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Eryngium campestre at Sutton Scotney Service Station (v.c.12). Photo B. Laney © 2015 (see p. 5)



Our new Honorary Member Sylvia Reynolds with her husband Julian talking to Jane Houldsworth at the AEM. Photo W. Arshad © 2015 (see pp. 61 & 78)

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Cover picture: –Winning photograph in the Autumn category by Ian Strachan, ‘Spear Thistle *Cirsium vulgare* seed head’. Photo © 2005(see p. 58)

IMPORTANT NOTICES

From The President

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In his first message “From the President”, my predecessor, Ian Denholm, wrote about the changes taking place in the BSBI at the time. The formal changes, including the Articles of Association, are now firmly in place. The BSBI is a limited company and a charity, and its governing body is the Board of Trustees. We also have a new name, but retain the same initials. Many people have put a great deal of effort into making these changes happen. Not least among these is Ian himself, who has been (and still is) not only a tremendous asset to the Society generally, but also a great source of help and encouragement to me personally.

What is my view of the BSBI? Its greatest strength is without question its members. The BSBI has remarkable members – a very diverse bunch, but many of them with extraordinary skills. I never cease to admire the ability and energy of botanists, especially those who can recognise plants in unfavourable situations towards the end of a long day, maybe at a distance across a river in poor light, or in a split second when driving by at speed. Similarly, I cannot imagine what it would be like to remember, as some apparently can, the distinguishing features of a group of species, most of which you have not seen for ten years, if ever. (I sometimes find myself looking up the same species two days in succession). Our combination of amateurs and professionals on an equal footing within a scientific society is also immensely valuable. It gives the BSBI a synergy which either group on their own would almost certainly lack. Moreover, the BSBI offers incredible value for money to its members. Where else can you get so much for so little? As well as all our excursions and other events (see the website, or *BSBI Yearbook 2016*), you get access to outstanding expertise, and the opportunity to contribute to serious scientific endeavour, not to mention

the good company and enjoyment you will experience along the way. We could sometimes be a little more welcoming and helpful to outsiders and beginners, but for the most part, the BSBI is a gem.

The main task in front of us at the moment is to make sure that the changes in the BSBI work to the advantage of field botany in these islands. Fortunately I will not be facing this task alone, as we have a very dedicated and hard-working band of staff and volunteers. Among these, it is good to be able to welcome back Jane Houldsworth, Head of Operations after a period of maternity leave (see p. 2 for a note from her), and Antony Timmins, who has resumed the post of Hon. Treasurer after a break of a year. I do not like to use terms like ‘dedicated’ and ‘hard-working’ lightly, but in the case of the BSBI, their use is totally justified.

Something which I would like to take a close look at is whether, given our new situation, we can get more botanical output from all the effort we put in, and yet enjoy it even more. Is our Committee system, for example, still ideal for its purposes? Atlas 2020 (see Peter Stroh’s report on this at p. 80) is uppermost in our planning at the moment, but there are other important initiatives underway or in need of completion and continuing need for botanical education and outreach. Almost certainly, there will be ‘exocets’ – such as a future funding deficit – that need to be diverted.

In raising questions like these, where am I coming from? I joined the BSBI in 1967 as a young research student working on experimental sedge taxonomy. For the next 24 years, I was active only intermittently at best, serving a short stretch on the Committee for Ireland, attending occasional field meetings, and contributing to the Monitoring Scheme of the late 1980s. Otherwise, I concentrated on

family life, a large garden, and a career in plant breeding and, later, conservation. In 1991, I took on the role of Vice-county Recorder for Armagh, being the only resident member of the BSBI in the county apart from my predecessor. Botanists, of course, never fully 'retire', so on 'leaving paid employment' in 2005, I began recording more systematically, took on the role of Irish Field Meetings Secretary and later of Chairperson of the Committee for Ireland. At no point, however, did I ever imagine that the BSBI would want a President who had spent most of the past 46 years in a rural Irish backwater!

When I joined the Society, there was no *BSBI News*, only a more formal-sounding *Proceedings*. Interestingly, the list of officers and Council members from that time included at least two who were present 48 years later at the Annual Exhibition Meeting and AGM in November 2015. It seems botanists are an enduring lot! At first glance, much of the content of the *Proceedings* could almost have been written today. Closer inspection, however, reveals some big changes. One of these is the way that the Society works. It has become more difficult for scientists in full-time employment to dedicate much of their time to the running of societies such as the

BSBI. In 1967, the annual expenses of the Society were about £3,200. Almost three quarters of this was covered by members' subscriptions, and there were no paid staff. Such a model, however, would no longer work for a society of our scale and output. Our expenditure last year was over £500,000, and less than 14% of this was covered by subscriptions. We now have about a dozen full- or part-time staff and contractors. Times have changed and we have changed with them, and we must continue to do so.

Having lived in Ireland for nearly all of my time as a member, my knowledge of the BSBI in Britain has many gaps. It is over 20 years since there was last a President from Ireland (David Webb) and Irish members are very aware that they are thinner on the ground. I hope I will be able to bring a slightly different viewpoint to the table. However, I would like to start with some listening: to staff, to committee members, to other members, and indeed to non-members. I can not promise to do as everyone asks, nor to give fulsome replies to a long list of points, but I will undertake to read any emails or listen to anyone that wants to talk to me. All I ask is that you keep it as concise and as constructive as you can.

A new era for *New Journal of Botany* – a message from the Editorial Team

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This month, *New Journal of Botany* welcomes Dr Ian Denholm as our new Editor-in-Chief. He takes up the post as of January 2016, replacing Dr Richard Gornall, who has served as Editor-in-Chief since the journal's inception in 2011.

This appointment ushers in a new era for *New Journal of Botany*, which, starting in 2016, will be published almost entirely in electronic form. We also look forward to working with our new publishers, Taylor & Francis, to build on recent successes for the journal, including its acceptance by Scopus for indexing, which should bring *New Journal of Botany* to the attention of a wider audience.

We are still able to provide print copies, as well as continuing to provide electronic access, to any BSBI members who feel that this is essential to their enjoyment of *New Journal of Botany*, but there will be a charge for this service, currently set at £10 per year. This can be paid by adding £10 to your subscription when you renew this month, or you can send us a cheque.

A dedicated email address has been set up to provide more information and handle any requests for print copies. Please contact printcopyNJB@bsbi.org or you can write to the Editorial Office at the address above. If you are happy to continue accessing *New*

Journal of Botany electronically, you do not need to notify us or pay any extra - just continue logging in to <http://www.bsbi.org.uk/NJB/> and using the password (email us if you can not remember the password).

Institutional subscribers who have paid the higher subscription rate (currently £248 per year for both print and on-line access) will be unaffected by this change.

As well as being more attuned to the future direction of scientific publication, the move to on-line publication by default will represent a considerable financial saving to the society, enabling us to channel more resources towards core activities, such as our training, research and outreach programmes.

