 Colour Section Plate 1). Suitable un-colonised habitat remains above and below the original introduction zone and it is anticipated that the population will continue to expand into these areas.

***Trifolium strictum* (Upright Clover)**

Trifolium strictum was first recorded from Stanner Rocks in 1936 by Francis Day and Walter Hardaker. It is restricted to a very small depression of ground that is located on the

same spur of rock as *Scleranthus perennis*. The population is critically small. In most years the population comprises fewer than ten plants and occasionally none at all. *Trifolium strictum* has a long-lived seed bank. At Stanner Rocks, plants re-appeared after an absence of seven years. In 2007, over 50 plants were present, the most ever recorded, but since then the population has persisted in single figures. Stanner Rocks is the only Welsh location for *Trifolium strictum*. Elsewhere in the British Isles, it is only known from a handful of sites on the Lizard Peninsula in Cornwall, where approximately 100 plants appear each year.

In 2013 a new *Trifolium strictum* population was founded using seed from Stanner material that was cultivated off-site. The introduction site was the old quarry bench that also supports the introduced *Scleranthus perennis* population.

In 2016, three small flowering plants were present at the native site. Each plant produced a single flower that set seed. Two small plants were present at the native site in 2017. At the quarry bench introduction site, 36 plants were present in 2014, approximately 100 plants were present in 2015, 20 plants were present in 2016 (Fig. 3 Colour Section Plate 4) and 30 plants were present in 2017. The introduced population is evenly spread over a wide area of the introduction site. In 2016 four large *Trifolium strictum* plants were growing amongst *Scleranthus perennis* outside the original introduction zone.

Whilst initial results are very encouraging, it is probably too early to confirm that a permanent self-sustaining *Trifolium strictum* population has become established at the introduction site.

Impact of climate change on potential *Ophrys apifera* (Bee Orchid) distribution

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This article explores whether the UK has warmed sufficiently for *Ophrys apifera* (Bee Orchid) to be able to colonise our orchid meadow (latitude 56.59) in eastern Scotland. The approach I have taken is to relate the distribution of Bee Orchid in the 1880s to average temperatures at that time. I then examine how temperatures have increased and explore some of the implications for potential future Bee Orchid distributions. The distribution of *Anacamptis pyramidalis* (Pyramidal Orchid) is considered for comparison.

Temperature trends

Durham (latitude 54.77, altitude 102m) and Oxford (lat. 51.77, alt. 63m) are two of the six meteorological stations (met. stations) in the UK for which long-term (prior to the 1900s) temperature records are available. The others are Southampton (closed 2000), Sheffield, Stornoway and Armagh. Durham started in 1880 and Oxford even earlier. Oxford has been consistently *c.*1.5°C warmer than at Durham (Fig. 1).

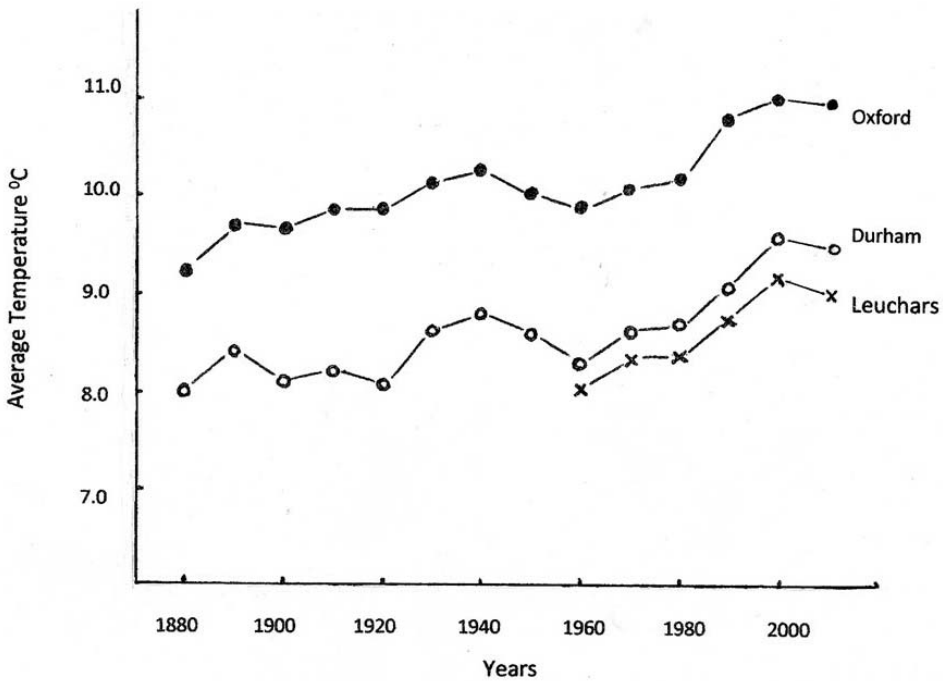


Fig. 1. Average temperatures for each decade from 1880 for the met. stations at Durham and Oxford and from 1960 for Leuchars. When calculating these averages, months with negative average values were modified to a value of 0°C.

Although there is some variation, including a cooling around the 1960s, average temperatures since the 1930s have tended to progressively increase at both Durham and Oxford. In the 1880s, average temperatures were 8.0°C

and 9.5°C for Durham and Oxford respectively. In the 10-year period 2007 to 2016, they were 9.5°C and 11.0°C respectively, an increase of 1.5°C. Temperatures recorded by the met. station at Stornoway (lat. 58.21, alt. 15m)

followed a similar trend: an average of 7.5°C during the 1880s, increasing to 9.0°C for the period 2007 to 2016 inclusive.

Temperature records for Leuchars (lat. 56.38, alt. 10m), the met. station nearest to our orchid meadow by Blairgowrie, are available for the 1960s onwards and show a similar warming trend. On average, temperatures at Leuchars are *c.*0.5°C lower than Durham and 2°C lower than Oxford (Fig. 1). However, it should be noted that Oxford sometimes has severe frosts. The average monthly minimum temperature for February 1986 at Oxford was -4.4°C, lower than any average minimum temperatures recorded over the last 60 years at either Durham or Leuchars. On one night in 1986 the temperature at Oxford was -15.3°C, and in 1980 it fell to -26°C, but only the tips of the leaves of Bee Orchid were damaged (Bill Temple, *pers. comm.*).

Bee Orchid at Oxford and Durham in the 1800s

In 1664 William Coles reported that Bee Orchids were “found in many places about Oxford” (Druce, 1886). In 1867, Bee Orchid was also reported by Baker and Tate from several sites in Northumberland (John Durkin, 2012. *County of Durham check list of vascular plants*). But, as far as I can determine, almost all early records for Bee Orchid in Northumberland were from sites close to the coast. The most inland site for Bee Orchid was Middleton-in-Row (lat. 54.29, alt. ca. 36m). However, since the 1980s Bee Orchid has been greatly extending its range in Northumberland (J. Durkin, *pers. comm.*).

Altitude, temperature and Bee Orchids

Altitude is relevant to this analysis because the met. station at Durham is 102m above sea level, and temperature decreases by *c.*0.6°C for every increase of 100m in altitude. Consequently, an average annual temperature in the 1880s of 8.0°C at Durham probably represented *c.*8.7°C on the Northumberland coast and 8.4°C at Middleton-in-Row. On this basis, I am assuming in this article that an average annual temperature of 8.4°C is close to the lower threshold for Bee Orchid. Average temperatures at Leuchars did not exceed 8.4°C until the

1990s, but have exceeded 9.0°C in the 2000s (Fig. 1 p. 33).

The met. station at Leuchars is on the east coast, at an altitude of 10m, and between 2007 and 2016 it had a 10-year average annual temperature of 9.0°C. Our meadow near Blairgowrie (lat.56.58) is at an altitude of 50m, so it would be expected to have an average temperature for the same period of *c.*8.7°C, probably still warm enough for Bee Orchid. However, a comparison in 2016 of the forecasted daily temperatures for Blairgowrie and Leuchars indicated that between January and September our meadow might be *c.*0.6°C cooler than Leuchars. Consequently, the average temperature of our meadow during the last decade might have been only 8.4°C, perhaps not quite warm enough for Bee Orchid?

Wider implications and conclusions

This analysis does not take account of the possible effects of year to year differences in annual average temperatures. The average temperature at Leuchars in 2010 was 8.15°C, compared with 9.8°C in 2014. Also, it is based on the assumption that the growth of Bee Orchid is directly temperature-dependent and that 0°C is the appropriate base for the temperature calculations produced here. The latter assumption seems unlikely, as the growth of Bee Orchid almost certainly requires temperatures higher than 0°C. However, using a higher temperature of 5°C as the base for calculating average temperatures only marginally affected the overall conclusions. Other factors besides temperature may affect the northward distribution of orchids, especially winter-green species. Winter day-length decreases with increasing latitude and there are other differences, including the soils *e.g.* chalk grassland and magnesium limestone are almost entirely absent from Scotland. Also, although the Bee Orchid is widespread throughout most of England, it is relatively uncommon in the south-west and in Wales, pointing to edaphic factors influencing its occurrence (see BSBI distribution map: <http://bsbi.org/maps?taxonid=2cd4p9h.5fd>). Even so, Bee Orchid distribution appears to be moving northwards in

response to increasing temperatures. Prior to the year 2000, it had not been reported from anywhere in Scotland. But since then it has been found at several sites, including near Port Seton (lat. 55.94, altitude *c.*10m), just south-east of Edinburgh (BSBI distribution map). It seems highly probable that it is now warm enough for it to colonise the eastern coastal strip of Scotland as far as Leuchars and probably beyond. The met. station at Nairn (lat. 57.95, altitude 23m) recorded an average of 8.79°C in the period 2007 to 2016, and Wick (lat. 58.45, altitude 36m), in the far north of Scotland, recorded an average of 8.28°C for the same period. On the west side of Scotland, Bee Orchid has only been reported as far north as near Ochiltree (Ayrshire, lat.55.43, altitude *c.*95m).

Several other orchids not found in Scotland have been reported on the east coast of Northumberland and north Yorkshire prior to the 1930s, *i.e.* before temperatures started to increase (see Fig. 1 p. 32). They include *Ophrys insectifera* (Fly Orchid), *Neotinea ustulata* (Burnt Orchid), and *Dactylorhiza praetermissa* (Southern Marsh-orchid) (BSBI distribution maps), none of which have been reported from Scotland. *Anacamptis morio* (Green-winged Orchid) and *Anacamptis pyramidalis* (Pyramidal Orchid) were present near Durham in the 1880s and both are now present in Scotland. Green-winged Orchid has now disappeared from the Durham area and is confined to one small area on the south-west coast of Scotland, whereas Pyramidal Orchid has a much wider distribution. It has been found on the east coast of Scotland near Arbroath (lat. 56.55), and on the west coast it is now found as far north as the Isle of Lewis (lat.58.16). Pyramidal Orchid was recorded from south-west Scotland prior to the 1930s but Green-winged Orchid is a more recent arrival.

The more northerly distribution of Pyramidal Orchid on the west coast of Scotland compared

with the east coast was probably facilitated by the west being warmer than the east. For example, Dunstaffnage (lat. 56.45, altitude 3m) is at almost the same latitude as Leuchars, but between 2007 and 2016 had an average of temperature of 9.6°C, 0.6°C warmer than Leuchars. Similarly, Stornaway (lat. 58.21, altitude 15m) between 2007 and 2016 had an average temperature of 8.8°C. This is 0.5°C warmer than Wick, which is on a similar latitude. It is surprising, therefore, that Bee Orchid has only been found in the west as far north as Ochiltree (lat.55.43, alt. *ca.* 95m). Inevitably, there will be a time-lag between when an area becomes favourable and its colonisation. However, even in the 1960s, the average temperature slightly further north at Paisley (lat. 55.85. alt. 32m) was 8.92°C and, in the decade 1972 -1981 (the first full decade for which data are available), Dunstaffnage had an average of 8.9°C, more than adequate for Bee Orchid? The restricted, southerly distribution of Bee Orchid in western Scotland is a reflection, perhaps, of the low probability associated with the natural long-distance spread of orchids (Trudgill, 2015). In this context, it is interesting to note that the second most northerly, east coast population of Bee Orchid is on the grass verge of the A1 near Torness (Brian Allan, *pers. comm.*) and may, therefore, have been ‘assisted’ in its northerly movement.

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Des Etangs' St. John's-wort *Hypericum* × *desetangsii* nothosp. *desetangsii* in Ireland

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Recently, on a rather quick tour of some places in Ireland with B.A. Tregale, I noticed a St. John's-wort (*Hypericum*) at the side of the road (M1372). This was *Hypericum* × *desetangsii* nothosp. *desetangsii* (Des Etangs' St. John's-wort). Later, on a road verge at Lough Bunny (R3896) another plant of the hybrid was seen. In *Webb's an Irish flora* (Parnell & Curtis, 2012), the hybrid is not mentioned and it only gives *Hypericum maculatum* (Imperforate St. John's-wort) in the key and text. In Stace (2010) the hybrid is given as 'rare in Ireland'.

In *Webb's flora*, for *H. maculatum*, the key and text describes the hybrid, not the species. I have been told by Paul Green that botanists

tend not to use this flora anyway. It seems that the majority of records for *H. maculatum* are from the southern half of Ireland, with scattered records elsewhere, and we did not go further south than Limerick. From the counties we were in, there seems to be a scattering of *H. maculatum* records, but these may need checking. While *H. maculatum* might be frequent in the south, perhaps it should be reviewed in Ireland?

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Determining *Montia fontana* L. (Blinks) subspecies habitat preferences using keyword analysis

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In the British Isles, *Montia fontana* L., a cosmopolitan species found in damp places throughout, has been divided into the four subspecies *fontana*, *chondrosperma*, *variabilis* and *amporitana* (Walters, 1953). Some attempts have been made at using plant morphology to differentiate the subspecies. Classon (1955) made a good attempt by including many excellent drawings and descriptions; however, sadly, did not follow the taxonomy of Walters (1953) and over-complicated the taxonomy by adding varieties to the subspecies. This leads to a lot of confusion and errors, although the morphological studies do show some promise. Poland & Clement (2009) and Poland (2007) made a good attempt, but stopped short by only differentiating between ssp. *chondrosperma* and ssp. *amporitana*.

Although ssp. *chondrosperma* can be morphologically separated from the others, as

is done in Jonsell (2001), Poland (2007) and Poland & Clement (2009), the examination of the surface of the seed remains the most reliable method for separating the subspecies. There are some indications that habitat can help. Walters (1953) notes that there is little doubt that preference for ecological habitats do exist for each of the subspecies. He further cautions that, until further studies are conducted, the extent of this correlation with habitat cannot be decided. In order to add to this knowledge, a review and analysis using keyword analysis of the data from the BSBI Database was conducted to determine if habitat preferences could be established.

A review of the available literature for *M. fontana* subspecies was conducted to determine the present understanding of habitat preferences. This review is summarised in Table 1.

Table 1.

	Walters (1953)	Jonsell (ed.) (2001)	Walters (1964)	Paiva & Villanueva (1990)	Sotek, Popiela & Kwiatkowski (2003)	Clason (1955)
<i>ssp. fontana</i>	Trickles of water or very wet places, on acid soil or rock only	Permanently wet places, slow running cold water, nutrient-rich, springs, pools, streams, lake shores, mires, seashores, ditches.	In water, or on mud or seasonally wet open ground, usually calcifuge.	Colonises ponds, backwaters of streams and water courses between 1200 and 3000 m.	Springheads poor in calcium carbonate, stagnant and slowly running waters and in mountainous springhead communities.	Rivers, streams, springs
<i>ssp. amporitana</i>				Fountains, streams, river banks, watercourses and wetlands.		Streams with clear water, brook valleys, on wells and marshlands, at gravel edges in pasture, in freshly dug pits and ditches.
<i>ssp. variabilis</i>				Not considered		
<i>ssp. chondrosperma</i>	Light acid soils, usually sandy or gravelly, with high water table at least in spring; only rarely more or less submerged in water, and then much modified in habit.	Moist Winter Wet Sandy Rock Pavement Coastal Grassland Sea Shore Wet Cliffs Rills Depressions Fallows Arable Fields	In drier places than the others, often on sandy ground or short, mossy turf.	Colonises habitats with lower humidity than the previous subspecies, edges of marshes, prairies and sandy, humid lands, rarely in water currents.	Temporarily flooded places and in wet arable fields.	Often forming tufts on bare earth, such as ditch edges and dredged ditches, in large numbers between grasses (also rye), also between mosses, sunny to light shaded places.

The data for *M. fontana* subspecies was downloaded from the BSBI Database (generally known as the DDb). This data was then imported into DB Browser for SQLite Version 3.7.0 (a free, open source GUI using SQLite).

A SQLite Query (see Appendix 1) was created and run to return the percentage of the total number of records for each keyword and key phrase for each subspecies. The results of this query can be seen in Table 2.

Table 2. Habitat keywords strongly associated with each subspecies.

Taxon	Associated habitats
<i>Montia fontana</i> ssp. <i>amportitana</i>	Flush / Stream / Damp / Path / Track / Wall / Mud / Pond / Wet / Wood
<i>Montia fontana</i> ssp. <i>chondrosperma</i>	Damp / Gravel / Sand / Turf / Lawn / Path / Track / Wall / Wet / Wood / Rock / Outcrop
<i>Montia fontana</i> ssp. <i>fontana</i>	Flush / Stream / Track
<i>Montia fontana</i> ssp. <i>variabilis</i>	Flush / Stream / Damp / Track / Wall

It needs to be borne in mind that the percentage is given as a Percentage of Total Records. The majority of records do not have comments that record the habitats, hence the percentages are very low.

Table 2 shows the habitat keywords strongly associated with each subspecies of *M. fontana* in the British Isles, as determined from the SQLite Query.

This unsurprisingly shows that ssp. *chondrosperma* has a preference for dry to damp, well-drained sandy and gravelly soil, lawns and turf. Ssp. *amportitana* seems to have an affinity for damp, muddy paths and tracks, and interestingly seems to have a strong association with woods and trees. Ssp. *fontana* and *variabilis* unsurprisingly show strong affinity for more aquatic and submerged habitats of flushes and streams. These results correlate well with that published in the literature.

While I was interested solely in *Montia fontana* subspecies here, it would be interesting to perform this operation on other taxa and infraspecific taxa to test for habitat preferences. The data held in the DDb are an untapped mine of information that, by applying appropriate tools, will yield useful information. Keyword analysis is one such useful tool that could throw up some important information.

I would be delighted and grateful to receive seed and plants from members of the BSBI for studies that I am conducting on *Montia fontana*. I would especially like to receive material from mainland UK. Please send seed or plants to the above address. I would also be delighted to

hear from anyone who is interested in similar data analysis. Please do not hesitate to contact me with queries, suggestions or comments.