BSBI Atlas 2020: aims, outputs and ideas

PETER STROH & KEVIN WALKER

Please see page 81 for this important and informative paper

Notes from the Editors

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Cheques

Each year a number of members pay their subscriptions by cheque but do not include any other form of identification in the envelope. It can be very time consuming trying to work out who has sent the cheque especially if it is from a member with a common surname.

If you do pay your subscription by cheque please include a slip of paper with your name and address or at the very least put your membership number or post code on the reverse of the cheque.

Congratulations to Michael Braithwaite, an honorary member and past President and Treasurer who has been awarded the Bob Saville Silver Quaich for a lifetime's service to biological recording. This is a new annual award created by The Wildlife Information Centre (TWIC) in memory of Bob Saville and is for special individual contributions to the recording of wildlife in the Scottish Borders and the Lothians. Past winners include BSBI Members Jackie Muscott and Rod Corner.

Hybrid flora of the British Isles

It is gratifying to be able to report that the first printing of 750 copies of the *Flora* is sold out, and has been reprinted; a fitting reward for the three authors for their efforts and determination to bring the project to fruition.

Last November, I received notice of the resignation of **Mr R Lewis** of Tyn-y-Groes, Conwy after over 73 years of continuous membership, having joined the Society in 1942. Surely this must be a record. Old age, Mr Lewis is now over 90, and failing eyesight were the reasons given for his reluctant decision to resign. I am sure all members will join with me in offering Mr Lewis our best wishes for the future and grateful thanks for his many years of support.

He tells me that he has runs of BSBI Journals dating from 1963 and he would be happy to give them to any member who can collect them from his home. If anyone is interested, please contact me (RGE) first.

The Weather

We have been remarkably lucky here in Cardiff to have escaped the worst of this winters weather. We have had a lot of rain and high winds but nothing to compare with the north of Britain and Ireland. We send commiserations to all members who may have been adversely affected by flooding and hope that the coming months will be calmer and dryer.

The New Year Hunt

A look online at the BSBI's publicity blogspot in early January revealed that this year's New Year Hunt was going just as well if not better than last year's and certainly seems to be gathering momentum. Well done to all involved (see also page 78).

NOTES

Eryngium campestre re-found in North Hampshire, v.c.12

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Eryngium campestre (Field Eryngo) is a rare plant in Britain, given as Critically Endangered in England (Stroh *et al.*, 2014), although it is relatively frequent in central and southern Europe. The first British record for it in the wild was by John Ray in 1662 in Devon. In Hampshire there are a few records in both vice-counties 11 and 12, but it was judged to be extinct in the recent Hampshire rare plant register (Rand & Mundell, 2011). It persisted at Mapledurwell beside a Roman road from 1943-1968, and close to the coast near Pylewell from 1983-1985 (when it was destroyed by the hole dug for a new telephone post!), as well as briefly near Milton, also near the coast, in 1921.

However, apart from those locations, there was a celebrated site that gave many records for the period 1912-1978, north of Winchester at Worthy Down, v.c.12. Initially there was a large patch of plants there on downland beside a Roman road (now the A272). That spot was ploughed c.1950, destroying most plants, but some persisted nearby along a hedgerow bordering the chalky field at SU459356, until it was eventually choked out by brambles. In *A supplement to Townsend's Flora of Hampshire* (Rayner, 1929) there is a record that is clearly for the Worthy Down site, but also a separate undated record by Miss H.M. Salmon for "Sutton Scotney". Rayner wrote that these were "Probably the same station", and that may be true, although Sutton Scotney itself is nearly three miles north of Worthy Down.

On 6th August 2015 Paul Stanley noticed one large plant of Field Eryngo beside the slip road onto the A34 at the northern edge of the north-bound service station at Sutton Scotney in North Hampshire, v.c.12. Several people, including Brian Laney, then visited this site see the photograph of the plant (inside front

cover) taken by Brian Laney on 21st August 2015).

Brian then helped by setting up a meeting with the E.M. Highways Agency on 24th September 2015, which I attended with Brian and Mervyn Brown, an expert on this species. The Highways Agency representatives agreed to protect the plant from future mowing, as it is only 60cm from the A34 kerb. By then the plant had collapsed and was rotten at the base, so Mervyn decided to cut it off. A little further down he found two buds for next year's growth. Mervyn replaced the top few inches of soil with silver sand to reduce competition from other plants and to help to prevent the plant from rotting. He intends to take most of the plant to the Kew Millennium Seed Bank but a little may be used to raise young plants that could be planted out in a safer spot nearby. Mervyn has arranged this with Kew, the land owner and Natural England (as it is a Schedule 8 species covered by the Wildlife & Countryside Act).

I picked up a dead detached leaf and Mervyn gave me a very small piece of the plant in order to make a voucher herbarium specimen. This has been deposited at the Kew herbarium in accordance with Natural England's permit for its collection. Dissecting the fruits of a few of the capitula under my microscope I could find hardly any seeds that looked viable. I look forward to hearing whether any viable-looking seed is found on the main stem that Mervyn will take to the Millennium Seed Bank at Wakehurst Place.

Mervyn is of the opinion that the plant should be regarded as native here, but I see that both 'Atlas 2000' (Preston *et al.*, 2002) and the recent New Naturalist book *Alien plants* (Stace & Crawley, 2015) regard it as an archaeophyte in Britain - so present here in a wild state since before the year 1500 but originally brought

here with human involvement (intentional or unintentional). In appendices the latter reference provides extensive lists of neophytes and archaeophytes with sub-classifications, and it classes *E. campestre* as a denizen, defined originally (Watson, 1847) as “at present maintaining its habitats as if a native species, without the direct aid of man, but liable to some suspicion of having been originally introduced by human agency, whether by design or by accident.”

It is just possible that the Sutton Scotney plant originally arrived as seed on the tyres of a vehicle from France, but if so, it is a remarkable coincidence that it grew quite close to where the plant was previously recorded.

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A Dewberry hybrid in the Fraserburgh dunes (v.c.93)

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Introduction

A bramble with ternate leaves and erect stems has grown in the dunes at Fraserburgh in NE Scotland for at least thirty years. There is now a patch so dense and large (17×12m) as to be visible on Bing aerial photos.

In its flowers and leaves this bramble seems to be a Dewberry *Rubus caesius*, but not in its vertical stems (see inside back cover). It also appears to be sterile, not developing fruit in 2014 or 2015, so I reckon it is a hybrid.

I first found this bramble in August 1985 and included shoots of it in a parcel to Alan Newton, along with other bramble collections from the local hectads NK05 and NK06. Alan merely wrote in his reply letter “also *R. caesius* – very scarce so far north”. I was new to brambles then, but now I reckon that Alan had not questioned my specimen’s lack of a normal stem piece and developed inflorescence because he had assumed it was the incompetent collection of a novice.

More recently I have seen Dewberry bushes on roadsides around Jedburgh and Kelso in

v.c.80, and noted their trailing stems, quite unlike the uniform, upright growth form of the Fraserburgh patch. I also realised that there were hardly any records of *Rubus caesius* in northern Scotland and some of them were doubtful. So I wanted to be sure of the identity of the Fraserburgh colony.

I therefore returned to the dunes in early January 2015 and found a dense patch of upright *Rubus* stems in the position I remembered from 1985, lying just inland from the dune ridge that runs alongside the beach. Without a GPS location from 1985, I cannot be sure it is the same patch, but searching around my remembered position produced no other stands. Moreover, my new collections made in January and also August 2015 match perfectly the 1985 sheet.

Description of the likely hybrid

The stems are erect, mostly 60-80cm tall, and very slender, with diameter only 2-4mm. They were largely mid-brown in colour in August, with just some sections green and slightly

pruinose. The stems lack hairs and stalked glands, and prickles are very few and very short (c.5 per 5cm and 1-2mm long).

The leaves are all ternate, with coarse toothing, lobes, and incised venation. In August they were mid-green above, slightly paler green below and were already bronzing at the margins. The upper surfaces were glabrous then, but the lower surfaces bore scattered hairs, most of them on the main and secondary veins. The petioles were glabrous and roughly equalled the lateral leaflets in length. The petiolules averaged a quarter the length of the terminal leaflets and for the lateral leaflets were 0-2mm long.

The inflorescences seemed undeveloped, mostly with just one or two flowers, but a few had four or five flowers on short pedicels. Many stems lacked flowers, some with tops turning sideways and even downwards. The pedicels were clothed in short-stalked glands, perhaps surprisingly. The petals were white, longer than wide, and narrowing to a broad point, with average size 8×5mm. The sepals were hairy and long-pointed. The stamens slightly exceeded the styles, and had glabrous anthers.

Discussion

The Fraserburgh plant's combination of ternate leaves, stems with pruinose bloom, and white flowers, make *Rubus caesius* fairly definite as one parent, but I am uncertain as to what species could be the second parent. Two hybrids of *R. caesius* are reported for Britain (Stace, Preston & Pearman, 2015): that with Raspberry, *Rubus idaeus*, is unlikely from the leaf characteristics of the Fraserburgh plant, especially the green under-surfaces; and that with *Rubus ulmifolius* is ruled out not only on these grounds but also the upright growth habit.

These upright stems suggest a parent species belonging either to the *Rubus* sub-section of the *Rubus* sub-genus or to the *Cylactis* sub-genus. This latter includes Stone Bramble *Rubus saxatilis*, which I think is the most

likely second parent, from its size, short prickles and ternate leaves.

Deciding on a second parent is made more difficult because no species in the groups mentioned above are known to occur within 10km of the Fraserburgh dunes. That, together with the rarity of all brambles, including Dewberry, in NE Scotland dunes, makes me wonder if the Fraserburgh colony did not have a local origin, but somehow was transported to its present position. I do not suggest endozoochory but carriage of larger fragments such as rhizomes or stem pieces by large birds – great numbers of geese come to the nearby Loch of Strathbeg each autumn – or by ships docking in the nearby Fraserburgh harbour.

The hybrid of *Rubus caesius* and *R. saxatilis* has been reported outwith the U.K. but seems rare. It was included by Focke in 1910 in his monograph on *Rubi*, but without description or locations. His source was an article by Blytt in *Botaniska Notiser* (1875). There is also a reported occurrence in Valle del Boite in northern Italy at 1700m, and three specimens are listed in the holdings of the Helsinki University herbarium (H) that I presume are from Finland.

Just possibly there could be more stands like the Fraserburgh one elsewhere in Britain; but given the prevalent reluctance of U.K. field botanists to tackle brambles and especially their hybrids, commented on in Stace *et al.* (2015), such plants may be ignored or unreported. So, publishing this article may elicit more sightings, which in turn could give more clues on parentage.

Acknowledgements:

I thank Alec Bull and Rob Randall for comments on my descriptions of the Fraserburgh colony.

Reference:

STACE, C.A., PRESTON, C.D. & PEARMAN, D.A. (2015). *Hybrid flora of the British Isles*. BSBI, London.

Status of *Juncus balticus* (Baltic Rush) and its hybrids in England

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Introduction

A strongly rhizomatous native perennial, *Juncus balticus* (Baltic Rush) has a distinctive appearance, with well-spaced, smooth, glossy, dark green aerial stems up to 100cm in height, lacking sub-epidermal sclerenchyma girders and bearing rather lax inflorescences, with dark brown flowers and fruits (Fitter *et al.*, 1984; Poland & Clement, 2009; Stace, 2010). Ellenberg indicator values show that it is a light-loving plant (L = 8), found on generally wet (F = 8), moderately acid (R = 5) infertile (N = 2) soils and has some salinity tolerance (S = 1) (Hill *et al.*, 2004). *J. balticus* has a circumpolar boreo-arctic montane distribution. In the British Isles, the plant occurs in maritime dune slacks and, rarely, on upland river terraces where there is little competing vegetation. It is largely confined to north and north-east coasts of Scotland, extending south to the Hebrides and Fife, apart from an English outlier in v.c.59 (South Lancashire) (Stace, 2002; 2010). According to the most recent BSBI distribution maps (<http://bsbidb.org.uk/maps>), *J. balticus* has been recorded in 77 Scottish and two English hectads and is therefore rated Nationally Scarce. The *Vascular plant red list for England* gives its threat status as Vulnerable (Stroh *et al.*, 2014). It is also listed as a Species of Conservation Importance in North-west England (Regional Biodiversity Group, 1999).

In England, *J. balticus* was formerly known from Lytham St. Anne's, Lancashire (v.c.60, West Lancashire), but that colony was lost to development in 1965 (Smith, 1984). Since then, the only extant sites have been at Birkdale on the Sefton Coast in north Merseyside (v.c.59, South Lancashire), where it was first discovered in May 1913 by R.S. Adamson. Smith (1984; 2006) described the history of occurrence and ecology of *J. balticus* in the Birkdale sand-dunes. He conducted surveys of the plant in 1981/1982

and 2003/2004, reporting that the total area of patches increased by 34% from 137.7m² to 185m² during this period. However, the rush disappeared from several dune-slacks in the north of its range, colonising others to the south, as well as newly-formed maritime habitat in an area known as Birkdale Green Beach (Smith, 2007). Losses were attributed to habitat maturation and scrub-invasion, the latter being a considerable threat to open dune habitats on the Sefton Coast duneland (Smith, 2009).

Two nationally rare hybrids involving this species also occur in the sand dunes of Merseyside and Lancashire, these being largely sterile plants that show considerable hybrid vigour and spread by vegetative propagation from rhizomes (Stace *et al.*, 2015).