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A further note on the Groundsel *Senecio vulgaris* ssp. *denticulatus*

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Previously, I had written a note about *Senecio vulgaris* (Groundsel) with the title ‘Should *Senecio vulgaris* ssp. *denticulatus* be a species?’ and provided new morphological evidence that suggested this could be the case (Wilcox, 2015). Originally, it was treated as a species, *S. denticulatus* O.F. Müll. Within this note, there was a short paragraph about the leaves from Crisp (1972), which described the dentition and leaf lobes:

“Leaf lobes: Crisp (1972) described the middle cauline leaves of ssp. *denticulatus* as having lobes semi-circular to triangular to oblong, margins fairly regularly bidentate, auricles often large, but otherwise variable, and outline oblong to spatulate. In comparison, other radiate forms have leaves with lobes triangular to oblong, margins usually irregularly dentate, auricles variable in size but

seldom large, and an outline oblong to rhomboid. (Personal correspondence, Richard Abbott).”

Looking at leaves this year to see what differences could be found, I did not think there was much difference in the leaf lobes. Leaves of a similar type and size tend to look similar and, although there was little difference in dentition to be of any note, the teeth tended to be more ‘hidden’ in ssp. *denticulatus* along the margins as the edges tend to curl under. The auricles can be small or large in either (see p. 39). Also, the arachnoid hairiness is variable in the ‘*vulgaris*’ group (Wilcox, 2015). The eligulate var. *crassifolius* (Sell & Murrell, 2006) is problematic, even as a variant. I have seen a rather arachnoid plant here in Bradford, but it was clearly ligulate (see Table 1).

Table 1

Character	<i>Ssp. denticulatus</i>	<i>Ssp. vulgaris</i> and its vars.
Seeds	(2.4-)2.5-2.8 mm – average 2.5 mm	(1.8-)2-2.2(-2.3) – average 2 mm
Hairs at apex of achene	Distinct fringe of hairs usually present	None to variable short fringe of hairs present
Pappus length	6-9 mm	5-6 mm
Supplementary bracts of capitula	Often linear-lanceolate (variable, but usually very narrow)	Ovate, ovate-lanceolate (very variable)
Habitat	Strictly coastal in the British Isles; other habitats quoted elsewhere in literature.	Var. <i>vulgaris</i> ubiquitous including coasts; var. <i>hibernicus</i> (always?) inland; var. <i>crassifolius</i> , see note above.
Leaf lobes	See note above (Crisp, 1972)	See note above (Crisp, 1972)
Leaves	Fleshy, thick, more-or-less strongly crimped, especially at the sinus, and margins curling under (slightly revolute).	Not fleshy, thin, often flat at the edges or, where crimped at the sinus, just down-turned, not curling under (not slightly revolute).
Chloroplast DNA haplotypes	A, B, C, E (Comes et al., 1997)	A, B, C (Comes et al., 1997).
Ligules	Usually ligulate (rarely not, check seed size); petaloid or sometimes very narrow (stick-like)	Var. <i>vulgaris</i> eligulate; var. <i>hibernicus</i> ligulate, always (?) petaloid even if small.
Flowering/fruitletting (UK)	Restricted period, mostly May	Can be found all year.

With the characters presented previously, which included new observations, namely the larger seed size with a more distinct fringe of hairs at the collar, and with the additional differences in the leaves observed here, there seems to be growing evidence to suggest that *Senecio vulgaris* ssp. *denticulatus* could be treated as a species again. Both *S. cambrensis* (Welsh Groundsel) and *S. eboracensis*, which essentially have the same parental origin, are treated as species, with less clear morphological differences. Like these two species, ssp. *denticulatus* has distinctly larger seeds than ssp. *vulgaris* (see p. 39). I rarely saw longer seeds in some herbarium material of what was thought to be ssp. *vulgaris* s.l. and I have wondered if some of these may have belonged to *S. cambrensis* or *S. eboracensis* or a similar plant (species) having arisen as one of these taxa before it was known this could be the case; and after the known wild escapes of *S. squalidus* in 1794 (Preston *et al.* 2002). However, Professor J. Kadereit comments: “Although I don't think that I would go along and accept ssp. *denticulatus* as a species, I believe there still is substantial overlap in morphological variation, and elucidation of phylogenetic relationships between the two is far from complete (the sample analysed is too small and the markers used are not sufficiently variable). Other findings, *i.e.*, presence (*denticulatus*) vs. (mostly) absence (*vulgaris*) of seed dormancy, and a substantially longer generation time in *denticulatus*, two characters where the differences have been shown to be allelic.” (pers. comm.) (and see Kadereit, 1984). Richard Abbott (pers. comm.) points out that Ren & Abbott (1991) showed that, while UK seed of ssp. *vulgaris* var. *vulgaris* lacks dormancy, Mediterranean seed of the same taxon exhibits strong dormancy.

Sell & Murrell (2006) re-combined *S. denticulatus* O.F. Müll. as *S. vulgaris* ssp. *denticulatus* (O.F. Müll.) P.D. Sell (n.b.: ‘Müll.’ is sometimes written: ‘Meull.’). At species level, the name *S. lanuginosus* has been used for ssp. *denticulatus* in the past, on some herbarium specimens I have seen from Jersey for example. However, that would

appear to be an illegitimate name (according to the International Plant Names Index (IPNI) – www.ipni.org). Perhaps more simply and correctly it would revert to *Senecio denticulatus* – its description in 1780 pre-dating the description of *S. lanuginosus* (C.A. Stace, pers. comm.).

Together with the additional chloroplast DNA haplotype (E) and other morphological characters presented, ssp. *denticulatus* is a reasonable candidate for species rank in this complex (often cryptic) group of taxa. However, “if in future the two subspecies are shown to represent different monophyletic groups, then there might be a good case to treat them as different species” (Richard Abbott, pers. comm.). Until such a time where further work at the genetic level could elucidate the relationships, then subspecies is the correct rank. I hope this note will at least encourage new interest.

Acknowledgements:

Thanks to J.W. Kadereit, R.J. Abbott and C.A. Stace for their comments, and to Phil Smith for providing leaves of *S. vulgaris* ssp. *denticulatus* from Ainsdale on the Sefton Coast (SD3013).

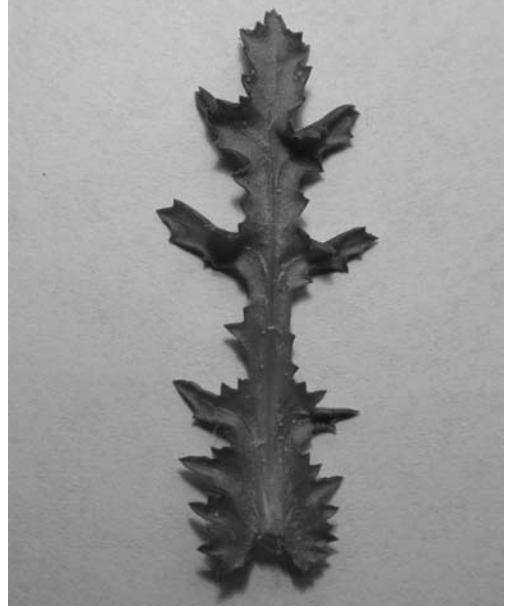
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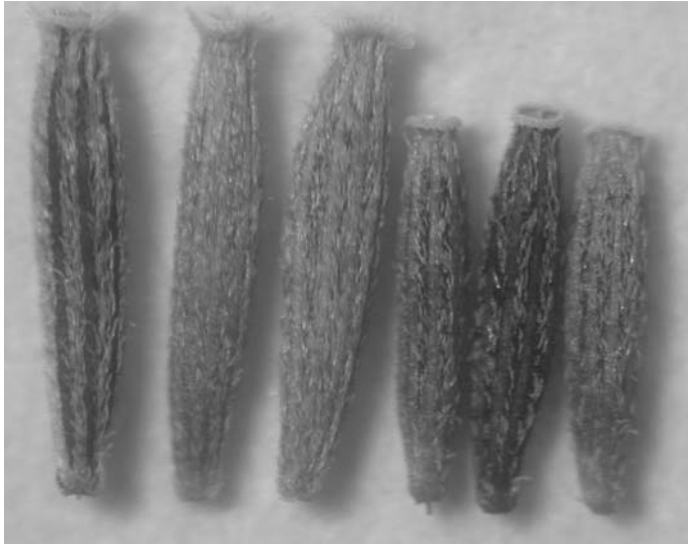
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Leaves of *Senecio vulgaris* ssp. *vulgaris* (right) showing ± flat margins, with teeth in outline (as seen from above, variable) and thin (less fleshy) leaves. Comparatively, *S. vulgaris* ssp. *denticulatus* (left) shows distinctly fleshier leaves with margins curling under (slightly revolute, as a result more crimped at the sinus); teeth mostly not showing in outline at the margins (although more so on the lobes, as seen from above).



Three seeds (achenes) of *Senecio vulgaris* ssp. *denticulatus* (largest 3 from the left), showing large size in all dimensions and the distinct fringe of hairs at the collar; average length 2.5 mm. Two seeds of *S. vulgaris* ssp. *vulgaris* var. *vulgaris* and one seed of var. *hibernicus* on the right; average length 2 mm.

Notes from Wisley (v.c.17): the host range of *Orobanchae hederae*

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While collecting material for a new Royal Horticultural Society (RHS) monograph on the genus *Hedera* (McAllister & Marshall, 2017), I had reason to study the host range of *Orobanchae hederae* Duby (Ivy Broomrape). This root parasite is considered to show strong fidelity to Ivy as a host and can most often be seen growing through carpets or alongside plants of *Hedera hibernica* (G. Kirchn.) Bean (Irish Ivy) (Foley, 2002). However, as testimony was gathered from RHS staff and other botanists, a fairly extensive list of alternative hosts was revealed. This is given below.

Ivy Broomrape is a member of the holoparasitic genus *Orobanchae*. There are 13 species of *Orobanchae* native to Britain and Ireland (Stace, 2010), several local and rare, and each with its own range of hosts. Ivy Broomrape is the longest-flowering species of the genus (Rumsey & Jury, 1991), observed to put up new spikes from mid-spring to November and even in the following January (Philip Oswald, pers. comm.), perhaps to fully exploit the photosynthetic resource of its evergreen host. *Orobanchae hederae* is found along the coast in south-west England, the Isle of Wight, Wales and Ireland, where it is the most common broomrape (Rumsey & Jury, 1991; Stace, 2010), and inland in the south-east of England (Foley, 2002), rarely occurring in Scotland. It also has a wide distribution in central and southern Europe, Asia Minor and North Africa (Kreutz, 1995). It has purple-reddish stems and sparsely hairy, creamy, purple-veined flowers. The buds at the top of each spike form a point (Fig. 1 Colour Section Plate 4). *Orobanchae hederae* is similar to the more common *O. minor* (Common Broomrape), which has also been observed to parasitise ivies, but the flowers of Ivy Broomrape cover more of the stem and, unlike in *O. minor*, are pinched near the mouth, with yellow, not purple, stigmas. The yellow Ivy Broomrape, *Orobanchae hederae* f. *monochroma* G. Beck, is an albino variant.

Besides Ivy, *Orobanchae hederae* has been recorded growing on a number of other genera belonging to the family *Araliaceae* (Frodin & Govaerts, 2004). Records of *O. hederae* growing on non-*Araliaceae* hosts are often due to the mis-identification of the parasite (Rumsey & Jury, 1991). The experimental finding that Ivy Broomrape parasitised *Trifolium pratense* L. (Jones, 1987) has not been repeated or observed in the wild. It has never been recorded parasitising *Aralia* (Frodin & Govaerts, 2004).

The table below contains the species that *O. hederae* has been observed to parasitise, along with where and when the interaction was observed, if this is known. One recent addition to this list is *Schefflera taiwaniana* (Nakai) Kaneh. A plant growing outside the Laboratory at RHS Garden Wisley was noted as hosting the parasite in June 2017 by Barry Phillips (Fig. 2 Colour Section Plate 4). It seems likely that it made the jump from a patch of *Hedera hibernica* Hibernica Group (Irish Ivy) growing a few metres away and upon which the parasite had previously been seen to occur.

The distribution of *O. hederae* is often given in literature as coastal, reflecting the wild distribution of the species usually thought to be its main host, *Hedera hibernica*. An alternative explanation, however, might be that the susceptibility of the roots of *O. hederae* to frost damage restricts its distribution to milder areas (Hugh McAllister, pers. comm.). With warmer weather generally, and particularly in towns and cities, this species has gained a foothold in wild and urban habitats away from the coast. *Orobanchae hederae* f. *monochroma*, which is common in continental Europe, has been recorded growing across inland Hampshire since 1979 (Brewis, 1990).

Exotic *Araliaceae* are increasingly popular garden plants. The greater number of records of *O. hederae* in the south-east suggests that the introduction of potential hosts to our public



Fig. 1. Dense population of *Teesdalia nudicaulis* (Shepherd's Cress), Woodvale, v.c.59. Photo P. Smith © May 2015 (p. 17)



Fig. 2. Extensive colony of *Teesdalia nudicaulis* (Shepherd's Cress), Woodvale airfield boundary, v.c.59. Photo P. Smith © April 2017 (p. 17)



Dactylorhiza purpurella (Northern Marsh-orchid) between the old and new A9 just north of Pitlochry v.c.88/89. Photo D Trudgill © 2013 (p. 20)



Ranunculus sceleratus (Celery-leaved Buttercup) flower in side view near Plymouth. Photo © David Fenwick ex APHOTOflora (p. 26)



Fig. 1. *Scleranthus perennis* ssp. *perennis* plants at the introduction site.

Both *Scleranthus* photos taken at Stanner Rocks, v.c.43 A Shaw © 2016 (p. 29)



Fig. 2. *Scleranthus perennis* ssp. *perennis* plants that have colonised rock ledges below the original introduction zone



Sporobolus indicus (Dropseed) - habit (l) and detail of inflorescence (r)

Both photos taken at Les Mielles Jersey by A. Haden © 2016 (p. 60)



Fig. 1. *Plantago lanceolata*, recorded from Topped Mountain, Co. Fermanagh, (v.c.H33), October 2004



Fig. 2. *Plantago lanceolata*, garden-grown at the authors address (2007) from seed collected in Kos, Greece, 2005



Fig. 3. *Equisetum telmateia*, recorded from roadside from Donagh to Dernawilt road, Co. Fermanagh (v.c.H33) in June 1998

All three photos © T. McCloughlin (p. 50)



Photo 1: *Galium murale* plant, with penny coin for scale. Note that the bristles do not cover the whole fruit and again the small size of the plant. Photo: A. Baker © 2017 (p. 59)



Photo 2: *Galium murale* in situ at the Cardiff site. Note *Veronica arvensis* and *Sagina procumbens* for scale, as well as the pale yellow-creamy flowers. Photo: J. Woodman © 2017 (p. 59)



Mitella ovalis, Uig, Skye.
Photo S. Gibson © 2017



Mitella ovalis detail of flower, Uig. Photo S. Bungard © 2017 (p. 61)



The King's Lynn Cucurbit, flower and fruit.
Both photos: C.R. Stevenson © 2016 (p. 57)



Hieracium villosum, Marsden Old Quarry, Durham, v.c.66.
Photo John Durkin © 2016 (p. 52)



Fig. 3. *Trifolium strictum* plants at the introduction site at Stanner Rocks, v.c.43.
Photo A. Shaw © 2016 (p. 29)



Arctotis aspera, near Heliport, Tresco with close-up of flower inset.
Photo D. Leadbetter © 2017 (p. 56)



Fig. 1. *Orobanche hederæ* showing buds at the top of each spike forming a point, Cambridge University Botanic Garden, v.c.29.
Photo P. Oswald © 2005 (p. 40)



Fig. 2. *Orobanche hederæ* on *Schefflera taiwaniana*, RHS Garden Wisley, v.c.17.
Photo R. Marshall © 2017 (p. 40)



Fig. 1. Hybrid butterbur: *Petasites albus* × *P. pyrenaicus*, in cultivation



Fig. 2. Seedlings of double-hybrid butterburs

Both photos taken in Suffolk by C.A. Stace © 2017 (p. 52)

Table 1. Taxa observed to host the holoparasite *Orobanchae hederae* and the sources of the records.

Host taxa	Records
<i>Eleutherococcus wardii</i> (W.W. Sm.) S.Y. Hu	Recorded (as <i>Acanthopanax wardii</i>) at Cambridge University Botanic Garden, first by Dr S.M. Walters (Crompton, 1982), subsequently recorded from 1982 to 1987 by Philip Oswald. After the <i>Eleutherococcus</i> was cut down Ivy Broomrape reappeared on the same site, parasitising <i>H. helix</i> ‘Glacier’ (at least 11 spikes in 1995). In 2008 re-landscaping began and Ivy Broomrape has not since been seen in this area. A cultivated plant of this species was also listed as a host by Frodin & Govaerts (2004).
× <i>Fatshedera lizei</i> (Cochet) Guillaumin	Two plants at Cambridge University Botanic Garden were found to be hosting 10 and 11 spikes each by Philip Oswald in 1989, and three spikes were observed in 2001. The plants have since been removed. Rumsey & Jury (1991) and Frodin & Govaerts (2004) also list this bigeneric hybrid as a host.
<i>Fatsia japonica</i> (Thunb.) Decne. & Planch.	Recorded at two sites in Cambridge University Botanic Garden by Philip Oswald. In 1988 some spikes were found on a plant in Bay 4, between the glasshouses. On the same plant 20 spikes were recorded in 1989, in 1992 new spikes emerged as late as October. Large populations of Ivy Broomrape were recorded on this host in 1995 and 2001. <i>Orobanchae hederae</i> was later recorded on a plant growing by some large plane trees. Both these hosts have since been removed. Ivy broomrape was discovered growing on this species by R. Ness at Maple Cross, Hertfordshire, in 2011 (identification made by Fred Rumsey) (James, 2011). Rumsey & Jury (1991) and Frodin & Govaerts (2004) also list this species as a host.
<i>Kalopanax septemlobus</i> (Thunb.) Koidz.	A plant at the Royal Botanic Gardens, Kew was observed to host Ivy Broomrape, some spikes reaching over a metre in height (Rumsey & Jury, 1991). Philip Oswald recorded Ivy Broomrape parasitising a plant in the Chronological Bed at Cambridge University Botanic Garden between 2007 and 2012.
<i>Hedera algeriensis</i> Hibberd	Recorded in a domestic garden in Surrey by Barry Phillips.
<i>Hedera canariensis</i> Willd.	Recorded by Hugh McAllister at the Royal Botanic Garden, Edinburgh. In 1996 Philip Oswald observed a clump of 10 and two single spikes on a plant at Cambridge University Botanic Garden. The ivy has since been removed.
<i>Hedera colchica</i> (K. Koch) K. Koch	Discovered by Richard Ward growing on the cultivar ‘Sulphur Heart’ (syn. ‘Paddy’s Pride’) in the research area of Cambridge University Botanic Garden in 1981 (Crompton, 1982). The broomrape persisted, some years in high numbers, on this host until the building was demolished in 2008 (Philip Oswald, pers. comm.). Philip Oswald recorded small clumps in the Winter Garden at the Cambridge University Botanic Garden in 1982 and 1983, growing on ‘Dentata Variegata’ (Oswald, 1983) and on a plant of ‘Sulphur Heart’ growing here in 1996. Spikes were recorded on this cultivar growing elsewhere in the Botanic Garden in 1997 and on an unlabelled cultivar by the vehicular access to the Garden in 1999 and 2001. Also recorded by Oswald on a variegated cultivar in the Ascension Burial Ground, Cambridge, in 2005. At RHS Garden Wisley this host was recorded growing by the Rock Yard (Phillips & Armitage, 2010).