Juncus balticus × *J. inflexus* (Hard Rush) is endemic to Britain and has a particularly impressive stature, with stems up to 2m, the tallest of any British *Juncus* (Stace *et al.*, 2015). It has been recorded only three times 'in the wild', at Ainsdale Sand Dunes National Nature Reserve (N.N.R.) (in 1950/52), Birkdale Sandhills Local Nature Reserve (L.N.R.) (1951) and Lytham St. Anne's L.N.R. (1966). The Ainsdale site (slack no. 6) was lost to sand-blow in the late 1980s but material had previously been taken into cultivation by C.A. Stace and was subsequently translocated to slacks and scrapes in Ainsdale N.N.R. and Ainsdale L.N.R. Both the original Birkdale and Lytham clones are still extant as large vigorous patches in wet-slacks, material from the Birkdale clone being translocated to three Ainsdale N.N.R. sites between 1967 and 1976 (Smith, 1984). Wilcox (2011) describes morphological differences between the three native clones and suggests varietal names for them. Contrary to the statement that this hybrid is completely sterile (Stace, 2010), he found that the clones produce a few fertile seeds and that these grow true.

The second hybrid, *Juncus balticus* × *J. effusus* (Soft Rush) (*Juncus* × *obotritorum*) has similarly been found three times in a wild state in Britain (Stace *et al.*, 2015), twice at Hightown (in 1966 and 1973), Sefton, and at Ainsdale (1933) in a slack that was destroyed by the building of a holiday camp in the late 1960s. The two Hightown sites were subsequently lost to development and coastal erosion. Material from one Hightown clone and that at Ainsdale were cultivated and translocated between 1968 and 1992 to Ainsdale NNR, Hightown dunes and Altcar Rifle Range (Smith, 2006). Elsewhere, this hybrid has only been recorded once – on the Baltic coast of north Germany (Stace *et al.*, 2015). The status of both hybrids in 1982 and 2003 was described by Smith (1984; 2006).

J. balticus and the two hybrids are considered to be amongst the most important Sefton Coast plants (Smith, 2009) and were last surveyed in 2003/2004. It was therefore considered opportune to re-visit the populations with the aim of monitoring changes in their distribution and status.

Methods

All known Sefton Coast sites for the rush and its hybrids were visited in June and July 2015, including new locations for *J. balticus* that had been discovered since 2004. The positions of patches were determined using a *Garmin Etrex* GPS unit and patch areas estimated from the mean of two diameters using πr^2 . Mean and maximum heights of rush stems were obtained for each patch. Data on the *J. balticus* × *J. inflexus* clone at Lytham St. Anne's were collected by M. Jones and A. Baines in early August 2015. For all large patches of *J. balticus*, 2×2m quadrats were recorded using U.K. National Vegetation Classification (N.V.C.) methodology (Rodwell, 2000). Reference was made to keys and community descriptions in Rodwell (1992; 2000) and a *MAVIS* programme was used to investigate the statistical fit of the samples to known N.V.C. communities. Sub-surface soil samples were taken from the centre of each quadrat, soil pH being determined using a *Lutron* PH-212 pH meter buffered at pH 7 and 4. Using the criteria of

Ranwell (1972), sites were classified as semi-aquatic, wet or dry slacks. An assessment was made of habitat condition and the need, if any, for conservation management.

Results

Juncus balticus

Nine sites supported 54 patches of *J. balticus*, totalling an area of 508m², compared with 185m² in 2004, an overall increase of 275% (Table 1). As in 2004, the sites form two groups: one in slacks in the northern part of the Birkdale Sandhills, together with the adjacent Green Beach, the other being about 2km to the south, also consisting of a slack and the nearby Green Beach (Figs. 1; 2). All the sites are no more than about 200m from the shore. As in the previous survey, the most important single site was slack no. 27 in the northern Birkdale frontal dunes. Here, the number of patches declined from 44 to 27, but the area occupied by the rush increased from 134.6 to 295.4m² (Table 1 p. 14). This was despite severe damage in the 2013/2014 winter, when an estimated 70% of patch area was destroyed by large off-road vehicles repeatedly driving through the slack, churning up the soil and causing deep ruts (personal observations).

In addition to slack 27, five other sites showed large increases in area since 2004. They include three wet-slacks in the frontal dunes (nos. 39a, 39b and 45), together with two areas of Birkdale Green Beach, where several new patches were found, although a few had disappeared under stands of *Alnus glutinosa* (Alder). Only at slack 26 and Tagg's Island were decreases in total patch area recorded (Table 1). Slack 26 is an old wet-slack east of the coast road, where Smith (2006) reported a major decline in *J. balticus* area between 1982 and 2004, attributing this to growth of competitive vegetation, in this case dense *Salix repens* (Creeping Willow). The losses at Tagg's Island were evidently caused by the spread of tall *Phragmites australis* (Common Reed), *Alnus glutinosa* and *Salix cinerea* (Grey Willow) into areas previously occupied by *J. balticus*.

Based on G.P.S. co-ordinates, in a few cases comparisons could be made between the areas

of individual patches over time. Thus, the single patch in slack 45 grew from 1.9 to 36.3m², a 19-fold increase in 11 years. Also substantial were $\times 61$ and $\times 14$ area increases for two patches on Birkdale Green Beach (south and central respectively). These represent annual radial increases in patch size of 4.3cm for the smallest, 23.9cm for the middle-sized and 34.7cm for the largest patch. Rozema (1979) demonstrated a relationship between patch or tussock size and age in some coastal Juncaceae, including *J. balticus*. He also showed that annual increment of tussock size increased with age in *J. maritimus* but did not give comparable data for *J. balticus*.

Average stem heights for patches ranged from 25 to 80cm (mean 54.7cm), the lower heights being recorded in sites crossed by informal footpaths, on which trampling had suppressed the shoots. The highest values are comparable to those maxima reported in the literature: e.g. 60cm (Poland & Clement, 2009); 75cm (Stace, 2010); 100cm (Fitter *et al.*, 1984).

Fifteen 2 \times 2m quadrats were recorded in vegetation supporting large patches of *J. balticus*, stand height varying from 35 to 75cm, with a mean of 52cm. The number of vascular taxa per quadrat ranged from six to 35, the average being 18.5. An impressive total of 81 vascular associates of *J. balticus* was identified in the quadrats, the most frequent being: *Agrostis stolonifera* (Creeping Bent) (14 quadrats), *Carex arenaria* (Sand Sedge) (7), *Festuca rubra* (Red Fescue) (10), *Holcus lanatus* (Yorkshire-fog) (8), *Hydrocotyle vulgaris* (Marsh Pennywort) (7), *Mentha aquatica* (Water Mint) (7), *Rhinanthus minor* (Yellow-rattle) (7) and *Salix repens* (10). All are common sand dune slack plants on the Sefton Coast (Smith, 2009). Only three non-native taxa were found at low frequencies: *Oenothera* sp. (Evening-primrose), *Sisyrinchium californicum* (American Blue-eyed-grass) and *Trifolium hybridum* (Alsike Clover). No fewer than 13 (16%) of the *J. balticus* associates are regionally or nationally notable, reflecting the high nature conservation value of Sefton Coast dune-slack and salt-marsh vegetation (Smith, 2009). These results are similar to those

obtained in 1982 and 2004, when 60 and 80 vascular associates of *J. balticus* respectively were recorded in quadrats (Smith, 1984; 2006).

Table 2 (p. 15) gives the results of MAVIS analysis of quadrat data. A wide variety of NVC communities was identified but most of the statistical fits to known vegetation types are poor or very poor. Four of the slack 27 samples show similarities to SD14b: *Salix repens-Campylyum stellatum* dune-slack, *Rubus caesius-Galium palustre* sub-community. This is an uncommon vegetation type associated with young to moderate-aged slacks flooded in winter by base-rich, nutrient-poor ground-water. Another slack 27 sample resembles SD14d, the *Festuca rubra* sub-community, a species-rich variant associated with slightly drier sites. The two remaining samples from this slack have some accordance with SD15: *Salix repens-Calliergon cuspidatum* dune-slack, being vegetation associated with older slacks subject to prolonged flooding by circum-neutral ground-water. However, the two sub-communities: SD15b (*Equisetum variegatum*) and SD15d (*Carex flacca-Pulicaria dysenterica*) suggest more base-rich conditions (Rodwell, 2000).

One of the southern Green Beach quadrats also has similarities to SD15b, the *Equisetum variegatum* sub-community, while a second from this locality is closest to MG12b: *Festuca arundinacea* grassland, *Oenanthe lachenalii* sub-community. The latter is associated with damp free-draining soils in coastal sites subject to frequent inundation by brackish water, as on upper saltmarshes. Indeed, the *Oenanthe* sub-community is restricted to saltmarshes. The five central Green Beach samples also fit salt-marsh vegetation, either SM16: *Festuca rubra* salt-marsh or SM18: *Juncus maritimus* salt-marsh, being characteristic of somewhat waterlogged mid to upper marsh habitats. Found in three samples, the *Plantago maritima* sub-community (SM18a) has a fairly high tolerance of seawater submergence, while the *Carex flacca* and *Leontodon autumnalis* sub-communities of SM16 are associated with higher marsh levels, having relatively few tidal inundations per annum (Rodwell, 2000).

The pH of 15 soil samples range from 7.3 to 7.9, with a mean of 7.5. These relatively high values for waterlogged soils reflect the calcium content of Sefton dune sand and are considerably higher than the mean of 6.7 (range 5.2 – 7.7) reported for Sefton dune-slacks by Millington *et al.* (2010). However, their samples included older and therefore more acidic slacks in the eastern part of the dune system, whereas all *J. balticus* sites are situated in more westerly, younger duneland, where calcium carbonate has had less time to leach out of the soils (Salisbury, 1925). Soil types range from peaty gleys in the older sites to ground-water gleys in more recently formed slacks (Smith, 1984).

Based on Ranwell's (1972) criteria, all the slack sites for *J. balticus* were classed as wet-slacks, in which the water-table is sufficiently close to the surface to provide the mainly mesophytic flora with adequate moisture at all seasons. In a few cases, shoots of the rush extended a metre or so into the drier fringes of the wet-slack habitat but these areas often supported dense stands of *Salix repens* or other shrubs, which evidently restricted the spread of *J. balticus*. Conversely, the rush did not colonise the semi-aquatic slack habitat. This was particularly evident in slack 27, where illegal off-road driving in the 2013/14 winter had created ruts about 30cm deep through patches of *J. balticus*. In the two summers since this event, re-growth of the target species had occurred up to the edges of the ruts but not in the ruts themselves, which supported semi-aquatic flora including *Eleocharis palustris* (Common Spike-rush) and *Ranunculus lingua* (Greater Spearwort).

It was evident that existing patches of *J. balticus* are potentially vulnerable to the effects of scrub or tall-herb invasion. Thus, the plant was often found in gaps between bushes of *Salix cinerea* or *Alnus glutinosa* or close to expanding stands of *Phragmites australis*.

Hybrids

A summary of information on the two hybrids is presented in Tables 3 & 4. Since 2003, the native patch of *J. balticus* × *J. inflexus* at Lytham St. Anne's L.N.R. has increased in area by 180% from 221 to 398m², while that at

Birkdale slack 18 decreased by 49% from 2475 to 1260m². The latter change was unexpected, as the Birkdale habitat seemed unaltered. The clone appeared healthy and had continued to spread up the sides of the slack into fixed-dune habitat, as reported by Smith (2006), although the maximum height of stems was only 155cm, much less than up to 200cm reported by Stace *et al.*, (2015). Possible measurement error was investigated by reference to the original 2003 data sheets but no evidence of a mistake was found, although it could not be entirely ruled out.

Of the five translocation sites extant in 2003, three still supported the *J. inflexus* hybrid. A small patch of the Birkdale clone on the edge of Pinfold Pond was lost to scrub development soon after 2003, its location being infilled to control New Zealand Pigmy-weed (*Crassula helmsii*) in 2011/2012. The patch of the Ainsdale clone in Ainsdale N.N.R. scrape 13a could not be found, due to heavy scrub development around the scrape fringes, which impeded access. All three surviving transplants have grown considerably (Table 3, p. 15), the largest increase being at slack 15, Ainsdale N.N.R. (from 14 to 804m²). Here, the hybrid is well scattered in a tall sward dominated by *Juncus inflexus* and was rather difficult to find. This may have led to an underestimate of its occurrence in 2003. Also flourishing, the patch in Ainsdale L.N.R. scrape no. 166 is thought to represent the Ainsdale clone (Smith, 2006). This has more than quadrupled in size from 31.5 to 148.5m² in 12 years. The transplant of *J. balticus* × *J. inflexus* at NN.R. scrape 13c has also grown, in this case more than doubling from 11.6 to 32m², but large *Salix cinerea* (Grey Willow) bushes overshadow part of the colony and should ideally be cut back or removed. Much of the scrape is dominated by tall *Schoenoplectus tabernaemontani* (Grey Club-rush). However, the hybrid seems relatively unaffected by this potentially competitive plant.

Five translocation sites for *J. balticus* × *J. effusus* were also monitored (Table 4). Only one, at Altcar Rifle Range, showed a small reduction in patch area since 2003. On the

edge of a shallow scrape, this site is relatively dry and has become colonised by tall *Salix repens*, resulting in the hybrid being suppressed, with short (45cm), sparse, thin stems supporting hardly any flowers. However, the recent introduction here of an annual mowing regime for conservation purposes may be beneficial. In contrast, the same clone in a much wetter scrape on Hightown dunes is flourishing, having increased in area by 254% and supporting vigorous stems up to 135cm tall (mean 110cm), bearing abundant large inflorescences. The two Ainsdale NNR patches have also done well, that in the wet-slack no. 56 being taller and seemingly more luxuriant than in the drier slack 15.