Host taxa	Records
<i>Hedera helix</i> L.	Encountered many times in Cambridge, growing on typical and variegated plants at the Ascension Burial Ground and at the University Botanic Garden by Philip Oswald, including a large population at the foot of a <i>H. helix</i> -covered wall by the drive of the Superintendent's house (200–250 spikes, including one pushing up tarmac, were recorded in August 1991). Oswald also recorded new spikes on <i>H. helix</i> 'Buttercup', 'Glacier', 'Lutzii', 'Meagheri' (emerging from June to November in 1982) and 'Sagittifolia Variegata' in the Winter Garden from 1982 to 1999. Spikes were recorded to begin emerging from May in 1991. No Ivy Broomrape could be seen parasitising ivies in the Winter Garden this year. This species was also observed to host <i>O. hederæ</i> on private land in Bedfordshire by Roger Cope in June 2017. Ivy Broomrape was found on the cultivar 'Erecta' in Bowles's Corner at RHS Garden Wisley by James Armitage in 2016.
<i>Hedera hibernica</i> (G. Kirchn.) Bean	The common host recorded in the wild (Foley, 2002). Outside its natural range <i>O. hederæ</i> is still most commonly found on the widely cultivated form known as Irish Ivy, <i>Hedera hibernica</i> Hibernica Group. This is the most frequent host recorded around Cambridge (Philip Oswald, pers. Comm.)
<i>Hedera iberica</i> (McAll.) Ackerf. & J. Wen	Recorded at Royal Botanic Garden, Edinburgh by Hugh McAllister. The source may have been a plant given to the garden by Alison Rutherford. However she has never observed the parasite growing in her own garden near Glasgow or the local area (Hugh McAllister, pers. comm.).
<i>Hedera maroccana</i> McAll.	Recorded parasitising the cultivar 'Spanish Canary' at the Generalife Gardens, Granada, Spain, by Alison Rutherford.
<i>Hedera rhombea</i> (Miq.) Siebold ex Bean	Recorded at Cambridge University Botanic Garden, in the Terrace Garden, in 1996 by Peter Sell and Philip Oswald.
<i>Schefflera taiwaniana</i> (Nakai) Kaneh.	Recorded on a plant in the Laboratory Borders, RHS Garden Wisley by Barry Phillips in 2017.
<i>Trifolium pratense</i> L.	This host/parasite interaction was artificially induced by Jones (1987).

spaces and gardens has affected this parasite's distribution. How the root parasite has found the new hosts is unclear. Wind dispersal of seed or deliberate or accidental introduction could be responsible.

We would be interested to receive notes of any additional ivy broomrape hosts to add to this list.

Acknowledgements:

I am very grateful to all those who have contributed their observations, especially for the detailed records of Ivy Broomrape in Cambridgeshire that Philip Oswald has recounted for this article.

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Aerial botany – taking botanical field work to the next level

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Some years ago, in fact many years ago, when I was BSBI Co-ordinator, I recall sitting on a panel at a BSBI annual meeting with Chris Preston and Trevor Dines discussing the future of botany in the new millennium. For some reason, the fact that I was to sit on this panel and give a short presentation had escaped me, so it came somewhat as a surprise when I was called to the front table. Fortunately, I managed to waffle on about computerisation of botanical records, or something like that.

This was in the days when most people *did not* have a computer. What I nor the others envisaged was how far technology would progress over the next two decades. In the heady, pioneering days of computerising vice-county records (and v.c. recorders!), who would have thought that, one day, one could carry round a small telephone with significantly more computing power than the average desktop computer of the time, upon which one could make both written and audible notes, take photographs, read OS maps and mark one's location using GPS, whilst playing games and communicating with friends and acquaintances through manifold social media! Smart phones were not designed for botanists, but they certainly are useful.

But that is old news. If, perhaps, the advent of the smartphone *was* predictable, who could have possibly predicted that one day, one could fly a small aircraft up the side of a cliff face or across other difficult terrain, take geo-referenced photographs of individual plants and map habitats and vegetation to a high resolution? Well, that day is here. I am of, course, referring to drones, or, to use the official term, small unmanned aerial vehicles (SUAVs).

Few of us could have missed the bad press that these ubiquitous machines have received. But we only ever tend to hear the bad things. The potential and actual uses of drones is increasing year on year, month by month. Botany is a little way behind (as always, some might say), but I and one or two other operators, perhaps because we are also professional botanists, have started to explore ways in which this new technology can assist in our work.

On a personal level, I mainly use drones as a tool to aid my ecological survey work. For example, I have been able to survey large areas of moorland using an automated flight programme and create large (>200Mb), high resolution orthophotos. An orthophoto is essentially a series of smaller photographs, taken to cover a pre-defined area using an automated grid pattern, where each individual photo has at

least a 75% overlap with the ones adjacent. These photographs are then stitched together using specialist software and a map produced. Because each of the photos is geo-referenced using the drone's built in GPS, so is the map that is ultimately produced. It can therefore be overlain onto other maps or imported into a GIS setup. Pretty amazing, really!

You can see an example of a high resolution orthophoto at: <http://bit.ly/2t2uB6z>, overlain onto a regular aerial photograph. I think you will agree that the difference in quality between the orthophoto and the regular aerial photo is quite remarkable. Try zooming in and out or doing a 'manual flyby' to get the full effect. To put it into context, orthophotographs such as this have a resolution of a few (usually around 4-5) centimetres on the ground per pixel on screen, whereas Google Earth can only boast a resolution of fifteen metres per pixel, on average. This particular orthophoto was produced from flying at an average height of 80m above ground level. Obviously, flying lower gives a higher resolution, although of course one must be aware of obstacles, such as trees or hill-sides, so there is a bit of a trade-off needed.

But there is more. Not only can you produce flat georeferenced orthomaps, because each photo overlaps in an angular way due to camera parallax, you can also produce a georeferenced 3D model of the same area. You can see an example via the following internet link: <http://bit.ly/2sIIZOF> (n.b.: this is a low-resolution version – full resolution 3D models take a lot of computing power and are difficult to host online, but you get the idea).

So, these are a couple of very useful applications for starters. Another is searching large areas of inaccessible land, such as steep, rocky mountains or cliff sides, when, for example, one is searching for a particular species of plant (see Back cover, photos 1&2). This would have been useful for a survey of *Salix*

lanata (Woolly Willow) I conducted in the Scottish highlands a number of years ago. Another is exploring habitats which may otherwise be somewhat difficult to get to – large areas of marshland or wet mire spring to mind. A recent example of a rare plant find using a drone in Hawaii (NTBG, 2017), can be found at: <http://bit.ly/2tVzLOT>.

Until now, the only way to reliably survey difficult upland areas or cliff sides has been via climbing, often requiring specialist climbing equipment, such as ropes and harness, and, of course, rock climbing skills. To survey extensive areas of wet mire may require lengthy bouts of wading, swimming, or perhaps even a boat. Now, you can just fly there, take some photos, and fly back again! Using FPV (First Person View) goggles can even make it an immersive (no pun intended) and exciting experience, akin to actually flying in the drone yourself.

OK, so it is a bit more complicated than that, and you cannot (yet) take voucher samples using a drone, but it is not *too* complicated and you can at least explore large areas of habitat relatively quickly and target the areas you need to look at more closely, saving lots of time and effort in the long run.

That is just a very quick overview and it is a method of botanical or ecological survey that is still very much in its infancy. But I thought I would put it out there, hopefully to stimulate some interest and discussion, as well as perhaps generate some ideas for projects or other applications that might be worth exploring. Space is limited here, but do please get in touch if you want any more information or have any suggestions in that respect.

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Editor's note

This must be one of the most exciting developments for field botany in recent years. Whilst an undergraduate in the 1960s, struggling with seeking out inland populations of *Silene maritima* (as it was then

called) I remember dreaming of how useful it would be if I could fly over putative sites rather than have to plunge through vegetation, more often than not of a thorny or prickly persuasion; drones would have fulfilled that dream! **GE**

***Plantago maritima* (Sea Plantain) as a roadside halophyte - a GIS based analysis**

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Plantago maritima (Sea Plantain) is described as a “perennial herb of the middle and upper zones of saltmarshes, coastal turf, rocks and cliffs, on coastal heaths and occasionally on shingle beaches and inland saltmarshes. In the uplands, it is found in species-rich pastures, on stream banks, rock ledges and scree, and in stony flushes” (Kay, 2002). Early references to it occurring inland as a roadside halophyte include Webster (1978) in her Flora of vice-counties **95** and **96**, and Scott & Davison (1982) in north-east England. Kay (2002) says that it “has spread on the verges of salt-treated roads, especially in Scotland, but this is barely evident at the 10-km scale”.

I only recorded *P. maritima* on roadsides in four monads in Banffshire (v.c.**94**) between 2001 and 2014. In 2014 and subsequently, most of my plant recording was targeted at locations in Moray (v.c.**95**) and especially the eastern half of East Inverness-shire (v.c.**96**). Here, I recorded *P. maritima* between 2014 and June 2017 in 85 inland monads. Of these inland occurrences, 83 monads were records from road verges, the remaining two monads were records of single plants on tracks. My subjective impression is that the abundance of *P. maritima* on road verges in my home area (Strathspey) has increased markedly in recent years. What was once something of a novelty is now a locally abundant component of the road verge flora.

Atlas 2000 mapped all hectad occurrences of *P. maritima* as native, in contrast to other

roadside halophytes, e.g. *Puccinellia distans* (Reflexed Saltmarsh-grass), where roadside populations were mapped as alien. I therefore decided to investigate the potential of using a GIS-based analysis to identify that part of the distribution of *P. maritima* that was associated with the road network. The analysis is restricted to Great Britain, and excludes the Isle of Man, Channel Islands and the whole of the island of Ireland.

Excluding duplicates, 56% of the records of *P. maritima* from Great Britain on the BSBI Distribution database (DDb) are at monad or better precision, while 82% are at tetrad or better precision. I therefore opted to conduct the analysis at tetrad scale. A list of all tetrads with occurrences of *P. maritima* (irrespective of date) was downloaded from the DDb. This dataset was imported into QGIS as individual tetrad polygons using the Tom.bio plugin (Burkmar, 2014). QGIS is a free open-source desktop geographic information system (GIS) that allows viewing, editing, and analysis of spatial datasets. The tetrad occurrences of *P. maritima* were overlain over five individual data layers, Coastline (MHW), Motorways, A roads, B roads and Minor roads. These data layers are part of the 1:50,000 scale vector mapping Ordnance Survey Meridian 2 dataset. Tetrads which intersected the coastline and each of the road network layers were identified using QGIS’s spatial query tools (Table 1).

Table 1. *Plantago maritima* tetrads intersecting coastline and road network.

Feature	Number of intersecting tetrads (total = 6885)	Percentage of GB tetrad range intersecting feature
Coastline (MHW)	5032	73.09
Motorways	56	0.81
A roads	2270	32.97
B roads	1576	22.89
Minor roads	4389	63.75
Not intersecting with coastline or any roads	542	7.87

Query results were exported to Excel and combined into a single worksheet. Individual tetrads can intersect with more than one

feature; therefore a simplified classification was adopted, assigning each tetrad to one of three categories (Table 2).

Table 2. *Plantago maritima* tetrads intersecting coastline and road network. Summary classification.

Feature	Number of intersecting tetrads (total = 6885)	Percentage of GB tetrad range intersecting feature
Coastline	5032	73.09
No coast, no road	542	7.87
Road, no coast	1311	19.04

At tetrad scale, 73% of the range of *P. maritima* intersects the coastline and is inferred to be native. A further 8% of the range intersects neither the coastline nor any part of the road network, and is also (provisionally) inferred to be native. The remaining 19% of the tetrad range intersects the road network and does not intersect the coast. This is (provisionally) inferred to refer to roadside halophyte populations, that, *sensu* Atlas 2000, are alien. This figure is an upper estimate, as tetrads with native populations occurring in semi-natural (non-coastal) habitats, but which also intersected the road network, would be recorded within the 'Road, no coast' category.

The tetrad scale analysis was scaled up to hectad level (Table 3), assigning each of the

1,295 hectads within which *P. maritima* has been recorded (at tetrad scale or better) to one of three categories: hectads containing any tetrad intersecting the coastline; hectads containing any tetrad intersecting neither the coastline nor any part of the road network; hectads with all tetrads intersecting the road network and none intersecting the coast. Additionally, there are 112 hectads in which *P. maritima* has been recorded, but with grid reference precision only at hectad level. These are mostly pre-2000 records from Atlas datasets, and were divided into two categories, hectads intersecting the coastline and those that did not.

Table 3. *Plantago maritima* hectads intersecting coastline and road network.

Feature (tetrads in hectad contain)	Number of hectads (total = 1,407)	Percentage of GB hectad range intersecting feature
Any with Coastline	992	70.5
Any with No coast, no road	85	6.04
All with Road, no coast	218	15.49
Hectad only precision intersecting coastline	53	3.77
Hectad only precision not intersecting coastline	59	4.19

Fig. 1 (p. 47) shows the distribution of *P. maritima* in Great Britain with hectads (cropped to the coastline) assigned to one of three categories: 1) Native (hectads with one or more tetrad scale records intersecting the coast, or neither intersecting the coast nor any part of the road network), or (hectads with only hectad precision records) the hectad intersecting the coastline; 2) Mainly non-native

(hectads with all tetrad scale records intersecting the road network, and none intersecting the coastline); 3) Unassigned (hectad precision records only, not intersecting the coastline); the majority of these are likely to refer to roadside halophyte populations.

Non-coastal native populations of *P. maritima* are shown to be mainly restricted to oceanic areas of western Scotland,

extending eastwards into parts of vice-counties 88, 97, 106 and 107. Native populations are correctly identified in a few hectads in northern England, where non-native populations now appear to dominate. Roadside halophyte populations are shown to be extensive across almost the whole of v.c.96 and parts of v.c.c.95 and 94, forming a larger contiguous block of records. Presumed roadside halophyte populations are also shown to be widespread in south-west Scotland and in northern England, with a scatter of hectad records elsewhere.



Fig. 1. Hectad distribution of *Plantago maritima* in Great Britain. Grey squares = assumed native distribution; black squares = mainly non-native (mainly roadside halophyte); black circles = unassigned status (mainly non-native roadside halophyte populations). See text for discussion.

Not surprisingly, the tetrad scale analysis does mis-allocate some hectads. The isolated hectad in Staffordshire shown as non-native, actually refers to a native population in a remnant saltmarsh (Hawksford & Hopkins, 2011), but where the record (at tetrad precision) overlaps with a nearby road. The concentration of hectad records shown as non-native in Cornwall refer to populations of *P. maritima* growing on former mine sites, particularly tin and copper mines (Colin French, pers. comm.).

In conclusion, around 19% of the range of *P. maritima* in Great Britain, at both tetrad and hectad scales, is associated with the road network. Kay's (2002) statement that the colonisation of verges of salt-treated roads is barely evident at the 10km scale is no longer correct. The rapid increase in abundance and frequency of this species alongside roads in parts of Scotland, and the wide scatter of records elsewhere, suggests that this species may well continue its spread along the road network.

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The problem of true-breeding so-called hybrids

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Botanising in an old meadow just south of the River Coquet (South Northumberland), a group from the Natural History Society of Northumbria recently encountered a localised population of an unfamiliar grass in a patch which may have been re-seeded. Reference to the literature showed that they were referable to a brome known as '*Bromus pseudothominei*' (Lesser Soft-brome). It is evident that this taxon is familiar to botanists to the south, and indeed to the north, of us, but our county has received only a handful of records, a relative absence which appears to be genuine. In an area where *Bromus hordeaceus* L. ssp. *hordeaceus* (Soft-brome) is common and widespread in this habitat, we found '*pseudothominei*' distinctive and interesting.

Quite what this taxon represents has taxed most authorities, without reaching a firm conclusion. Most recently, Stace *et al.* (2015) regard it as a hybrid between *B. hordeaceus* and *B. lepidus* Holmb. (Slender Soft-brome), while stating "treatment ... as *B. hordeaceus* subsp. *pseudothominei* (P.M. Sm.) H. Scholtz might prove preferable". Meanwhile, Cope & Gray (2009) treat '*pseudothominei*' as a synonym for *B. hordeaceus* ssp. *hordeaceus*, a conclusion that we find surprising.

What, perhaps, is even more surprising has been the general acceptance of this taxon as a hybrid. This apparently dates from the work of Philip Smith (1968, 1973) who artificially created hybrids between *B. hordeaceus* and *B. lepidus*, which were apparently indistinguishable from '*pseudothominei*'. However, it is vanishingly unlikely that '*pseudothominei*' is a primary hybrid, for the following reasons:

It is an annual grass which is predominately self-fertilised (Smith, 1968), so opportunities for hybridity should be rare.

It is apparently true-breeding (the population we encountered appeared to be uniform), but were it a hybrid, the (mostly selfed) F2 would be expected to segregate out the characteristics of their putative parents.

One putative parent, *B. lepidus*, does not occur in many areas where the hybrid is frequent (*B. lepidus* is absent from 46% of the British hectads from which '*pseudothominei*' has been recorded. (Stace *et al.*, 2015).

It is important to emphasise that a hybrid annual will not normally breed true and will need to arise *de novo* in each generation. There are, however, two conditions that allow a hybrid to breed true: allopolyploidy, as in *Senecio cambrensis* (Welsh Groundsel) or *Spartina anglica* (Common Cord-grass); and reciprocal interchange balanced heterozygosity, which in our flora is limited to *Oenothera*. One should note that '*pseudothominei*', *B. lepidus* and *B. hordeaceus* are all tetraploids ($2n = 28$), so '*pseudothominei*' is not an allopolyploid, at least from these parents.

Clearly, '*pseudothominei*' should be recognised either at the rank of subspecies (*B. hordeaceus* ssp. *pseudothominei*) or as a species, *B. pseudothominei* P.M. Sm. I would argue that, in the context of the genus *Bromus*, in which a number of species are separated by relatively few morphological differences, that the latter solution might be preferable. I am told that, as this latter combination exists as a hybrid binomial, it does not require formalisation.

Atriplex

The afore-mentioned arguments apply equally to two hybrids of *Atriplex longipes* Drejer (Long-stalked Orache), which are appearing with increasing frequency on the coast of north-east England: *A. ×gustafssoniana* Tascher. (Kattegat Orache) and *A. ×taschereaui* Stace (Taschereau's Orache). In these cases, it is more difficult to make a convincing case for the true-breeding nature of the hybrids. This genus displays high levels of phenotypic plasticity, so that key characteristics of bract-ole length and shape, pedicel length and leaf-shape vary hugely even within a plant. Gustafsson (1973) for *A. ×gustafssoniana* and

Taschereau (1985) working with *A. ×taschereaui* show that the hybrids are fertile and segregate very variable back-crosses and F2 selfs. However, anecdotally, I suggest that in the wild these hybrids can behave like species, forming patches of relatively uniform plants, which have come from seed. The dwarf variant *v. kattedgatensis* (Turesson) Tascher. of *A. gustafssoniana* has been shown to be true-breeding and invariable at times (Taschereau, 1985).