With a few exceptions, average stem heights for both hybrids were lower in 2015 than in 2003 (Tables 3, 4, p. 15, 16). This probably reflects below average rainfall from autumn to spring 2014/2015 resulting in an exceptionally low sand dune water table. Thus, all the scrapes that normally hold water well into the summer were completely dry during the study period.

While most sites occupied by *J. balticus* are wet-slacks, the habitat of five of the 11 hybrid stands was classed as semi-aquatic, five as wet-slacks and one dry-slack, the latter being at Altcar Rifle Range, where *J. balticus* × *J. effusus* is not thriving. Overall, therefore, it seems that the hybrids require, or at least grow better, in wetter conditions than the *J. balticus* parent.

Discussion

It is encouraging that *J. balticus* has survived at all the sites occupied in 2004 and has increased in area at most of them, while new patches have appeared, especially on Birkdale Green Beach. Losses have occurred only where aggressive competitive vegetation, including *Phragmites australis* and various shrubs, has developed in the slacks and the Green Beach. This accords with previous findings that the plant is a good coloniser of young, sparsely vegetated wet-slacks and upper saltmarsh and may then persist for many years before declining, as the habitat becomes

drier and more heavily vegetated (Smith, 1984; 2006).

How *J. balticus* colonises new sites is not known, although Smith (1984; 2006) reported that the seeds are rather sticky and therefore could potentially be spread by pedestrians. He mentioned that patches were often associated with informal footpaths through slacks and on the Green Beach, this still being the case, with shoots often much reduced in height where regular trampling takes place. Once established, the rush spreads rapidly by means of rhizomes, provided that the associated vegetation remains relatively open and scrub-free, this condition being assisted by light pedestrian activity. Indeed, Smith (1984; 2006) commented on the apparent resistance of the rush to mechanical damage. Its partial recovery from churning of the substrate by off-road vehicles in slack 27 is a recent example. Evidence was also found of an increased rate of patch growth with age, as noted in other Juncaceae by Rozema (1979).

The earlier finding (Smith, 1984; 2006) that *J. balticus* is associated with a wide range of vegetation types in dune-slacks and upper saltmarshes is confirmed in the present study. N.V.C. quadrat samples in both 2004 and 2015 included SD14, SD15, SD16, MG12 and SM16. But the former study also found examples of SM13: *Puccinellia maritima* saltmarsh, MG11: *Festuca rubra-Agrostis stolonifera-Potentilla anserina* grassland and S19: *Scirpus maritimus* swamp containing *J. balticus*, these being absent from the 2015 samples. Interestingly, the best site for the rush, slack 27, supported mostly SD14 and SD15 vegetation in both 2004 and 2015. However, it should be stressed that most of these putative communities showed poor statistical fits to known N.V.C. vegetation types, a finding that has been common to many ecological studies on Sefton Coast wetlands (Smith, 2014).

Plant hybrids do not often attract the attention of conservationists, but Preston (2004) argues strongly that distinct hybrid taxa which form persistent populations and have restricted distributions should be considered as ‘plants of

conservation concern'. The great rarity and vulnerability of the two Baltic Rush hybrids seem to justify their inclusion in such a category. Most of the hybrid patches on the Sefton dunes have grown in size since the 2003 survey, although the apparent contraction of the native clone at Birckdale is a matter for concern. Two translocated patches of *J. balticus* × *J. inflexus* have been lost, while the Altcar Rifle Range transplant of *J. balticus* × *J. effusus* is struggling in what appears to be sub-optimal habitat.

The long-term future of *J. balticus* and its hybrids on the Sefton Coast is closely linked to dune dynamics, hydrology and the impact of vegetation change. In common with most coastal dunes in north-west Europe, the Sefton Coast dune system has become over-stabilised in recent decades, with a low rate of slack formation (Houston, 2008; Smith, 2009). This means that young slacks with open vegetation suitable for *J. balticus* are in short supply. However, the ongoing southward development of Birckdale Green Beach (Smith, 2007), is producing new upper salt-marsh and dune-slack habitat, which may provide opportunities for further colonisation by this species.

The present study has shown that stands of both *J. balticus* and the hybrids are vulnerable to tall-herb and scrub invasion. However, because the plants are quite localised and their positions known, small-scale management operations, such as scrub control and/or mowing of slacks are feasible, if difficult to organise and fund in the current financial climate. Further translocations of the hybrids to appropriate wetland sites could be explored as a low-cost option, there being a number of potentially suitable scrapes excavated for conservation purposes in recent years.

In the long term, climate change could have a significant impact on these plants. Although *J. balticus* is a 'northern' species, there is no evidence, as yet, that it is being affected by rising temperatures. However, using predictions from the U.K. Climate Impact Programme, a conceptual water-balance model for Ainsdale N.N.R. developed by Clarke & Sanitwong Na Ayuthaya (2010) suggests that

the dune water-table may fall by as much as 1.5m by the end of the century. This could mean that slacks remain drier for increasingly longer periods, seriously effecting wetland flora, including *J. balticus* and its hybrids. Currently in preparation, an integrated coastal zone management plan will need to address these and other issues to ensure a viable future for the Sefton dune system and its unique biodiversity.

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Table 1. *Juncus balticus* survey data for 2015 compared with 2004

Slack	Habitat	No. Patches 2004	Area (m ²) 2004	No. Patches 2015	Area (m ²) 2015	% area change
26	Wet-slack	7	3.5	1	0.03	-11667
26a	Wet-slack	2	0	0	0	
27	Wet-slack	44	134.6	27	295.4	219
Tagg’s Is.	Wet-slack	13	20.6	5	7.7	-268
39a	Wet-slack	3	5	4	32.4	648
39b	Wet-slack	4	15.1	3	26.3	174
GB (C)	Saltmarsh	10	3.2	10	43.1	1347
GB (S)	Wet-slack	2	1.1	4	67.1	6100
45	Wet-slack	1	1.9	1	36.3	1911
Total		86	185	54	508.3	275