Further, the natural history of these annual oraches suggest that *de novo* hybridisation in the field (as against the experimental greenhouse) must be a rare event. In the light of reports of protogyny and gynomonoeicy in *A. longipes* (Taschereau, 1985), it seems likely that the inflorescences protected within relatively ‘floppy’ bracteoles of that species must receive some out-crossed pollen. However, the other putative parents, *A. glabriuscula* Edmonston (Babington’s Orache) and *A. prostrata* Boucher ex DC (Spear-leaved Orache) appear to have an effectively cleistogamous mating system, precluding much out-crossing.

More convincingly perhaps, both presumptive parents have been recorded from only 7% of the British hectads containing *A. ×taschereaui*, while the comparable figure for *A. ×gustafssoniana* is 26%. Surely, if these annual taxa were hybrids, one would expect that both parents should co-exist where the hybrid occurs? Although strand-line populations show some mobility, it is stretching credulity too far to suggest that all hybrids originate from the few areas where the parents co-exist (and *A. longipes* is rarely a strand-line plant). Once again, it would be possible to treat these taxa at specific level (*A. gustafssoniana* and *A. taschereaui*) without recourse to formalisation.

A suggestion

There is a striking similarity between the histories of the hybrid taxa discussed above, namely that researchers artificially created interspecific hybrids, which were then found to resemble closely some undescribed naturally

occurring plants. In all these examples, the annual habit, autogamous breeding system, true-breeding offspring and frequent absence of one putative parent made it extremely unlikely that these wild plants were actually of this *de novo* hybrid origin. Nevertheless, this hybrid diagnosis has been rather uncritically adopted by successive generations of botanists.

Just because a deme (to use a dated but useful term) falls between two accepted species morphologically, it does not follow that it is of hybrid origin between them. It might be possible to prove (or disprove) such an origin using molecular techniques, but as far as I am aware this has not been investigated in the present cases.

Rather, in autogamous complexes such as *Bromus* and *Atriplex*, one would expect a number of poorly separated true-breeding lines will occur, the distinctions between which may not be as clear-cut as taxonomists would wish. The taxonomic rank at which such lines (demes) should be described is a matter of judgement, taste and usage, but they should not be regarded as hybrids!

Acknowledgement:

My thanks to Professor C.A. Stace for advice on a nomenclatural matter.

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The problem with split ends: split meristem growth distortions in plantains and giant horsetails

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Botanising throughout the British Isles and Europe, down the years I have recorded aberrant ‘forms’ of individuals within populations of both flowering and non-flowering plants. Very often, such aberrations are so obvious that my children (primary school age-group) can even spot them, and none are so obvious as those involving a split meristem of the inflorescence, because the inflorescence will be doubled or trebled and stand out as something quite different. When a child thinks of a ‘flower’ it is usually an anterior structure on a single simple peduncle, in other words the result of the stem apical meristem (SAM). Changes to the SAM can lead to reversions, proliferations, of floral parts. However, such changes can be brought about as a result of pathology – damage done to the plant as well as genetic sports.

Heslop-Harrison (1952) remarked that the best of the 19th and 20th century teratological studies are those of Moquin-Tandon (1841), Masters (1869), Penzing (1921/23) and Worsdell (1915/16). He concludes that many types of structural anomaly have been listed as teratisms, including relatively minor departures from the presumed normal forms of species in numbers, positions and shapes of organs, and may be regarded as no more than extremes of the normal range of variation. As Goebel (1897) stated: “We cannot say where a normal structure ends and an abnormal one begins, both being connected by the most imperceptible transitions.” One difficulty, of course, lies in the concept of the ‘normal’, which is always to a large extent arbitrary. It is perhaps a truism that ‘normal’ can never in actuality signify the ‘average’ condition in a population.

There are two main ‘causes’ of a split meristem in the wild: i) physical damage from human activity or animal mouthparts; ii) an external influence causing an interruption of the genetic activity; and iii) genetic mutation,

often reversion resulting in phyllody. If the meristem is split in many plants into two tips, both grow and differentiate. The degree of the cleavage and the point at which it stops would appear to be critical, as continuing experiments have yet to yield the optimal width and length of cut required to produce double-heading. This might seem to present a simple picture, and were my experiments to work, a simplistic model might be suggested. However, I doubt such a picture exists. Physical damage can do much more than splitting the meristem. In the case of galls, species of wasp, midge or mite cause a new structure to form altogether, made from the plant tissue, apparently resulting from a ‘re-programming’ of sorts. In one specimen of *Plantago lanceolata* (Ribwort Plantain) (Fig. 1 Colour Section Plate 2), it is more complicated than a mere doubling or trebling of the flower-head, since a new rosette of leaves has formed at the end of the peduncle, from which three small inflorescences emerge ‘as normal’. This seems to display an alternative gene expression, since a whole plantlet has been produced. Interestingly, this appears to mimic another species of *Plantago* – *P. afra* (Glandular Plantain), last observed by me in Cyprus in 2004. Here, the inflorescence is branched at a certain distance on the peduncle, with bracts in evidence. It seems that the specimen in Fig. 1., from Fermanagh, may have been altered at a critical point in its development, producing leafy growths, which is one type of reversion. From time to time, I have observed *P. lanceolata* with individual floral reversion but, unfortunately, not always having a camera with me. It would be interesting to see if *P. lanceolata* could be induced to produce single inflorescences.

The specimen in Fig. 2 (Colour Section Plate 2) is more typical of the kind of split meristem phenomenon, where multiple inflorescences appear without leafy growths. What is curious is that the inflorescences appear to be different

sizes, suggesting different times for the damage to have taken place. However, the main central inflorescence appears ‘fully normal’, which would not have been expected had the main inflorescence formed and then been damaged. A very similar type of split meristem phenomenon was also observed in *P. media* (Hoary Plantain) in Slovenia, on the shore of Lake Bled in 2009. A drift of *P. media* under tree cover was affected to the degree of 40% of individuals.

Finally, a perfectly symmetrical five-pointed inflorescence, four in the lateral plane and one in the ventral plane, of *P. lanceolata*, with leaflets or bracts set between, underscores my wonderment at how an ‘error’ might achieve a symmetrical form. Certainly, plants have a plasticity that affords extensive variation, which, when tweaked by insects, increases the multiplicity of form. Thus, Rutishauer & Isler’s (2001) review of Arber’s ideas on plant morphology seems prescient. The *Equisetum telmateia* Ehrh. (Great Horsetail) in Fig. 3 (Colour Section Plate 2) is the result of probable insect damage, following an early verge cut, and it is the only example of a horsetail in this condition. However, the SAM of a strobilus of a member of the *Equisetopsida* is something in need of further study of itself, but the result of damage to the SAM exhibits the same pattern or result as in the *Magnoliidae*.

I would be grateful if members could forward reports of their oddity finds to appear in a forthcoming book in 2020.

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‘Ghost ponds’

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I thought members might be interested in a recently published paper concerning ‘ghost ponds’ – infilled agricultural ponds – as the findings present some positive news, always worth celebrating. Researchers at UCL found that at least eight aquatic species, including several Charophytes, were capable of germinating from seeds or oospores following 50–150 years of dormancy in sediments, demonstrating that aquatic plants are capable of surviving prolonged burial under intensively managed agricultural fields.

The paper, by Alderman *et al.* (2017), can be downloaded at:

<http://www.sciencedirect.com/science/article/pii/S0006320717304342>.

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The new natural hybrid *Petasites japonicus* × *P. pyrenaicus*: a post-script

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Desjardins *et al.* (2016) reported the existence of a new hybrid butterbur, *Petasites japonicus* × *P. pyrenaicus* (*P. fragrans*), naturalised near Hayward's Heath, East Sussex, having escaped from the gardens of Borde Hill.

Reference was made in that paper to a long series of artificial hybridisations carried out by C.A.S. between five species of *Petasites* (the four in our flora, plus *P. paradoxus* from the Alps), from which mature F₁ plants were obtained in nine of the ten possible combinations. Moreover, all of these interspecific hybrids were highly fertile, reproducing among themselves to produce hybrids with three- and four-parent species in their constitution.

The Borde Hill hybrid (female plant) has flowered in my garden for the past two years. In 2016, it was grown in isolation and did not

set seed. In 2017, it was grown by chance next to a male plant of the artificial hybrid *P. albus* × *P. pyrenaicus*, and it set abundant seed (Fig. 1 Colour Section Plate 4). As far as I know, no other male plants of the genus grow nearby (*P. japonicus* about one mile away; *P. pyrenaicus* about 2.5 miles away). Some seed produced by the Borde Hill F₁ was sprinkled on compost and it soon germinated freely 'like mustard and cress'. The seedlings that are now developing (Fig. 2, Colour Section Plate 4) must have the parentage (*P. japonicus* × *P. pyrenaicus*) × (*P. albus* × *P. pyrenaicus*); female parent given first in all three formulae.

Reference:

DESJARDINS, S.D., HOARE, A.G. & STACE, C.A. (2016). 'A new natural hybrid in the genus *Petasites*: *P. japonicus* × *P. pyrenaicus* (Asteraceae)'. *New J. Bot.*, **6**: 64-70.

A new naturalised Alpine hawkweed, *Hieracium villosum* Jacq.

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Sell & Murrell (2006), in their account of hawkweeds occurring in Britain, only included two woolly, decorative, non-native alpinines, *H. lanatum* and *H. pilosum*. However, Gordon Graham (1988) in his *Flora and vegetation of County Durham*, included *H. villosum*, which had been known for many years, naturalised on rock ledges in Marsden Old Hall Quarry (NZ396664). John Durkin collected fresh material and that has now been checked against authentic material in **RBGE** (see Colour Section Plate 3).

Confusion is possible between these three species and a key follows:

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Key to three naturalised alpine hawkweeds

- | | |
|--|-----------------|
| 1. Plant with more-or-less plumose hairs | <i>lanatum</i> |
| 1. Plants only with simple hairs | 2. |
| 2. Cauline leaves (2)3-6; outer phyllaries appressed | <i>pilosum</i> |
| 2. Cauline leaves (2)4-8(15); outer phyllaries squarrose | <i>villosum</i> |

Adventives & Aliens News, 12

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In February 2017, Angus Hannah kindly informed me of the recently discovered presence of *Hypolepis ambigua* (A.Rich.) Brownsey & Chinnock (Pig Fern) on the Island of Bute (v.c.100). This fern, endemic to New Zealand, was first noted in March 2016 and has now been found in at least eight monads (three hectads) in open areas in both deciduous woodland and “recently felled Sitka Spruce plantation”. Intriguingly, Angus comments that the fern is “not known in cultivation in Britain, but probably occurs as a fernery weed”. For a full account of this exciting discovery, I would direct members to the Scottish Newsletter on the BSBI website, or see *The Scottish Newsletter*, **39**: 12-14, 24.

While on the subject of alien ferns, I would like to correct a mistake, which appeared in *Adventives & Aliens News* 10. The record for *Blechnum penna-marina* (Little Hard-fern) published there for W. Mayo (v.c.H27) is not the first for Ireland. The first Irish record, and the first for Britain and Ireland as a whole, was for W. Donegal (v.c.H35) in 1926! My apologies.

After the appearance of my note on *Cynoglossum amabile* (Chinese Hound’s tongue) (*BSBI News* **134**: 47-48), two recorders contacted me with two more records, neither of which were to be found in the Distribution Database at the time. I have included them below for the sake of completeness (see v.cc.5 & 57), although one has already been published in a county flora.

If the Kent records (see v.cc.15 & 16) are representative of the situation at large, and it is an interpretation reinforced by the BSBI hectad maps, then it is evident that both *Hypericum hircinum* (Stinking Tutsan) and *H. ×inodorum* (Tall Tutsan) do maintain a significant presence in the wider environment after all (see *Adventives & Aliens News* 5), although it is still far from clear to me which, if either of them, does so most successfully. It probably depends on which gets into a likely

spot first and therefore on which boasts the most efficient vector (does not the greater fertility of *H. hircinum* confer an advantage in this respect?), or is most commonly cultivated. Feedback please! Is the national picture further complicated by a degree of misidentification? Another interesting development in this still evolving story comes in the shape of a record of *H. hircinum* ssp. *cambessedesii*, which has recently come to light in Cornwall (see v.c.1), the usual one with us being ssp. *majus*.

The pure white of the open flowers of *Symphytum orientale* (White Comfrey) are well-known. Is it as well known that, when in bud, those same flowers are a very pale yellow? It has become a familiar feature on all manner of waste ground in the vice-counties of south-east England. A completely open-ended request for records and observations might result in a glut therefore, but I would be particularly pleased to receive details of any from north, say, of the Wash and/or west of London, to give a sense of its spread, or lack thereof, in those parts of the country where it might be supposed that a Russian/west Asian species would be less at home. Many thanks!

V.c.1 (W. Cornwall)

Hypericum hircinum ssp. *cambessedesii* (Stinking Tutsan). West of Camkie (SW711 341), 2006, D. Pearman (det. N.K. Robson in 2007): in a hedge well outside the village, and spreading. Endemic to Mallorca, this ssp. differs from ssp. *majus* in being smaller (up to only 1m rather than 2m), having smaller leaves (2.2-4.8cm rather than 3-7.5cm), smaller petals (1-1.5cm rather than 1.3-2.1cm), and shorter styles (1-1.3cm rather than 1.3-2.4cm).

V.c.5 (S. Somerset)

Cynoglossum amabile (Chinese Hound’s tongue). Taunton (ST22492473), 27/9/2012, S. Leach (det. H. Crouch & S. Leach/comm. H. Crouch): seven plants in newly sown patch of grass adjoining the Third Way, near south

end of Greenbrook Terrace. With *Nigella damascena* (Love-in-a-mist) and *Poterium sanguisorba* ssp. *balearicum* (Fodder Burnet). “Presumably arrived in imported top soil or as grass-seed contaminant.”

Ballota pseudodictamnus (L.) Benth. (False Dittany). Wellington (ST14202068), 24/9/2016, S. Parker: one plant as street weed (see Adventives & Aliens News 10). The remarkably similar *B. acetabulosa* (Greek Horehound or False Dittany) (Stace, 2010), another Mediterranean species, has also been reported in Britain. The best character for differentiating them is the width of the expanded part of the calyx, 7-8mm in *B. pseudodictamnus* and 12-20mm in *B. acetabulosa*. In addition, the stems of the former are yellow-tomentose, white-tomentose in the latter. The petiole length is also different, 2-4mm (*B. pseudodictamnus*) and 5-15mm (*B. acetabulosa*). All of this would imply that the two species are readily distinguished, but Eric Clement believes that some material in cultivation is hard to assign. At least two authors have stated that the dried calyces of *B. acetabulosa* (and presumably of *B. pseudodictamnus* too) are used as floating wicks in the olive oil lamps of Orthodox churches.

V.c.6 (N. Somerset)

Scutellaria altissima (Somerset Skullcap). Wadbury Valley/Mells (ST73534881), 17/7/2012, H. Crouch & G. Read: one small patch on bank opposite stone building; (ST73764883), 17/7/2012, H. Crouch & G. Read: abundant on old wall and slopes above (both comm. H. Crouch). The best known British locality, from where it was first recorded in 1929, for this S.E. European/W. Asian native, grown rarely in this country as a garden plant. In the couplet distinguishing *S. altissima* and *S. columnae* (Large Skullcap) in Adventives & Aliens News 9, I made no mention of corolla length, possibly the most reliable character: 15-20mm in *S. altissima*, 25-30mm in *S. columnae*, although there might rarely be a small degree of overlap.

V.c.9 (Dorset)

Choisya ternata (Mexican Orange). Norden (SY9511683692), 19/7/2016, D. Leadbetter:

one seedling on verge. A popular garden shrub, grown for its fragrant white blossom and Bay-scented ternate leaves, but self-sowing only rarely.

Gilia capitata Sims (Blue Thimbleflower). Swanage (SZ030790), 30/5/2015, D. Leadbetter: one plant on recreation ground. For Brian Wurzell’s drawings of this species and its congener, *G. achilleifolia* Benth. (Yarrow-leaved Thimbleflower), see *BSBI News*, 70 (front cover), and p.33 for identification tips. A member of the Phlox family from the western United States, most likely now to occur as a rare garden escape, less likely as a bird seed impurity.

Juncus antheratus (Lax-flowered Rush). Crossways (SY7516787670), 10/10/2016; (SY75288754), 28/9/2016, R. Walls: on silty quarry spoil in both cases. See Stace & Crawley (2015: 106) for a very useful photo showing *J. antheratus* in botanical line-up with *J. tenuis* (Slender Rush) and *J. dudleyi* (Dudley’s Rush).

Cyperus involucratus Rottb. (Umbrella Sedge). Swanage (SZ03028000), 31/10/2015, D. Leadbetter: plants in gutter in Victoria Road and Ulwell Road. A north African sedge grown as an ornamental garden plant. This is an invasive species in parts of mainland Europe. It is not so in this country as yet, or anything like it, but might be beginning to increase (see v.c.14).

V.c.10 (Isle of Wight)

Jasminum beesianum (Red Jasmine). Nettlestone (SZ623903), 6/2017, P. Stanley: self-sown. More records in recent years with its increased (if short-lived) popularity as a garden shrub? (see Stace, 2010).

V.c.12 (N. Hants)

Chenopodium giganteum (Tree Spinach). Holtham Lane (SU725317), 25/9/2016, S. Povey: plentiful in an area of set-aside. *C. probstii* (Probst’s Goosefoot) can be similar in stature and general appearance, but its leaves tend to be persistently red-margined. In *C. giganteum* they are extensively red-purple when young. The highly distinctive ovate-trullate lower stem leaves might have been

shed by the time *C. giganteum* has produced inflorescences. An oil-seed alien in the past, now more likely as an escape or reject from cultivation (Clement *et al.*, 2005: 54) (see v.c.14).

Cornus mas (Cornelian Cherry). Winchester (SU48752942), 20/7/2016, A. Stewart: in St Giles Hill Park, with other shrubs. A rather dull, deciduous shrub from southern Europe/west Asia, grown in parks and gardens, it must be presumed, for the very early appearance of its clusters of small (c.4mm across) yellow flowers. Rather rarely bird-dispersed(?).

V.c.13 (W. Sussex)

Silene coeli-rosa (Rose-of-heaven). Southwater (TQ15652626), 16/8/2008, Sussex Botanical Recording Society: five plants on rough bank below old road. The v.c.14 record in Adventives & Aliens News 10 is not the first East Sussex record. An undated one is listed in Wolley-Dod (1937) as *Eudianthe coeli-rosa*. It is localised to the Crumbles, an area which would have included the site of the 2016 record, which need not be a recent introduction therefore.