Table 2. MAVIS analysis of *Juncus balticus* quadrats

Location & quadrat no.	NVC code	Community	Sub-community	% fit	Assessment of fit
Slack 27 Q6	SD14b	<i>Salix repens</i> - <i>Campylium stellatum</i> slack	<i>Rubus caesius</i> - <i>Galium palustre</i>	47	Very poor
Slack 27 Q7	SD14b	<i>Salix repens</i> - <i>Campylium stellatum</i> slack	<i>Rubus caesius</i> - <i>Galium palustre</i>	41	Very poor
Slack 27 Q14	SD14b	<i>Salix repens</i> - <i>Campylium stellatum</i> slack	<i>Rubus caesius</i> - <i>Galium palustre</i>	46	Very poor
Slack 27 Q15	SD14b	<i>Salix repens</i> - <i>Campylium stellatum</i> slack	<i>Rubus caesius</i> - <i>Galium palustre</i>	49	Very poor
Slack 27 Q8	SD14d	<i>Salix repens</i> - <i>Campylium stellatum</i> slack	<i>Festuca rubra</i>	42	Very poor
Slack 27 Q5	SD15b	<i>Salix repens</i> - <i>Calliargon cuspidatum</i> slack	<i>Equisetum variegatum</i>	41	Very poor
Green Beach south Q3	SD15b	<i>Salix repens</i> - <i>Calliargon cuspidatum</i> slack	<i>Equisetum variegatum</i>	39	Very poor
Slack 27 Q4	SD15c	<i>Salix repens</i> - <i>Calliargon cuspidatum</i> slack	<i>Carex flacca</i> - <i>Pulicaria dysenterica</i>	48	Very poor
Slack 45 Q1	SD16b	<i>Salix repens</i> - <i>Holcus lanatus</i> slack	<i>Rubus caesius</i>	41	Very poor
Green Beach central Q11	SM16d	<i>Festuca rubra</i> saltmarsh	<i>Leontodon autumnalis</i>	42	Very poor
Green Beach central Q9	SM16e	<i>Festuca rubra</i> saltmarsh	<i>Carex flacca</i>	42	Very poor
Green Beach central Q10	SM18a	<i>Juncus maritimus</i> saltmarsh	<i>Plantago maritima</i>	60	Fair
Green Beach central Q12	SM18a	<i>Juncus maritimus</i> saltmarsh	<i>Plantago maritima</i>	54	Poor
Green Beach central Q13	SM18a	<i>Juncus maritimus</i> saltmarsh	<i>Plantago maritima</i>	52	Poor
Green Beach south Q2	MG12b	<i>Festuca arundinacea</i> grassland	<i>Oenanthe lachenalii</i>	38	Very poor

Table 3. Summary of data on *Juncus balticus* × *J. inflexus* in 2003 and 2015

Site & Grid Ref.	Habitat	Origin of material	Date of Transplant or origin if natural	Area 2003 (m ²)	Area 2015 (m ²)	% change in area	Av. Stem height (cm) 2003	Av. Stem height (cm) 2015
Ainsdale N.N.R. Slack 15 SD286105	Wet slack	Birkdale	1968	14	804	5743	90	70
Ainsdale N.N.R. Scrape 13a SD286102	Semi-aquatic	Ainsdale	1992	7.5	Not found	0	0	0
Ainsdale N.N.R. Scrape 13c SD285101	Semi-aquatic	Ainsdale	1992	11.6	32	276	140	120
Ainsdale N.N.R. Pinfold Pond SD303112	Semi-aquatic	Birkdale	1976	13	Lost	0	0	0
Ainsdale L.N.R. scrape 166 SD294120	Semi-aquatic	Probably Ainsdale	1992	31.5	148.5	471	100	130
Birkdale L.N.R. slack 18 SD305139	Wet slack	Natural	Pre-1951	2475	1260	-49.1	170	130
Lytham St. Anne's L.N.R. SD312302	Wet slack	Natural	1966	221	397.7	180	115	100

Table 4. Summary of data on *Juncus balticus* × *J. effusus* in 2003 and 2015

Site & Grid Ref.	Habitat	Origin of material	Date of transplant	Area 2003 (m ²)	Area 2015 (m ²)	% change in area	Av. stem height (cm) 2003	Av. stem height (cm) 2015
Ainsdale N.N.R. Slack 15 SD286105	Wet-slack	Ainsdale	1968	60	110	183	80	60
Ainsdale N.N.R. Slack 56 SD291113	Wet-slack	Ainsdale	1978	99	188	190	80	90
Altcar Rifle Range SD286050	Dry-slack	Hightown	1977	5	4.2	-16	75	45
Hightown dunes SD296022	Semi aquatic	Hightown	1992	9	22.9	254	55	110



Fig. 1. Distribution of *Juncus balticus* patches in northern sites (white circles). Each slack is indicated by a number



Fig. 2. Distribution of *Juncus balticus* patches at southern sites (white circles). Slacks are indicated by a number

BSBI, conservation and site condition monitoring

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It is often claimed that the BSBI does not do enough conservation work. Of course, we support plant conservation, but in my opinion at least, we are not a conservation organisation *per se*. Our organisation is fully engaged with

identification and recording. Indeed many members are currently stretched to the limit with Atlas 2020. We are just too small, with too few members, to get involved in conservation; at least not as an organisation. But that

does not stop many of our recorders and members getting involved locally, which of course is great!

So, we must make our information and expertise available to those who *are* involved in conservation. We do that by making our data available to conservationists; by publishing our data in atlases, rare plant registers, checklists and floras; and by publishing interpreted outputs, such as species dossiers, analysis, scientific papers and, perhaps most important of all, red data lists. They are crucial because they inform plant conservation priorities and policy in the entire sector from the Government right down to landowners.

Another area where we are able to influence conservation, at least in Scotland, is through the rare plant monitoring we undertake on behalf of Scottish Natural Heritage, called site condition monitoring (SCM). SNH's support for the BSBI and the BSBI Scottish Officer post requires us to undertake between four and six sites annually. Generally, it is the local vice-county recorder who leads on the work, as they have the greatest local knowledge and vested interest. Indeed, many recorders have a long association with sites and the species that occur on them. For example, Rod Corner was instrumental in the designation of Whitlaw Mosses as an SSSI in 1962, and also wrote the species account in *Scarce Plants in Britain* (1994) for one of its rare denizens, *Juncus alpinoarticulatus* (Alpine Rush).

In 2015 we were involved with the SCM survey of Morven & Mullachdubh SSSI, at the edge of the Cairngorm National Park near Ballater. It is a 25km² area of upland habitats, culminating in the 871m remote summit of Morven. It had not been surveyed before so our survey would form a baseline. Data to start the search for the rare plant species was largely obtained from the Distribution Database, with a contribution by the local SNH Area Officer.

In total we had records for 28 populations of eight Nationally Scarce target species on the site: *Carex vaginata* (Sheathed sedge), *Linnaea borealis* (Twinflower), *Lycopodium annotinum* (Interrupted Clubmoss), *Pyrola media* (Intermediate Wintergreen), *P. rotundifolia* (Round-leaved Wintergreen), *Sedum*

villosum (Hairy Stonecrop), *Sibbaldia procumbens* (Sibbaldia) and *Vaccinium microcarpum* (Small Cranberry). The mission was to re-find and monitor them. Of the 28 populations, 15 were re-found, ten were not found, despite an extensive search, and three were not searched for because the records were too old or vague. Sadly, we completely failed to re-find *Sibbaldia*, despite a very thorough search. However, a total of 38 additional, or 'new', populations of the other target species were found and monitored. Together, this makes a very valuable update to our records and the Cairngorm National Park rare plant register. In addition, some 1,400 records of 222 species were made during the course of the fieldwork, all at monad or better resolution, and this will fill a big hole in Atlas 2020 coverage for South Aberdeen.