Bidens frondosa (Beggarticks). West Marden (SU7513), 24/9/2008, A. & R. Jones (re-det. M. Shaw/conf. E.J. Clement): by pond in Markwells Wood. A specimen in the herbarium of A.W. Jones, labelled as *B. pilosa* (Black-jack). The first Sussex record (see Adventives & Aliens News 4).

V.c.14 (E. Sussex)

Nuphar advena (Spatter-dock). West Hoathly (TQ3643733944), 18/9/2016, M. Berry & R. Wells (det. M. Berry/conf. E.J. Clement): in quantity at lake margin, near Gravetye Manor. No signs of its having flowered/fruited. The first Sussex record.

Chenopodium giganteum (Tree Spinach). Eastbourne (TQ62680051), 22/5/2016, M. Berry: one plant in re-seeded area, The Oval (Princes Park) (see v.c.12).

Vicia villosa (Fodder Vetch). Eastbourne Seaside (TQ6286700345), 21/6/2017, M. Berry (conf. E.J. Clement): one plant in re-seeded, recently landscaped area of Princes Park. The plant was referable to ssp. *varia*,

with very sparsely hairy calyces, pedicels and rachis. The first E. Sussex record since 1981 (see Adventives & Aliens News 10).

Teucrium hircanicum L. (Iranian Wood-sage). Eastbourne Old Town (TV59979944), 5/7/2016, M. Berry (det. E.J. Clement): seedlings on steps and wall top, entrance to Manor Gardens. Resembles a large purple-flowered *T. scorodonia* (Wood Sage), with longer, narrower inflorescences and longer, more narrowly lanceolate bracts. The leaves are foetid, not sage-scented. Both species have calyces densely beset with sessile white glands. A rare garden plant which self-sows quite readily.

Solanum laciniatum (Kangaroo Apple). Eastbourne Holywell (TV60969792), 5/3/2017, M. Berry: about 15 plants scattered along foot of wall, South Cliff. Something similar has been observed in Brighton by Tony Spiers. It seems small (c.8-20 plants), probably temporary colonies of this species can develop along the bases of walls where birds perch. A garden plant, which can grow to be a considerable shrub in its native Australia.

Cyperus involucratus Rottb. (Umbrella Sedge). Eastbourne Seaside (TV62239973), 17/9/2016, M. Berry: seedlings along pavement of Royal Parade, derived from plants in a garden (see v.c.9).

V.c.15 (E. Kent)

Hypericum hircinum (Stinking Tutsan). Hythe (TR1534), 30/4/2016, G. & S. Kitchener: growing inside a street drain (Clement *et al.*, 2005: 94).

Hypericum ×inodorum (Tall Tutsan). Brook (TR086443), 10/4/2016, G. & S. Kitchener: odd bush in *Allium ursinum* (Ramsons) woodland on downland scarp slope, above Fishponds Farm (Clement *et al.*, 2005: 93).

V.c.16 (W. Kent)

Araucaria araucana (Monkey-puzzle). Maidstone (TQ74935672), 28/10/2016, B. Woodhams: sapling three feet high in hedge-row, between two levels of split route of Buckland Lane. "No candidate parent tree present in vicinity."

Hypericum ×inodorum (Tall Tutsan). Shortlands (TQ3969), 10/8/2016, R. Burton: self-sown from shrubbery of adjacent Packham Court in neglected driveway of Beech Tree Court, Shortlands Road.

V.c.17 (Surrey)

Araucaria araucana (Monkey-puzzle). Haslemere (SU9113731845), 13/4/2014, D. Nelson: four seedlings on verge, near parent in garden. This is the record referred to in the preamble of Adventives & Aliens News 11, but omitted from the compilation!

Amaranthus deflexus (Perennial Pigweed). Kew (TQ18637741), 30/7/2016, G. Housome: few plants on the steps on south side of the Orangery. Seen c.200m from this site in 2013. Although not necessarily a helpful character in the field, this is our only perennial Amaranth. It is most likely to be confused with *A. blitum* (Guernsey Pigweed). For differences see Stace (2010). (Clement *et al.*, 2005: 62; with a drawing of *A. blitum* helpfully reproduced on the facing page).

Erodium trifolium Cav. (Heron's-bill). West Dulwich (TQ32797317), 19/4/2016, London Natural History Society (comm. G. Housome): one plant under trees at south edge of recreation ground, Thurlow Park Road. (See Adventives & Aliens News 7).

Poa chaixii (Broad-leaved Meadow-grass). Rowledge (SU83834361), 2/1/2015,

E.J. Clement & G. Housome: one good tuft on ditch bank, just inside entrance on north side, road entrance to Frensham Court. Sown with *Festuca heterophylla* (Various-leaved Fescue) as ground cover in Victorian times, sporadic records could materialise as recording groups obtain access to estates and policy woodland etc.

V.c.57 (Derbyshire)

Cynoglossum amabile (Chinese Hound's tongue). Staveley (SK4374), 2012, K. Balkow (det. G. Coles/comm. K. Balkow): on newly restored section of Chesterfield Canal, with other aliens, probably part of sown annual seed mix. Listed in an addendum to *The flora of Derbyshire* (2015).

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Arctotis aspera on Tresco

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In May 2017, I spent an interesting week botanising on the Isles of Scilly. On 22nd I re-visited Tresco for a second day to search for a number of previous records of various species, one of which was *Arctotis ×hybrida* (African Daisy) west of the heliport.

On reaching the site (SV 89151403), I immediately saw a large patch of a shrubby-looking Asteraceae species growing in vegetation in the dunes. The plant appeared well-established and had clearly been there for some years. While I was not familiar with the

South African *Arctotis* genus and it is not mentioned in Stace, I had studied photographs of *Arctotis ×hybrida* before my trip, which showed it with bright colourful flowers. However, the *Arctotis* I was looking at had a white capitulum with a yellow centre, although the size of the flowers and the grey-green pinnatisect leaves, which were both aromatic and glandular, seemed to fit the genus. After collecting a specimen, I moved on to my next site.

It was not until I returned home that I was able to investigate the *Arctotis* further and, after studying photographs, I came to the conclusion that it might be *A. aspera* (Rough-leaved *Arctotis*). I then contacted several botanists in South Africa and was given the e-mail address of Dr Robert McKenzie, who is a specialist in the *Arctotis* genus and has been revising their taxonomy. He immediately confirmed from the photograph I sent him that the Tresco plants are indeed *A. aspera* (see Colour Section Plate 4)

Robert McKenzie explained that the majority of perennial *Arctotis* in cultivation today are hybrids, but in the 18th and 19th centuries the ‘true’ species were cultivated in Britain and other European countries, with *A. aspera* being one of the first to be grown in Europe. In South Africa, it can be seen at Cape Point and on Table Mountain, but there do not appear to be any records of escapes or naturalisation outside that country.

I next wrote to Eric Clement to determine whether anyone else had recorded *Arctotis*

aspera in Britain. Eric replied that he had two sheets in his herbarium of *Arctotis aspera*, both from the same area on Tresco where I had found it. The first record had been made by the late A.A. Butcher on 13th October 2000 and the identity confirmed by the Assistant Head Gardener on Tresco, where there was a planted, named specimen in the Abbey Gardens. The second record was from J.E. Oliver on 25th June 2007. Eric also said that there appeared to be no published records of *Arctotis aspera* as an escape, either in Britain, or elsewhere, confirming what Robert McKenzie had already stated. There is a reference to the species being grown in 1873 in the Middle Terrace in Tresco Gardens, so it certainly has a history on the island. It is not exactly clear how or when it arrived at the site west of the heliport, but I understand that the area was used as a tip, so it may have originally been a throw-out.

Acknowledgements:

My thanks to Dr Robert McKenzie of Rhodes University and to Eric Clement.

***Cucurbita moschata* – an overdue casual addition to the British alien flora?**

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In the autumn of 2016, Robin Stevenson sent me photographs (Colour Section Plate 3) of a plant he had determined as *Cucurbita moschata* Duchesne (Butternut Squash), growing on organic debris and paper waste at King’s Lynn (v.c.28) (for Robin’s account of this unusual site, see *BSBI News*, **134**: 43-44). The fruit shape looked right, no alarm bells rang and I filed the record away. This was careless of me, given that, if correct, it would probably be the first for Britain. Had I had my wits about me, I would have asked Robin whether he might return to the site to make a voucher for confirmation. By the time I realised the full significance of the record, however, it was too late, and the opportunity for confirmation had been lost, presumably for good.

Not at all unreasonably, Robin identified his plant by comparing its fruits with the Butternut Squashes available at his local supermarket, finding them to be an excellent match in shape, size, texture and colour. However, in the case of *C. moschata*, it seems that leaf indumentum is a more reliable character. According to Philip Verloove (2014), *C. moschata* is “an exceptional and ephemeral food refuse alien. Recorded once (in Belgium) in 2014 on a dump at Roeselere. This is a southern species and only rarely cultivated in western Europe.” He goes on to say that it is easily distinguished by its softly hairy leaves, which often have distinctive white markings – as shown in the accompanying photograph of the Roeselere plant. There is also a good close-up image of the leaves on the Wikipedia page for the genus

Cucurbita. The leaves of *C. pepo* (Marrow) and *C. maxima* (Pumpkin) tend to be glabrous to sparsely, bristly-hairy. He also comments that “its calyx lobes are not linear, as in *C. pepo* and *C. maxima*”, but attempts no description of their actual shape. On the Missouri Botanical Garden website, *C. moschata* is described as “a monoecious, creeping, vine-like annual that trails along the ground or climbs by (branched?) tendrils.” It also highlights “the velvety-hairy, shallowly to deeply lobed, broad ovate to kidney-shaped leaves with toothed margins and cordate bases, often with white spots on the veins”, and, in addition, provides details of some floral characters: “single axillary flowers (male typically long-stalked with three stamens and female typically short-stalked with three two-lobed stigmas) are creamy white to orange-yellow”; “fruits generally have orange flesh”. Fruit shape is very variable. The specific epithet indicates a musky odour, but I have been unable to find any references to such a character. Seed characters might also be important for accurately naming members of this family (pers. comm. E.J. Clement). In the U.S. *C. moschata* is apparently known as a winter squash, because the fruits are left to mature for autumn rather than summer harvesting.

As it is rarely cultivated in western Europe, most, if not all, of the Butternut Squashes sold in this country will have been imported from outside that region. Is it possible that some of the items being sold in shops here as Butternut Squashes are in fact cultivars of another Cucurbit, more easily grown and/or more cheaply imported?

I have looked closely at Robin’s photos and cannot see any hairs on the leaves, but very short hairs might be present. He is not sure

whether the leaves had a velvety texture, but suspects not. While it is not possible to tell if the fruiting pedicel is “thickened and fluted”, I think the plant is most likely a cultivar of *Cucurbita pepo* (Marrow), with fruits that closely resemble those of Butternut cultivars of *C. moschata*, but would be very pleased to have this provisional determination overturned by someone who knows for a fact that *C. pepo* never produces fruit of this shape, or who has a more intimate knowledge of *C. moschata*. Of course, another genus altogether could be involved. If this tangled tale has a moral, it might be that vegetative characters sometimes take precedence over flowering/fruiting ones (John Poland never doubted it!). It also illustrates the value of making vouchers where possible, particularly of anything unusual or puzzling, and particularly where the ‘feel’ of a plant might be decisive in determining its identity. Even if the King’s Lynn plant does not represent the first British record of *C. moschata*, it will surely turn up somewhere in the not too distant future, and, as with so many other “ephemerals” found in habitats subject to frequent upheaval, the window of opportunity for detecting it might close quickly.

Acknowledgements:

I would like to thank Robin Stevenson for sending me his photos, patiently answering my queries, reading through the foregoing and giving it his approval; and Eric Clement for constructive comment.

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 MISSOURI BOTANICAL GARDEN
 (www.missouribotanicalgarden.org).

Is *Galium murale* (Small Goosegrass) overlooked?

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We are writing this short note to draw BSBI members' attention to *Galium murale* (Small Goosegrass), a tiny *Galium* that has turned up several times in recent years in southern Ireland, southern Wales and southern England. It is believed to be a native from the Micronesians Island to the Caucasus and the Middle East, including the Mediterranean, North and East Africa. Because of its size, growing season and because it does not key out in our common identification books, such as Stace (2010), we believe it may be overlooked. Please keep your eyes peeled and let us know about your findings!

Galium murale was first recorded as a wool alien casual in 1911, but this population and other subsequent sightings as a wool alien did not survive to our knowledge (Sell & Murrell, 2006). It was then reported in *BSBI News* from a private and undisclosed locality in Eastbourne, Sussex (Nicolle, 2008). However, this record does not currently appear on the BSBI Maps (accessed online on 18/05/2017), which is a shame because it had been positively identified by Eric Clement, a referee in the matter of aliens and casuals.

There seem to be more and more observation of this tiny plant from this point, as shown in Table 1.

Table 1: Populations of *Galium murale* recorded in Britain and Ireland. Note that the plant subsequently proved to be growing at several locations within Fishguard ferry port and Rosslare Harbour. The population size pertains to the first observation but could vary considerably when re-visited in subsequent years.

Location	Vice-county	Year	Recorder	Habitat	GB Grid	Population size
Musselfburgh	Midlothian VC83 *	1911	J. Fraser	wool alien	NT37	
Blackmoor	North Hampshire VC12*	pre-2000**	Rodney Burton	wool alien	SU73	
Lostwithiel	Cornwall VC1	2007	Ian Bennallick and Matt Stribley	pavement	SX10355980	10
Eastbourne	East Sussex VC14	2008	David Nicolle	pavement	TV605982	1000s
Bath	Somerset VC6	2010	Fred Rumsey	pavement	ST744654	1
Fishguard Ferryport	Pembrokeshire VC45*	2011	Paul Green	pavement	SM94853855	1000s
Newport	Isle of Wight VC10	2012	Paul Stanley	pavement	SZ50158990	8
Rosslare Ferry Port	Wexford VCH12*	2014	Paul Stanley and Keith Turner	pavement	T138123	30
Newport	Isle of Wight VC10	2015	Paul Stanley	pavement	SZ489892	40
Enniscorthy	Wexford VCH12	2017	Paul Green	pavement	S96374042	1
Ringaskiddy	M. Cork VCH4	2017	John Diggin	pavement	W782644	20
Cardiff	Glamorgan VC41	2017	Ambrose Baker	pavement	ST19167594	24

* First country record

** cited as "many years ago" by Nicolle (2008)

These localities are in the warmer parts of Britain and Ireland, where this winter annual appears to be able to thrive. Whilst the Bath locality was actually a single plant (Couch, 2010), the Welsh and Irish population were more substantial and sometimes even as large as thousands of plants in Fishguard Harbour (Green, 2013).

The seeds may disperse easily, for instance on boots or car tyres, as its presence at two connected ferry ports appears to suggest (Rosslare and Fishguard) (see *e.g.* Green, 2016). It has also been suggested, in Belgium, that it travels with plant pots from southern Europe (Hoste *et al.*, 2009). Although it can become abundant, it totally disappears during

the summer months, *i.e.* during the typical botanising season, which may explain why it is rarely reported. So how do we spot it?

Firstly, it is very small and reminds us of *Sherardia arvensis* (Field Madder) (Photo 1 Colour Section Plate 3), yet on closer inspection, the pale yellow-creamy, tiny petals rule this taxon out. The plant's habit can also be described as a smaller version of *Mentha requienii* (Corsican Mint). In Stace (2010), it keys out as *Galium boreale* (Northern Bedstraw) because of the whorls of four leaves, but this is obviously not a good match. Ignoring this, and going on to couplet 3, leads one to the elusive *Galium spurium* (False Cleavers). However, the description and the size of this species does not match specimens of *Galium murale*.

Identification is more successful using the *Galium* account in *Flora Iberica* (Ortega Olivencia & Devesa, 2007). The Cardiff specimens, for instance, keyed out very smoothly and matched very well the description and drawing of *Galium murale* and no other taxa from Spain or Portugal. We recommend consulting this book, which is available online for free (see the reference below).

So far, it has been found on pavement in urbanised areas: pavement cracks, car parks, a ferry port, *etc.* It is likely to be associated with typical pavement weeds, such as *Veronica arvensis* (Wall Speedwell), *Sagina procumbens* (Procumbent Pearlwort) (photo 2 Colour Section Plate 3), *Sagina apetala* (Annual Pearlwort) and *Poa annua* (Annual Meadow-grass). In Ringaskiddy and Rosslare, it grows side by side with *Polycarpon tetraphyllum* (Four-leaved Allseed), another pavement weed that may prove to be on the increase, and a new species for Ireland (recorded by PG).

Acknowledgement:

We would like to thank Kevin Walker and Colin Pope for their help when compiling Table 1.

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Sporobolus indicus in Jersey

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While on a walk through Les Mielles, Jersey, in 2012, Charles David and I came across an unknown grass that was about 1.5m tall, growing alongside a minor road. It was identified as *Sporobolus indicus* (Dropseed), and

since there were houses nearby it seemed birdseed was the most likely source (see Colour Section Plate 2). A few weeks later, on a trip with the Botany Section of the Société Jersiaise to Chausey, an island belonging to

France, we saw the small sand dune there near the landing jetty had changed from an interesting habitat of short turf to a sandy area completely overgrown with *S. indicus*. On returning to Jersey, the decision was made to eradicate the *S. indicus*, since the sandy area of Les Mielles is a conservation area. Despite an

annual application of weed killer, the *S. indicus* is proving to be difficult to remove and a few plants are still there in 2017. Another site near a primary school in La Moye, Jersey, has now been found for *S. indicus* and a decision has yet to be made whether to attempt to remove it.

The Bishop's-cap fits on Skye

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SETH J.D. GIBSON, *Uig, Isle of Skye, IV51 9YE;* (widerscope@hotmail.co.uk)

On 18th April 2017, one of us (SJDG) found an unusual plant growing for about 40m along a small watercourse in Uig Wood on the Isle of Skye. He sent two images to the vice-county recorder (SJB) and we both put the images on our blogs (<https://skyeraasayplants.wordpress.com> and <https://uigboy.blogspot.co.uk>). A few days later, David Broughton e-mailed SJB to say he thought it looked like a *Mitella*, “possibly the same one I have in my garden, *M. breweri*”. Twenty minutes later he sent a further e-mail, saying: “Actually, I think my money would be on *M. ovalis*. Looking at my *breweri* again it is too small and delicate.”

SJB soon found web pages describing these and other North American members of the *Heuchera* tribe from the Pacific coastal region (<http://biology.burke.washington.edu/herbarium/imagecollection.php>) by David Giblin, University of Washington Herbarium Collections Manager, and e-mailed him the images. Within a couple of hours he confirmed *Mitella* (or, as he calls it, *Pectiantia ovalis*). This plant goes by the names Bishop's-cap, Oval-leaved Mitrewort or Coastal Mitrewort, or variations on that theme. *Mitella* is from Latin *mitra*, turban or head-dress, and *-ella*, diminutive, alluding to the cap-shaped fruit. The native range of this species is from British Columbia to California.

This appears to be the first record in the wild in the British Isles and the population in Uig Wood

comprises about a dozen plants, of which many were flowering well, with upwards of 60 flowering spikes in total (see Colour Section Plate 3). We visited the site on 26th April and took a voucher specimen, which has been deposited at RBGE. David Broughton also pointed us to a *Mitella* key from ‘Flora North America’ at: <http://www.efloras.org>, which proved hard to use in the field, but careful use later confirmed the identity. *M. breweri* and *M. ovalis* are readily distinguished by leaf shape and the hairiness of the basal petioles.

After we separated on 26th April, SJDG spotted more plants in a garden about 200m away and later discovered a drain running from near this garden to the woodland site. Seeds of *M. ovalis* and other *Mitella* spp. are available in the UK, e.g. from Growild Nursery in Cumnock, East Ayrshire.

Iain Macdonald also picked up the blog post and e-mailed to say: “on 15th April 2017 I found the same species growing within the confines of Inverewe Garden ... naturalised beside a ditch.” On balance, Iain thinks this does not count as being ‘in the wild’, leaving the Uig population as the first truly wild site. E-mail discussions with the staff of Inverewe Garden suggest that it has been present for perhaps as long as 17 years or more, and, although no documentation has been found, it is thought to have been purchased for the garden.

Missing aliens

CLIVE A. STACE, *Appletree House, Larters Lane, Middlewood Green, Suffolk, IP14 5HB;*
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In trying to compile a realistic list of our aliens, it seems reasonable to consider that any species that have not been recorded post-1999 should be excluded from that list. I have not found any post-1999 records for the following

89 taxa, but would be very grateful for contrary evidence of any of them. Please send your comments by email or post (postage will be refunded) to me (contact above).

Many thanks for your help.

Achillea ligustica
Aetheorhiza bulbosa
Agrostis hyemalis
Amaranthus crispus
A. quitensis
A. capensis
A. standleyanus
A. viridis
Amphibromus neesii
Anisantha rubens
Asperugo procumbens
Asphodelus albus (Jersey)
Astragalus cicer
Atriplex suberecta
Betula populifolia
Brachypodium hybridum
(*distachyon*)
Bromopsis inermis ssp.
pumpelliana
Calotis cuneifolia
Centaurea melitensis
Ceratochloa brevis
Chenopodium hircinum
C. nitrariaceum
Chloris – all 3 spp.
Chrysocoma tenuifolia
Cirsium erysithales (v.c.6
still?)
Cotoneaster froebelii (v.c.16)
Crocus serotinus
Cullen americanum
Cynodon incompletus
Cytisus nigricans

Daucus glochidiatus
Dysphania carinata
D. cristata
D. multifida
Dysphania pumilio
Ehrharta stipoides
Eleusine multiflora
E. tristachya
Elodea callitrichoides
Elymus scabrus
Eragrostis parviflora
E. virescens
Eriochloa pseudoacrotricha
Galanthus reginae-olgae
Gastridium phleoides
Hainardia cylindrica
Hedypnois cretica
Hordeum pubiflorum
H. pusillum
H. euclaston
Hydrocotyle novae-zeelandiae
Ipomoea lacunosa
Juncus subulatus (v.cc.6 &
86)
Lepidium divaricatum
L. africanum
L. densiflorum
Leptochloa fusca
Lolium remotum
Malva preissiana
Monsonia brevirostrata
Narcissus × *intermedius*

Nassella neesiana
Nertera granadensis
Ononis alopecuroides
O. baetica
O. mitissima
O. natrix
Phalaris brachystachys
Potentilla rivalis
Rapistrum perenne (last:
June 1999)
Ridolfia segetum
Rumex brownii
Rytidosperma racemosum
Schismus barbatus
Schkuhria pinnata
Senecio pterophorus
Sida – all 3 spp.
Sigesbeckia orientalis
Sinapis alba ssp. *dissecta*
Solanum villosum ssp. *villosum*
Spiraea × *brachybotrys*
Sporobolus africanus
Stipellula (formerly *Stipa*)
capensis
Tanacetum balsamita
Tragus – all 3 spp.
Trifolium cernuum
T. lappaceum
Trigonella caerulea
Veronica austriaca ssp.
teucrium

***Trigonella caerulea* on St. Martin's, Isles of Scilly (v.c.1a)**

CAROL HAWKINS, 2 *Smithson Close, Wymondham, Norfolk, NR18 0SU*;
(billhawkins@btopenworld.com).

On 5th June 2017, my husband and I were on holiday in the Isles of Scilly and went to St. Martin's. We visited Churchdown Farm, planning to send off a few flowers to relatives. It was here that the discovery was made. We found a flush of some 50 beautiful, pale blue flowers: highly scented members of the clover family, with heads about the size of a farthing. The farm staff did not know them, nor where they had come from. I sent a pressed speci-

men to Eric Clement, who confirmed its identity as *Trigonella caerulea* (Blue Fenugreek), a plant that is used as a culinary ingredient in Georgia. It was in a field, close to the office, where carnations had been harvested. Obviously not a crop, it may have come in with green manure or simply as a seed contaminant that had spread in ideal conditions; hopefully a delightful addition to the flora of the Isles!

NOTICES

Herbarium news: what's happening at the Natural History Museum

FRED RUMSEY, *Dept. of Life Sciences: Algae, Fungi & Plants Division, The Natural History Museum, Cromwell Road, London, SW7 5BD*; (f.rumsey@nhm.ac.uk).

Following the departure of Dr Mark Spencer, as of April, I have now assumed responsibility for the British, Irish, European and historical botanical collections at the NHM, and this seemed a timely opportunity to give an update on what is happening here and make a plea for members to think about using this resource.

With the able assistance of John Hunnax, Curator of the British and Irish herbarium, and a dedicated team of volunteers (particularly big thanks to Chris, Iris and Maggie), we are in the process of re-curating the vascular plants from the Kent list order to Stace, ed. 3, to reflect the changes that molecular work has played on our understanding and to link with the most widely used definitive flora account for ease of use by visitors.

Significant recent additions to our collections include Bert Reid's *Taraxacum* herbarium, which he has kindly donated to us and which we are now re-mounting and databasing. This is extremely comprehensive, with almost all the material seen (and commented upon) by John Richards. We were particularly pleased to receive this, as this was arguably the one major critical apomictic group where our collections were lacking; *Rubus*, still regularly worked on by

David Allen; *Hieracium*, worked on by David McCosh; *Sorbus* and *Rosa* all being well served.

We are also anticipating the receipt of a major and significant collection of Lincolnshire plants, the herbarium of Rev. Woodruffe-Peacock, currently in the possession of the Lincolnshire Naturalists Union. Housing and digitising this, as well as our British collections, made by that most influential of Lincolnshire botanists Sir Joseph Banks, are parts of an ambitious county-wide project on Lincolnshire plants, past and present, which we hope to see funded by the Heritage Lottery Fund. This will see new collections made and training in plant identification, specimen preparation and care given.

While our space is limited, which necessitates very careful consideration before committing to accept new material, I am particularly keen that the collections maintain relevance and grow to reflect the ever-changing British flora. Their scientific worth is greatly enhanced in this way. However, as important as accessioning new material is, so is dealing with what we already have. The rationalisation of collections and development of exhibition spaces means that the onus is now firmly upon us to deal with our

monumental historical backlog: the legacy of donations and bequests from the past, the collections of deceased botanists and the herbaria of academic institutions that no longer saw their need. This material, largely unsorted and unmounted, contains treasures (and some dross!) and we are now facing the daunting task of sorting this, with the intention of making the specimens accessible to researchers and visitors. Volunteers who might wish to help with this would be welcome.

We look forward to hosting the BSBI Annual Exhibition Meeting once again this year and will be giving tours of the historical collections and the herbaria. These have proved very popular in

past years. More rewarding though can be individual visits. I am very keen to encourage more of the active membership and recording community to come and use our collections. Please contact me about this. We also intend, in the new year, to trial open days on some Saturdays, linked to small events or workshops with particular taxonomic themes. Similar events have been run with the London Natural History Society on weekday evenings to great effect. Again, I would be very keen to hear from referees who might be available to demonstrate their particular groups and would also welcome suggestions as to topics that the membership might be prepared to travel to hear about.

REQUESTS

A new visual wild flower key – testers required

PROFESSOR H.G. JONES, *Plant Science Division, University of Dundee at the James Hutton Institute, Invergowrie, Dundee, DD2 5DA*: (joneshamlyn@gmail.com)

I am currently developing a new electronic flora aimed at enabling the easy identification of many British and Irish wild flowers (including grasses, sedges, trees, shrubs, horsetails and ferns). This is a largely visual flora based on photographs and allows rapid identification from flowers (and from leaves for many plants). Further text information is provided in many places to help in identification and to allow separation of critical species. Whilst this key aims to be usable by beginners by keeping advanced botanical terminology to a minimum, it should also be of value to more experienced botanists as a reference (with direct access from the indexes to specific species or genera). The flora is designed for use in the field on smartphones or tablets without requiring internet access, but as a result requires approaching

3GB free storage, as it includes moderately high-resolution images. Alternatively, a trial version can now be accessed on the internet at: visual-flora.org.uk (although it may be slow to respond on some slow internet connections). Only the top levels of the key on the visual-flora website (see inside Back Cover) are available for viewing without logging in, but for anyone interested in helping me to refine this key I can provide a personal login to the full key if you contact me directly at: visualflora@gmail.com.

I am looking for some dedicated testers (who do not need to be experts) to help improve the overall format, to check for errors (both taxonomic and typographical), and to help improve the overall usability of the system.

Sparganium erectum (Branched Bur-reed) subspecies – material wanted

M. WILCOX, *43 Roundwood Glen, Greengates, Bradford, BD10 0HW*;
(michaelpw22@hotmail.com)

The subspecies in Branched Bur-reed (*Sparganium erectum*) are likely to be under recorded. There may be some distributional differences

but without more detailed studies this is difficult to assess. Later in the season when there are less plants to record these plants should be

in fruit (end of August onwards). At least here, ssp. *microcarpum* seems to be the common subspecies with ssp. *oocarpum* being rarely encountered (at least in Yorkshire).

Therefore, I would be interested to hear from anyone with fruits of these subspecies. The fruits should be as mature as possible and

peeled off from one or two heads per plant and placed in a paper packet so they are more or less flat for ease of posting with the appropriate details on the packet.

If there are enough records, I can collate these and liaise with the referee on this matter

The botany of slag heaps: a request for information about the current vegetation of the colliery sites of the South Lancashire Coal Field

JEAN RICHARDSON, 3 *Elmridge, Leigh, Greater Manchester, WN7 1HN;*
(lasarsleigh1@gmail.com)

The following summary defines the habitat known as: ‘Open Mosaic Habitats on Previously Developed Land’ (UK BAP priority habitat)

“This priority habitat consists of a patchwork of bare, previously disturbed ground and vegetated areas which can be in the process of changing from one vegetation type to another. Typical of this habitat are areas of grassland, tall ruderal plant species, damp areas, patches of scrub and invasive species, both native and non-native. The previous disturbance is often industrial, such as mining, although the habitat can include old quarries or building sites, areas of spoil from old coal mines, disused railway lines and urban brownfield land.”

Greater Manchester

The above summary is from a very interesting and readable article (kindly sent to me by Pete Stroh) which focuses on Scottish industrial sites. However, it seems to match the land and vegetation of many of the coal pit sites around Greater Manchester, where I live. They are of great importance ecologically and under threat from development, as ‘brown-field’ sites. The issue locally is how that ecological value can be recognised and protected.

In Leigh, Greater Manchester, a town where there were several large mines, the local Bickershaw Pit was expanded into a ‘super-pit’ by the National Coal Board. Until 1992, about

20,000 tons of coal were brought to the surface each week. The legacy of this gargantuan industrial project is a huge area, which is a mix of complex, bare slag heap material, species-rich grassland, large reed-filled ponds and damp areas. The area provides shelter for a wide range of fauna.

Locally, there is a good tradition of observing and recording the fauna of the colliery, but, seemingly, not so much emphasis on botany. If any members can share details of published studies of the vegetation of the site of the former pits of the South Lancashire Coal field and particularly those which identify examples of the habitat: ‘Open Mosaic Habitats on Previously Developed Land (OMHPDL)’, this information will be put to good use to help local natural historians strengthen the case for protecting the fragile and amazingly beautiful environments of the former Wigan and Leigh pits.

References:

- Northern Mine Research Society.
(<http://www.nmrs.org.uk/mines-map/coal-mining-in-the-british-isles/lancashire-coalfield/wigan-coalfield/bickershaw-colliery/>).
- Scottish Natural Heritage (n.d.). *Open mosaic habitats on previously developed land (UK BAP Priority Habitat)*. Scottish Natural Heritage (<http://www.snh.gov.uk/docs/A1509898.pdf>).

OFFERS

BSBI publications on offer for free

DAVID CANN, 12 Church Street, Crediton, Devon, EX17 2AQ; (canndavid@hotmail.com)

I have the following on offer for free, if collected:

BSBI Abstracts
Vols. 1-16; 19-27.

Watsonia

Vol. 4, pts. 3-5; Vol. 5, pt. 1; Vol. 6, pt. 5;
Vol. 7, pts. 1-3; Vols. 8-12; Vol. 13, pts. 1-3;

Vols. 14-19; Vol. 20, pts. 2 & 3; Vol. 21;
Vol. 22, pt. 1; Vol. 23, pt. 4; Vol. 24, pt. 4;
Vols. 25-27; Vol. 28, pts. 1 & 2

Proceedings of the BSBI

Vol. 6, pt. 4; Vol. 7, pts. 1-4

BOOK NOTES

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The following titles are to be reviewed in current or future issues of *New Journal of Botany*. Also included are notes on books that are not being given a full review (marked *). Unsigned reviews are by the editor.

*FARJON, A. *Ancient oaks in the British landscape*. Kew Publishing, Kew, 2017. 400 pp. £20.00. ISBN 978 1 84246 640 7; h/b.

Aljos Farjon combines history with science and tells the story of how ancient oaks have shaped the English landscape over the past 1,000 years. The two native species of oak, *Quercus robur* (Pedunculate Oak) and *Q. petraea* (Sessile Oak), are among the longest living trees in England. Using data made available by 'citizen science' (data gathered by volunteers across the country), Aljos explains this remarkable situation by giving detailed evidence, enhanced with beautiful images of these stunning oaks as well as graphs and maps. (Publisher's blurb).

*HART-DAVIES, C. *A wild plant year: history, folklore and uses of Britain's flora*. Two Rivers Press, Reading. 2017. 116 pp. £10. ISBN: 978 1 909747 13 5; p/b.

This collection of botanical drawings of native British species is accompanied by

shorter or occasionally longer captions giving some information on their uses and significance in folklore. Occasionally the plates go off at a tangent, with a recipe for sloe gin and a composite 'fun and games', covering conkers, cleavers and the like. The book would make a delightful present for a wild flower lover and also contains a lot of useful or quirky information.

*HAVEMAN, R. *Concealed diversity: taxonomical, phytogeographical and phytosociological notes on brambles in north-west Europe*. The author, Wageningen, 2016. ISBN 978 94 6343 101 9; doctoral thesis, available as a free PDF download from: www.researchgate.net.

This book will doubtless be of interest to batologists, as it investigates some of the most baffling aspects of the taxonomy of brambles, with a special focus on species occurring in the Netherlands.

*ICENI BOTANICAL ARTISTS. *Breckland wild flowers: heaths and grasslands*. Icen Botanical Artists, 2016. £15.00. ISBN: 978 1 5272 0195 8; p/b.

Based on a series of exhibitions by a local group of botanical artists, this book highlights the 45 species of botanical rarities that are special to the Breckland area.

*MABBERLEY, D.J. *Mabberley's plant book*. 4th edition. Cambridge University Press, Cambridge, 2017. xix, 1102 pp. £65. ISBN 978 1 107 11502 6; h/b.

Once again, the trusty reference book has been revised and updated, with “some 1400 additional entries”. Subtitled ‘*a portable dictionary of plants, their classification and uses*’, it is dedicated to the author’s mentor, Professor Corner of Cambridge. Its ease of use, compared with the hassle of logging into a reference site such as IPNI, makes it an invaluable companion for any botanical editor or author. The publisher’s pricing policy caters for the affluent, but inexpensive copies of the previous editions are readily available.

*MCALLISTER, H. & MARSHALL, R. *Hedera: the complete guide*. Royal Horticultural Society, London, 2017. £40.00. ISBN: 978 1 90705 773 1; h/b.

This comprehensive and beautifully illustrated guide includes detailed information and photographs of all 12 species and nearly 200 cultivars. The cultivars are grouped by leaf shape and colour, aiding plant choice for gardeners and designers. The book also covers botany, history, breeders, ecosystem services, extensive cultivation advice, and a checklist of more than 1,000 cultivar and scientific names. (Publisher’s blurb).

SMITH, R., HODGSON, B. & ISON, J. *A new flora of Devon*. Devonshire Association for the Advancement of Science, Literature and the Arts, 2016. 848 pp. £60. ISBN 978-15272 0525 3; h/b.

OBITUARY NOTES

CHRIS D. PRESTON, Obituaries Editor, *19 Green's Road, Cambridge, CB4 3EF*; (cdpr@ceh.ac.uk); assisted by the General Editor GWYNN ELLIS

Since the publication of *BSBI News* 135, we regret to report that the news of the deaths of the following members has reached us, two of very long standing. We send regrets and sympathies to all the families.

Mr M Archer* of Boyle, Co. Roscommon, a member for over 20 years

Mrs M Barron* of Inverness, a member for over 46 years

Mr D R Glendinning, of Comrie, Perthshire, a member for over 64 years

Mrs N E G Roberts of Swansea, a member for over 14 years

An obituary of those marked * will appear in a future BSBI publication!

NEWS OF MEMBERS

Bob Ellis

DAVID PEARMAN, ‘Algiers’, *Feock, Truro, Cornwall, TR3 6RA*; (dpearman4@aol.com)

We will miss Bob and we owe him huge thanks for his work over the last 14 years.

He joined us as a staff member in 2003, after the untimely death of Pete Selby, and picked up the reins both of the Local Change Project, and also the use of the software programme for record submission, MapMate, which Pete had introduced us to. For many of you, this will sound just a piece of jargon, but MapMate has

revolutionised the task of data collection and submission for the vast majority of our vice-county recorder network in a way that nothing had before that date. Bob inherited this and, with endless patience, explained it and guided our recorders for all his time with us. Yes, there were and are other packages, all perfectly competent, but this programme caught the imagination and persuaded many techno-

phobes to take the leap to computerise their records. To give an idea of its importance, well over half of all the records coming into our database – the Distribution Database – come *via* MapMate.

Bob's patience was the key to this scheme working and he also was my colleague and assistant on our Records Committee for 12 years. Here he was a perfect foil, because I was always trying to move things forward and not necessarily dotting all the 'i's, and then I would sense a silence on my left-hand side, and I would know that presaged a (necessary) caveat from Bob! Because, no matter how impatient I might be, it always was necessary and wise counsel. I hope he enjoyed the working together as much as I did, even if everything had to wait for his vital fag-break!

I should mention too his joint editing of the results of the Local Change Project, his involvement with the England Red List, his co-authorship of the results of the Threatened Plant Project and his role in guiding so many vice-county recorders with their Rare Plant Registers – quite a roll-call of achievements. Again, for all this time, he was the vice-county recorder for East Norfolk, which he is continuing. I am lucky enough to see the field meeting programme there, packed with outings, each one culminating in welcome refreshment at a named pub!

I wish him well and look forward to meeting at the occasional Exhibition Meeting.

The Presidents' Award goes to Tom Humphrey

JOHN FAULKNER, *Drumherriff Lodge, 37 Old Orchard Road, Loughgall, Co. Armagh, BT61 8JD*; (jsf@globalnet.co.uk)

The recipient of this annual award is decided upon jointly by the Presidents of the BSBI and the Wild Flower Society. In the terms of the original endowment, it is intended to acknowledge the most useful contribution to the understanding of the flowering plants and ferns of Britain and Ireland in a completed calendar year.

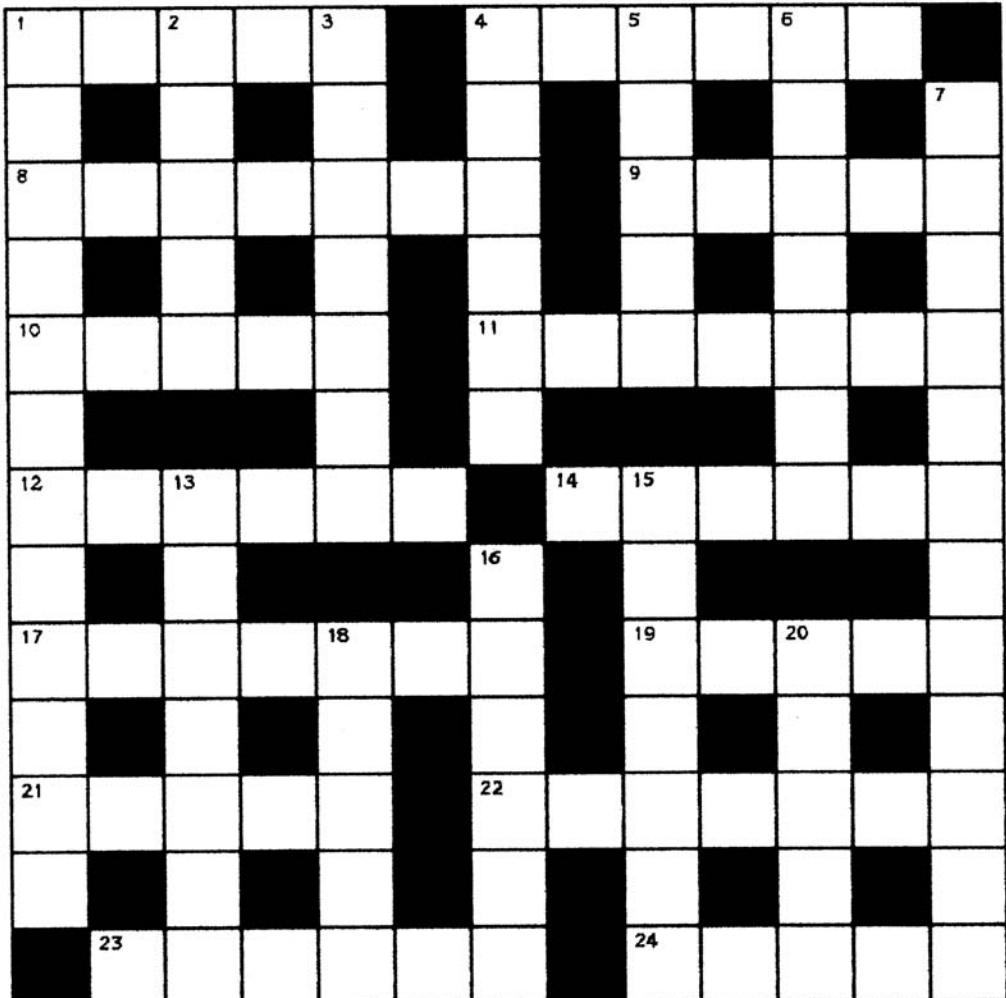
Since it was set up in 1995, the award has usually gone to the author (or authors) of an outstanding botanical book. 2016 was thus a departure from that norm, but one that the two presidents, Sir Ghillean Prance and I, believed to be well justified. Tom Humphrey, as creator and curator of the BSBI's Distribution Database, has undoubtedly made an enormous contribution to botany in these islands through

his work. Some readers, especially vice-county recorders, will be well aware of the versatility and importance of the 'DDB', as it has become known. As something of a late-comer to databases, even I can appreciate and use some of its many and varied facilities.

Tom has been working on it for several years, but now that it houses some 40-50 million records (the precise number depends on how you count the duplicates) and is widely used by VCRs and others, this seemed a good moment to acknowledge his achievement. The 2016 award (a certificate and a cheque) was presented to Tom at the start of the BSBI's Welsh AGM in Holywell, Flintshire, on 6th June 2017.

BOTANICAL CROSSWORD 32

by CRUCIADA



ACROSS

1. It's stiff to tackle identification (5)
4. Pomegranate from Carthage – top class! (6)
8. Black and white bed of grass, for example (7)
9. Half of homeopathy is rubbish: in particular, bulrush (5)
10. Erica's petals, say, given as food to American resident (5)
11. It's no stigma for a flower to be this – happily let stay (7)
12. Medieval battle of the Brassicas? (6)
14. Usually very hot when said to be cool (6)
17. Labour over operations on surface of earth (7)
19. Tree that's narrow, hollow and twisted (5)
21. Country dancer loses head inhaling this perfumed root (5)
22. Leaf taken from 17 substituting operations by referee (7)
23. Parrot on eastern boundaries that survives in paleobotanical remains (6)
24. Internally rotates tail of outer seed coat (5)

DOWN

1. Consequence of branching arrangement (12)
2. Information given to you and me about taxon level (5)
3. Date classes, perhaps, ceased miserably after 500 (7)
4. Volunteer's into classy fertiliser (6)
5. Crazy like an acorn? (5)
6. Call round with universal parental guidance on wasp's nest (7)
7. I hear two girls make up mixed leaves on bed of cereal (12)
13. Are pots made of this grass? (7)
15. Reaping expression of surprise, perhaps, at first reappearance of underwear (7)
16. Said to stick at double figures with element of wheat flour (6)
18. Mouse left in gut of thrush (5)
20. Forest tiger? (5)

RECORDERS AND RECORDING

Panel of Referees and Specialists

JEREMY ISON, 40 Willeys Avenue, Exeter, Devon, EX2 8ES; (Tel.: 01392 272600;
Jeremy_ison@blueyonder.co.uk)

Although it has not necessarily been the established practice, please get in touch with referees by email or telephone (if contact details are available) before sending specimens. Duplicates should be retained in case of mishap. Also, if irreplaceable material is to be sent in the post, it should be sent with appropriate tracking, signed for receipt, and insurance.

John Wallace has taken on the role of referee for *Montia fontana* subspecies. His contact details are included in the *Yearbook* as recorder for v.c.H04.

Rose Murphy has resigned as referee for *Fumaria* and *Oenothera* and Martin Ingrouille has resigned as referee for *Limonium*. There are now vacancies for referees for these taxa.

Ray Harley, whose email address was reported as defunct in the January BSBI News, has a new address, it is rharley05@hotmail.com (not eol). **Dr Harley** is keen to continue as referee for **Lamiaceae** and *Mentha* in particular, but would also like to arrange for succession, preferably with a transition period. Anyone who is willing and able to take this on should contact me

Panel of Vice-county Recorders

PETER STROH, c/o Cambridge University Botanic Gardens, 1 Brookside, Cambridge CB2 1JE;
(peter.stroh@bsbi.org)

Michael Archer has recently retired as joint recorder for Leitrim (v.c.H24). Michael has been recorder in Leitrim for the past five years, but has been involved with the BSBI for considerably longer and has made a great contribution to the Society. He has been VCR for more than one county, and was a stalwart on the BSBI Committee for Ireland. We send our best wishes and thanks to Michael.* Staying in Ireland, **Melinda Lyons** has recently retired from her position in Louth (v.c.H31) after a period of five years. Many thanks to Melinda for recording, in spite of a very busy schedule. There are no other changes to report, aside from one email address: **Liz Lavery** (v.c.87) can now be contacted at: eldlavery@outlook.com.

We have six vacancies for vice-county recorder posts, and for at least three counties a joint recorder would be welcomed to assist in collecting and collating records for the Atlas. These vacancies are listed below. If you require more information about the role, please

do get in touch with either me, at the contact details above, or your Country Officer (me, for England).

As ever, thank you to all VCRs, past and present, for your dedication, help and expertise.

Vacancies:

Bedfordshire (v.c.30) – joint recorder required to work alongside **John Wakely**

Berwickshire (v.c.81)

County Longford (v.c.H24)

County Louth (v.c.H31)

Dorset (v.c.9) – joint recorder required to work alongside **Robin Walls**

East Gloucestershire (v.c.33)

Merioneth (v.c. 48) - joint recorder required to work alongside **Sarah Stille**

West Sussex (v.c.13)

East Sussex (v.c.14)

* I'm sad to say that since writing this note I have been informed of Michael Archer's death. We send our sympathies to his family and friends.

Forty-eight years of botanical recording

MICHAEL BRAITHWAITE, *Clarilaw Farmhouse, Hawick, Roxburghshire, TD9 8PT;*
(mebraithwaite@btinternet.com)

I have decided to retire from regular botanical recording after 48 years and have been looking back on that recording from the viewpoint of the records that I hold in MapMate. This excludes my recording in distant places, particularly on holidays in the Western Isles and abroad. I remember Alex Lockton once quoting a figure of 150 as the average number of botanical records that a professional contrac-

tor might be expected to make in a day's site recording. I thought it sounded on the low side. To my surprise, I find that, in making 137,187 records over 1,653 days, my average number of records per day has been only 83, more suggestive of a golf score than a botanist's 'bag'. I decided to investigate why this was so.

The year-by-year profile of my recording has been as in Fig. 1.

MEB records

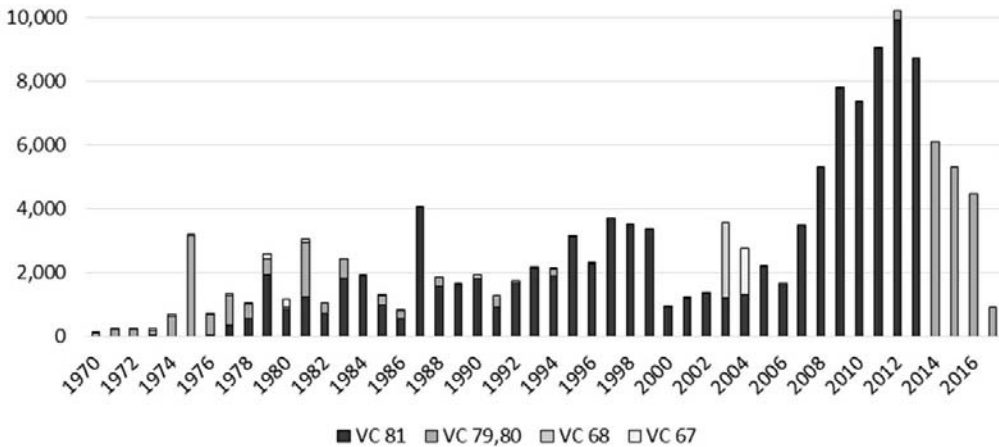


Fig. 1

The variation from year to year is huge. When I first took up botany on moving north in 1969, I marked up my finds in a copy of 'Keble Martin'. From 1970 I kept a wildlife diary in which I recorded notable sightings of plants and other wildlife. Much of my botanising in those early years consisted of modest rambles in the evening after work, so, while I was out often, my finds were very limited in scope. I was to join the BSBI in 1973 and in 1975 was persuaded to make a survey of 15 two-kilometre stretches of the disused railway near Hawick. This generated over 3,000 localised records. I was next involved in making lists of sites of botanical interest, first in Roxburghshire (v.c.80), where I was living, and then in Berwickshire (v.c.81), to which I was appointed

vice-county recorder in 1979. My recording has always been at monad scale, blurred slightly for site boundaries, with the scarce species recorded at 100m scale or finer. The bulk of my recording from 1979 to 2013 was in Berwickshire. Recording in Berwickshire while living in Roxburghshire involved me in much travelling, an average of an 80 miles round-trip or two hours driving for a day in the field, so there was no opportunity for short evening rambles and the number of recording days declined.

During the season I visited my vice-county for one day most weekends when I was not otherwise occupied, which was fairly often. As a result the number of days recording in my vice-county was fairly modest, at about 15 to 20 days a year, as in Fig. 2.

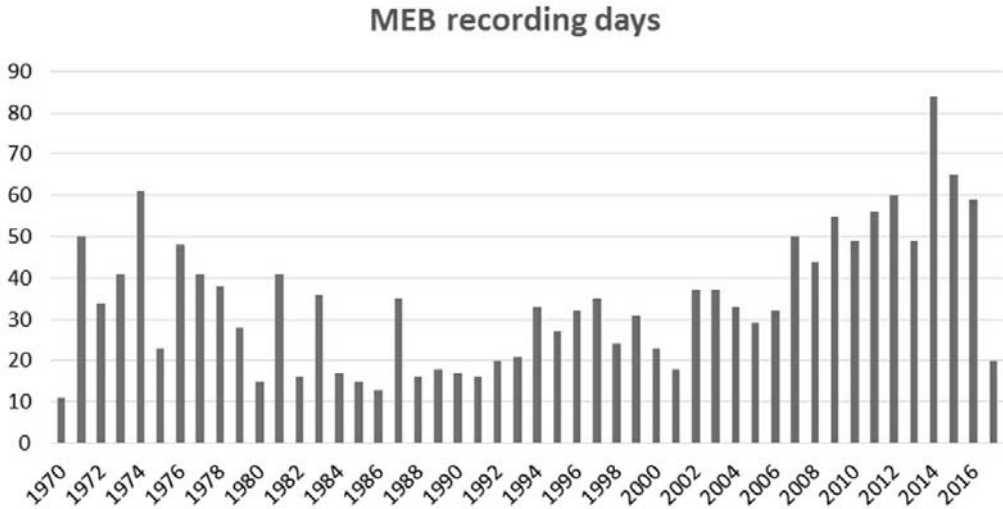


Fig 2.

Spurts of higher activity coincide with the BSBI Monitoring Scheme and the last few years of the BSBI Atlas 2000 project. From 2000 to 2006 the recording days were more or less maintained, and indeed increased somewhat after my retirement in 2002, but the number of records made fell sharply. This was because I undertook several intensive site surveys, recorded scarce plant populations in detail and studied some under-recorded groups, such as aquatic species, roses and the halophytes of roadsides. In 2007 I commenced a new sample survey of the vice-county, which ran until its successful completion in 2013. This was an intensive and exhausting recording project. In 2014, 2015 and 2016 I carried out three survey projects not far from our home in Roxburghshire. The 2014 survey was of the Burgh of Hawick, ten minutes away, so I made lots of short visits throughout that year.

The number of records made has varied with the season, as in Fig. 3 p. 73 (where the data relate to days in Berwickshire recording on my own). Winter recording was usually for some limited special purpose, such as a survey of Juniper over two winters, a similar survey of clubmosses and surveys of some other winter-green species, such as *Chrysosplenium alternifolium* (Alternate-leaved Golden-saxifrage). Such recording yielded only a small number of records per day.

I was surprised to find that my average high-season recording yielded only 130 species a day, so I have studied the records for 2009 in more detail. At that time I usually noted the time spent recording on each recording card (sometimes more than one per day). On days spent in 'square bashing' between May and September I made an average of 222 records per day, much more than the long-term average, at a rate very close to one record a minute. In contrast, recording in the 1980s was nearly all strictly site-orientated and the average for high-season recording was nearer 150 records per day. Although my field skills improved over the years, I covered proportionately less ground in a given time, and analysis of my 2015 repeat of my 1975 disused railway survey only detected bias relating to field skills for a very few of the more critical species.

I was reminded that the 2007-2013 survey differed from what had gone before by the inclusion of field crops and planted trees, and that, from 2009, my confidence in identifying plants vegetatively was much enhanced by a study of 'Poland'.

The emphasis on records at 100m scale or finer, often with supporting detail, has been fruitful. If I had tried to cover more ground less thoroughly I would not have had time to record so much detail. I would then not have been able to demonstrate the sad fate of

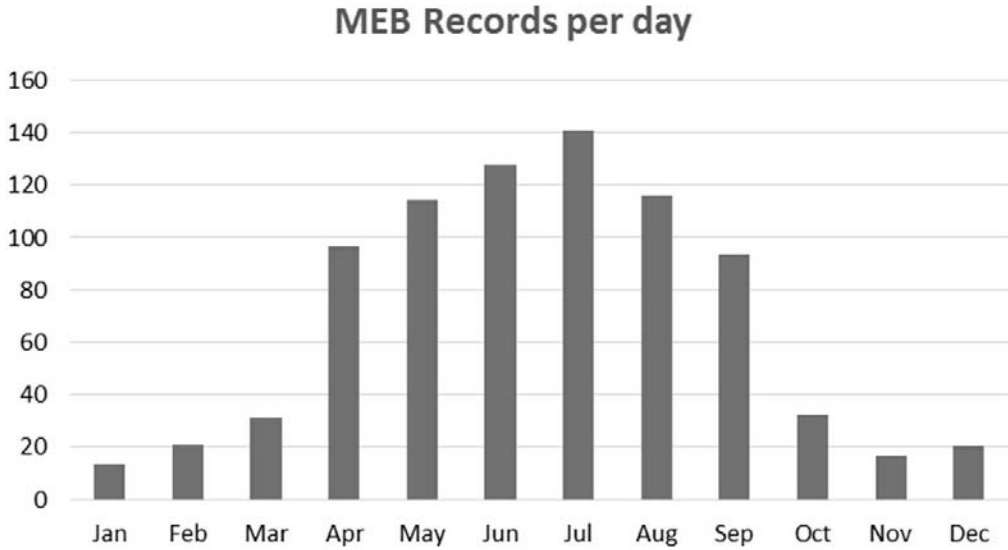


Fig 3.

Berwickshire's scarce plant populations, which I have shown to be disappearing at a rate of 16% a decade (Braithwaite, 2010). Surprisingly, as far as I am aware, no one else has yet tried to replicate these results in other areas.

I now find that I am proud to have averaged only 83 records a day. Maybe botanising is more like golf than I had imagined and a low score is something to aspire to. Taking the 48 years as a whole, I have not been obsessively engaged in 'square bashing' all the time (indeed it was not until 1987 that I first sought to fully-record a grid square of any size) and have concentrated on the detail. Frequently I was content to just walk peacefully and observe, making only a few notes. Quite often I was leading groups where botanical recording was not the objective. I was prepared to tackle upland ground, where the

walk-in was long and the species-diversity low. I have enjoyed pottering round arable fields looking for arable weeds and visiting the micro-habitats of urban areas as well as reveling in the dramatic landscapes of the Berwickshire coast and the Lammermuirs. There is next to nothing to regret and ever so much to be thankful for.

References:

- BRAITHWAITE, M.E. (2010). 'Berwickshire's disappearing scarce plants'. *Watsonia*, **28**: 129-140.
- MARTIN, W.K. (1965). *The concise British flora in colour*. George Rainbird Ltd., London.
- POLAND, J. & CLEMENT, E. (2009). *The vegetative key to the British flora*. John Poland, Southampton.

NOTES FROM THE OFFICERS

From the Hon. General Secretary – *DELYTH WILLIAMS*

Bryn Siriol, Graigfechan, Ruthin, Denbighshire, LL15 2HA; (Tel.: 01824 702196)
(delyth@siriolbryn.co.uk)

It is with some trepidation that I take up the role of Hon. Gen. Sec. I have hard acts to follow and goodness knows how long it will take to ascend the learning curve. Nevertheless, for me it is a huge honour and privilege to be serving the BSBI and I intend to do so to the best of my (probably very limited) ability.

I have been a member of the Welsh Committee for about 15 years, an ex-Chair and a Trustee for four years or so. I took over as Recorder for v.c.50 (Denbighshire) (north-east Wales) in 2009 from my much loved and respected predecessor Jean Green, whom many of you will remember. I absolutely love this job, wandering all over a lovely part of the world, getting to places no-one else goes to, taking note of the panoramas, the Hares, Skylarks, Lapwings and Red Kites, as I did this week. Oh yes, and the plants too (see inside Front Cover). Working with, learning from and encouraging other recorders is, I believe, part of my job. I owe a huge debt of gratitude to all those who have helped me along the way and in my turn, and there's never enough time, I do believe it behoves us all to encourage anyone who shows

interest, especially the youngsters. Data input is a bit of a chore, but using MapMate and learning to interrogate the BSBI's Database is so useful and so interesting. It is such a powerful resource. Best of all, there is always prompt and excellent support from any number of knowledgeable folk.

I am very much an amateur, despite degrees in botany (no taxonomy, just biochemistry and molecular), oceanography and education. There were two lapsed memberships from former times before I was able to re-join and become a more active member, phasing into retirement now, which allows all the time in the world – grandchildren notwithstanding. It's wonderful!

The BSBI certainly deserves the epithet 'a Society like no other'; at the very least for its historical and continued inclusion of amateurs collaborating with professionals on an equal footing, something for which I am very grateful and appreciative. Our next steps are to work through the Recommendations of the recent Review, which will take the Society in its continuation from strength to strength.

From the Finance Officer – *JULIE ETHERINGTON*

Church Folde, 2 New Street, Mawdesley, Lancashire, L40 2QP; (julie.etherington@bsbi.org)

We are always looking for ways to make your money go further. There are two easy ways you can help. In return for ten minutes of your time, we could generate a massive **£10,000 every year**.

Gift Aid

When you complete a Gift Aid form*, the BSBI receives 25p Gift Aid from HMRC, on top of every £1 of membership subscription income, every year. This is a one-off form, which will remain effective every year into the future: a quick and easy way to make your money go even further. You can even save the

price of a stamp and do this online if you wish, because signatures are no longer needed.

Direct Debit

Choosing to pay your membership subscription by DD* is quick and easy for you and is very cost effective for the BSBI. A DD means that we will take care of collecting your subscription each January, even if you move your bank account. You can even set one up now for 2018. For peace of mind, we will always tell you before we collect any money and, for security, your money is covered by the DD guarantee.

Find both forms at: <http://bsbi.org/subscriptions>. Every penny goes towards helping your BSBI become even better.

* To register for Gift Aid you must be a UK taxpayer; and to pay by DD you must use a £ sterling bank account. The BSBI does not yet have paperless DD.

From the Scottish Officer – *JIM MCINTOSH*

c/o Royal Botanic Garden, Inverleith Row, Edinburgh, EH3 5LR;
(Tel: 0131 2482894; jim.mcintosh@bsbi.org)

BSBI eNews

Recent editions of the monthly electronic newsletter *BSBI eNews* have included articles on a wide range of topics of interest to BSBI members; everything from the identification of *Festuca filiformis* (Fine-leaved Sheep'sfescue) and *Equisetum × litorale* (Shore Horsetail) to news about staff, such as Bob Ellis's retirement, and Tom Humphrey's recent President's award. There are regular features on Atlas 2020 recording, data entry and validation, MapMate and the BSBI Database, as well as publications, on paper and online, and events, such as workshops and annual meetings.

All county recorders and referees are sent a link to the online edition, but the current issue and back-issues are freely available to everyone on the publications page of the BSBI website (Resources > Publications). Bookmark the page and look out for new editions, which appear on, or shortly after, the 1st of every month.

Probably too much of *BSBI eNews* is drafted by me and I would welcome all contributions of interest to fellow readers! Items should be short and succinct, as befits an electronic newsletter, and I would particularly like illustrations and links (*e.g.* to further information).

BSBI Photographic Competition 2017

If you are a keen photographer and are planning to enter the BSBI Photographic Competition, remember to send your entries to Natalie Harmsworth (email: natann29@freeuk.com) by 20th October 2017. Full details of the competition appeared in *BSBI News*, 134, and are online at: bsbi.org/bsbi-photographic-competition. To recap briefly, the 2017 competition has two categories: 1) Plants in the Landscape; and 2) Archaeophytes – naturalised plant species that were introduced before 1500. Photographs should be taken in Britain or Ireland; but photos do not have to be taken during 2017 and you do not have to enter both

categories. However, there is a limit of two images per category per entrant. Winners will be selected by a popular vote of those attending the Scottish Annual Meeting.

Two further points to note: please submit the largest possible file sizes. Files over 10MB should be sent *via* Dropbox and not by email. Also, please title photographs using the following format: common name, (scientific name), location, photographer's name, and competition category (PL or A), *e.g.* "Cornflower (*Centaurea cyanus*), Strathmore, by John Smith_A".

BSBI Scottish Annual Meeting

All BSBI members are very welcome to this year's Scottish Annual Meeting at the Royal Botanic Garden, Edinburgh, on Saturday the 4th November. Our main speaker is Michael Scott, nature writer and speaker, who will give a beautifully illustrated talk on 'Mountain

Flowers', the title of his most recent book. There will also be short talks on *Saxifraga hirculus* (Marsh Saxifrage) in Scotland by Aline Finger, The Threatened Plant Project results by Pete Stroh, and Scottish Wildlife Trust Stirling's Plant monitoring & conserva-

tion work by Roy Sexton. We will repeat the mini-workshops that proved so popular in 2016, with a selection of new topics. However, the main event is really the exhibition (everything else is really just the icing on this delicious cake!) and we would warmly welcome exhibits and posters that will interest Scottish botanists – from regular, infrequent and new contributors.

Although a flier is included with this edition of *BSBI News*, we would be grateful if as many as possible would book and pay online. Please follow the links from the BSBI website homepage to the Scottish Annual Meeting booking page, which will include details of the mini-workshops.

From the Irish Officer – *MARIA LONG*

c/o National Botanic Gardens, Glasnevin, Dublin 9, Ireland;
(Tel.: 00 353 87 2578763; maria.long@bsbi.org)

This is a short note this time from the Irish Officer! It is such a busy time of year. To touch on a couple of highlights from recent weeks: I have recently been involved in a very successful workshop, 'Introduction to Botanical Keys', led by the hugely experienced Richard McMullen. It was a great success, with everyone attending working hard and getting something from the workshop. The weekend before that I co-led an outing in Co. Derry with Sharon Spratt. We had a big turnout, lovely weather, and succeeded in our ambitious plan to visit three very different sites. We saw four of Ireland's six clubmoss species, which was a real treat, and did so in the company of no less than four of the seven Northern Ireland BSBI recorders!

In other news, we now have three vacant vice-county recorder posts in Ireland – Louth, Longford and Leitrim; although both Louth and Longford are receiving recording attention from hard-working VCRs from other counties, and in Leitrim we have a few people interested in the position. That said, both Longford and Louth in particular will need recorders in the medium to longer term, so please get in touch if you are interested to find out more about the role.

As a final note, I want to mention the very sad passing away of one of our most loved recorders, Michael Archer. He was a kind and interesting man, and touched all those who met him with his warmth and his wit. He will be missed greatly.

From the Communications Officer – *LOUISE MARSH*

Dates for your diary

234 London Road, Leicester, LE2 1RH; (louise.marsh@bsbi.org)

The Annual Exhibition Meeting and AGM

This year's Annual Exhibition Meeting and Annual General Meeting will take place on Saturday 25th November at the Natural History Museum, London. A flyer included inside this issue of *BSBI News* gives more details of the AEM, including how to book. Of course, it is possible to just turn up on the day, but it helps us if we know in advance how many people are coming.

There will be the usual array of exhibits, talks, a pop-up bookshop from Summerfield Books

and lots of networking opportunities. We will not be having a set theme this year, but you will be able to enjoy talks by AEM 'regulars' and several speakers new to the event, such as Andrew Branson, who will be talking to us about the new BSBI publication (see also p. 10). You can find the full programme on the flyer.

If you have never attended an AEM before, you can get an idea of what goes on by visiting <http://bsbi.org/annual-exhibition-meeting>, where you will also find any updates about this

year's AEM and Powerpoints from last year's talks.

Any members wishing to exhibit at the AEM should contact us at: meetings@bsbi.org to discuss any requirements and reserve a space. We welcome any poster or exhibit concerning British and Irish botany and would be happy to

offer extra support and guidance to any member who has never exhibited before. The AEM is for everybody, not just 'experts', and your exhibit can be as simple or as complex as you like! Click on the AEM 2016 Exhibits' links on the AEM webpage to see some examples.

New Year Plant Hunt 2018

This is a reminder that we plan to run our seventh New Year Plant Hunt (NYPH) for four days over the New Year holiday. We hope that, whatever your skill level, you will want to join us in recording what is in flower in mid-winter. It's a great way to shake off the mid-winter blues or to introduce friends and family to the delights of botanical recording, and the NYPH is also helping us build up a clearer picture of which wild or naturalised plants are able to bloom across Britain and Ireland in the middle of winter.

Details of the 2018 Hunt will be posted on the website during the first week in December: <http://bsbi.org/new-year-plant-hunt>

If you are new to the NYPH, follow the links on the webpage to our dedicated NYPH website <https://nyph.bsbi.org/>, where you can see photographs of some of the 492 species recorded in bloom during the NYPH 2017. There is also an interactive map showing all the locations where plants were recorded. We hope that plant hunters would re-visit those locations in January and that we can also fill in any gaps.

Co-ordinating the New Year Plant Hunt takes a huge amount of work, so if you can spare some time to join the NYPH Team as a volunteer this year, we would be delighted to hear from you at this address: nyplanthunt@bsbi.org.

From the Hon. Field Meetings Secretary – JONATHAN SHANKLIN

11 City Road, Cambridge CB1 1DP; (fieldmeetings@bsbi.org)

Autumn seemed to have arrived early this year, with a string of cool, wet and windy days at the end of July and beginning of August. Some blackberries were just about ready for eating in early July, and in Cambridgeshire those of *Rubus ulmifolius* were becoming edible in early August. Flowers were showing the seasonal change too, with many already in seed. BSBI national and local field meetings, however, continue to the end of October, although there may be increasing reliance on the jizz of dead plants.

The Annual Summer Meeting in Flintshire went very well, although sorting out the logistics was a challenge. There will be a full report in the *Yearbook* or 'New Publication' (NP), but for a quick summary, rain was a bit of a dampener on the first day, wind on the second and the weather was not too bad after that.

Around 50 participants visited 30 tetrads, seeing 831 species and making over 7,000 records. A good number of Flintshire and national rarities was seen, and *Urtica dioica* (Common Nettle) was the most frequently reported plant. There was a lot of learning and picking up of tips from other recorders, which is a big part of these events. Next year, we visit the Isle of Man, in a joint meeting with the British Bryological Society, and there will be a flier with the first NP. We will be staying at King William's College from 16th – 23rd July at a B&B rate of £28 per night. Although this is a full week, we will bias the BSBI part towards the second half of this period. Further details, general information, including travel, and a booking form will be posted on the ASM web page as soon as they are available.

I will soon be starting to collate the field meetings program for 2018. Each of the four countries organises its own meetings and these are collected together to form the full BSBI program. I will be asking those English counties that have not had any recent meetings if they would be willing to host one. If there has not been a meeting in your area this year and you would like the BSBI to visit, either get in touch with your local vice-county recorder,

or contact me. There is likely to be a proportion of meetings dedicated to ‘mopping up’ for Atlas 2020, but others will show off interesting plant areas, or provide training at all levels in the Society.

I would finally like to thank Gwynn Ellis and Trevor James for the great flexibility that they have shown in including my often-belated contributions and for making *BSBI News* a journal that I look forward to receiving.

Diary for 2017 / 2018

DELYTH WILLIAMS, *Bryn Siriol, Graigfechan, Ruthin, Denbighshire, LL15 2HA*; (Tel.: 01824 702196) (delyth@siriolbryn.co.uk)

2017	Committee, etc.	Location
Tuesday 3 October	Records and Research	London
Tuesday 10 October	Training and Education	Shrewsbury
Thursday 12 October	Publications	London
Saturday 21 October	Welsh Committee	Newtown, Powys
Wednesday 1 November	Council	London
Saturday 4 November	Scottish AGM	Edinburgh
Wednesday 15 November	Board of Trustees	London
Saturday 25 November	AEM & AGM	London
2018		
Tuesday 30 January	Records and Research	London
Wednesday 1 February	Meetings and Communications	London
Tuesday 6 February	Training and Education	Shrewsbury
September tbc	Recorders' Conference	Shrewsbury

Botanical Crossword 32

Solution

ACROSS

1. RIGID 4. PUNICA 8. MONOCOT 9. TYPHA
10. FUSED 11. STYLATE 12. CRESSY 14.
CHILLI 17. TOPSOIL 19. ROWAN 21. ORRIS
22. TREFOIL 23. POLLEN 24. TESTA

DOWN

1. RAMIFICATION 2. GENUS 3. DECADES
4. POTASH 5. NUTTY 6. CUPGALL
7. VALERIANELLA 13. ESPARTO 15. HARVEST
16. GLUTEN 18. OUSEL 20. WOODS

Crib

ACROSS

1. RIG/ID 4. PUNIC/A 8. MONO/COT
9. anag (homeo)PATHY 10. F<US>ED
11. anag LET STAY 12. double def (alternative
spelling of CRECY) 14. pun 17. T<OPS>OIL
19. anag NAR(R)OW 21. (M)ORRIS
22. for the letters OPS in 17 across, substitute the letters
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13. anag ARE POTS 15. HA/R/VEST
16. glue ten 18. mOUSE Left (alternative spelling of
OUZEL) 20. Tiger Woods – geddit?

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EDITORIAL (cont.)

I could not sign off as editor of *BSBI News* without thanking one other member who has been a source of inspiration for so many years, whose advice, when sought, has been freely given and whose friendship and encouragement has carried me through several difficult times.

Who, you may be asking, is this paragon of virtue? **David Pearman** of course! To him and his wife Anita I raise a glass in thankful gratitude.

That's it then, all that's left for me to say is 'Hail and Farewell' and thank you to you all!!

LIST OF MEMBERS SEPTEMBER 2017

By the time you read this a new *List of Members*, in pdf format, will be available on the Members only section of the BSBI website, correct up to September 2017. Members who do not have email or internet access but would like to see a copy are asked to contact the Membership Secretary, who may be able to help.

CONTRIBUTIONS INTENDED FOR the New BSBI Publication should reach the Editor, Andrew Branson before November 12th

The retiring General Editor Gwynn Ellis can be contacted by phone on 02920 332338; email: gwynn.ellis@bsbi.org

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visual-flora Glossary English Latin Top



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As an alternative the key can also be run direct from visual-flora.org.uk, though it can be **rather slow** as it requires a lot of data transfer. Note that a personal login is required (obtainable from the contact below).

Links:

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Photo 1. Plants high up on a limestone sea cliff, photographed using a small drone with a 'standard' fixed focal length lens from c.2m. Most plants should be identifiable, although needs full resolution photo to zoom in. See: <http://bit.ly/2uBIo4w>

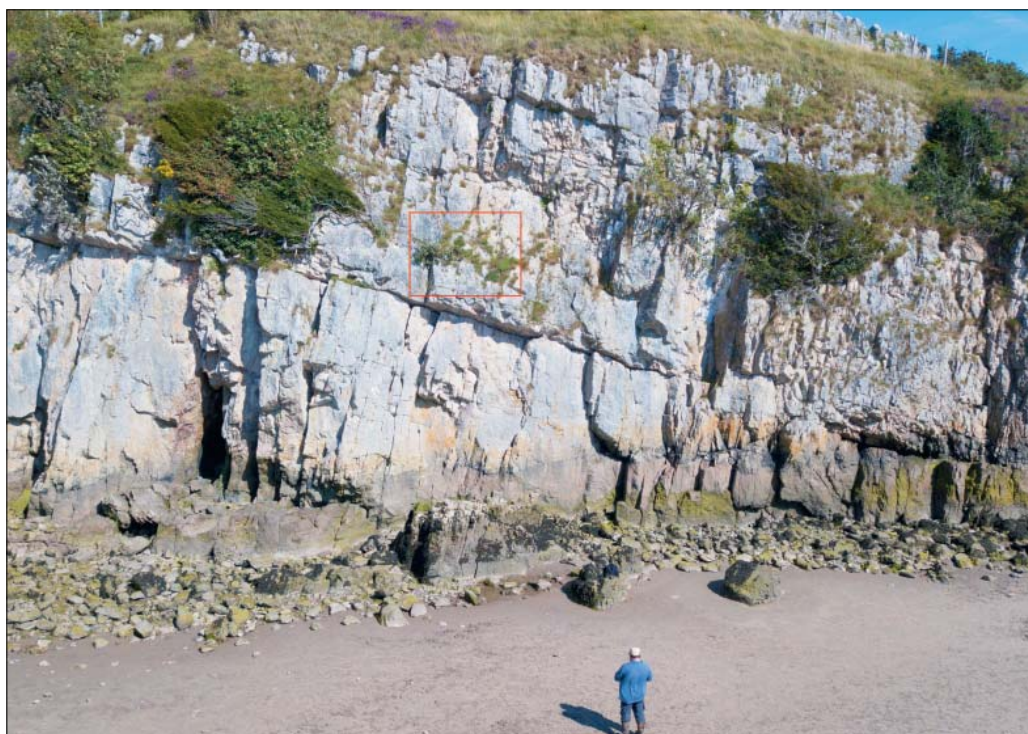


Photo 2. Limestone sea cliff, Silverdale, North Lancashire, surveyed using a small drone. The location of the close-up shot (photo 1 above) is indicated by the red square, illustrating the inaccessibility of the plants and the advantages of using a drone to get a closer view.

Both photos © C Crook 2017 (p. 43)