So the work is enormously useful to the BSBI. In addition, we are given an opportunity to note management issues and make management recommendations based on survey evidence. In the survey report, for example, we recommended that muirburn be restricted to avoid damaging the very species that the SSSI aims to protect, such as Juniper. We also noted that small mounds had been excavated by digger apparently without SNH consent and have subsequently heard that the matter is now in the hands of the police!

I would like to thank all the volunteers who regularly undertake SCM on behalf of the BSBI, and I would like to thank them *personally* for supporting the Scottish Officer post, which, in turn, allows me to spend most of my time supporting the BSBI's core activities in Scotland, such as Atlas 2020. This year, thanks are due in particular to Eric Meek for his sterling baseline work on Morvern & Mullachdubh, Stephen Bungard on Eigg – Cleadale SSSI, David Welch on Hill of Towanreef, Brian Ballinger and Mary Dean on Kyle of Sutherland and Liz Lavery on Loch Leven.

If you would like to get involved with this valuable contribution to recording and conservation, please let me know and I can put you in touch with the 2016 lead volunteers.

Two new occurrences of *Najas marina* outside its traditional British range

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Najas marina (Holly-leaved Naiad) has an almost cosmopolitan distribution, occurring throughout Africa and the Indian Ocean Islands and from Europe east through Siberia, the Mediterranean, Middle East, and the Indian Sub-continent to far eastern Russia, China, Japan and the Korean Peninsula, south to Taiwan, Myanmar and Vietnam (Board of Trustees of the Royal Botanic Gardens, Kew, 2015). It also occurs in the Molucca Islands and Australia, as well as the United States, Mexico and Central and South America (Lansdown, 2015). It occurs more or less throughout Europe, except Ireland and Iceland. It is considered to be Vulnerable both in the U.K. (Cheffings & Farrell, 2005) and in England (Stroh *et al.*, 2014) and is protected in the UK by Schedule 8 of the Wildlife and Countryside Act, 1981. It is listed as Endangered in Norway and as Vulnerable in Cyprus, Denmark and Switzerland, but elsewhere populations appear to be reasonably abundant and stable. *N. marina* typically grows in mesotrophic to eutrophic lakes and ponds (Preston, Pearman & Dines, 2002; Lansdown, 2010) and will tolerate at least mildly brackish water, evidenced by its occurrence in the Thurne Broads system in the Norfolk Broads.

N. marina was first discovered in Britain in 1883 in Hickling Broad and, until 2010, had never been recorded in Britain outside of the Broads system (Preston, Pearman & Dines, 2002). Given its global distribution and tolerance of nutrient-rich water, this limited distribution is perhaps surprising. Since 2010 it has been recorded in three sites outside its known U.K. range. In 2010 *N. marina* was found to be abundant in a small (3.6 ha) *Chara*-dominated shallow ornamental lake (Bluestone Plantation Lake) near Cawston in the headwa-

ters of the River Wensum, Norfolk. In 2015, following pond restoration work as part of the Norfolk Ponds Project, particularly clearance of fringing scrub, *N. marina* was found in a marl-pit pond about 500 m from the 2010 record. Just a few plants were located in the lake margins, as part of a recovery community dominated by *Ceratophyllum demersum* (Rigid Hornwort), *Chara* spp. (stoneworts) and *Potamogeton crispus* (Curled Pondweed) (see photos, Colour Section plate 3). Also, in 2015 *N. marina* was found in an artificial lake in the Wildfowl and Wetlands Trust Reserve at Arundel in West Sussex (v.c.13). Surveys of aquatic plants in the lake in 2014 found no sign of *N. marina* at Arundel and so it can reasonably be understood to have arrived or germinated there for the first first time in 2015. Floating fragments of the material from Arundel were collected and pressed for deposition in the herbarium at Brighton (BTN) (see photos, Colour Section plate 3).

It is not yet possible to establish the origins of these new records. Whilst it is entirely logical that the two Norfolk records could be the result of dispersal from the established Broads populations, this is much less likely to be the case for the West Sussex record. A range of aquatic and wetland plants was introduced to the site (2005) at Arundel during its development, but *N. marina* was not explicitly included in this planting and if it did arrive with introduced plants then for some reason it did not germinate until 2015. This makes introduction with ornamental planting less obvious as a source. It is possible that all three records are the result of dispersal by wildfowl, but there is no obvious reason why this should happen three times in five years when it has apparently not happened in the preceding 110 years. A third

possibility is that some level of dispersal has occurred at intervals, but that this has not until now resulted in persistent populations of plants. The latter explanation could be reinforced by the idea that climate change may have rendered previously unsuitable sites now suitable. This last theory could be supported by the fact that another Norfolk specialist, the Norfolk Hawker dragonfly, has also recently expanded its British range into Cambridgeshire and Kent. However, this species is at its northern-most limit in Britain, whereas *N. marina* is not and occurs north into Scandinavia.

A large number of subspecies has been recorded within *N. marina*, although not widely recognised (Preston & Croft, 1995) and of these the British material has been identified as ssp. *intermedia*. Subspecific identification of the new populations could show whether or not they are the same subspecies as the population in the Broads. A more reliable explanation could be achieved through molecular analysis, possibly via on-going molecular work carried out by scientists at Kew for Natural England.

The future of *N. marina* at these three sites cannot be guaranteed and further investigation is needed regarding the origin of plants, to help inform conservation. At Arundel the reed-bed channel is kept clear by the action of water voles on the reeds and the passage of shallow-draft, propeller-driven boats used to transport visitors through the reed-beds. *N. marina* is tolerant of relatively nutrient-rich habitats (although this may not be the case for all the subspecies) and so persistence of this popula-

tion seems reasonably likely. The new Norfolk sites lack protection. They both have low nutrient levels and are well buffered from surrounding agricultural land. Nevertheless they are vulnerable to eutrophication, water abstraction and, in the case of the marl-pit pond, terrestrialisation. The status of all three populations will be monitored for the foreseeable future.

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A commentary on *The railway flora of Teviotdale revisited*

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Introduction

A booklet, *The railway flora of Teviotdale revisited*, has been published, giving a detailed account of my botanical re-survey in 2015 of a stretch of the disused 'Waverley Line' railway, first surveyed by me in 1975. The Waverley Line ran between Edinburgh and Carlisle. The survey stretch was divided into 15 sections bounded by 2km grid lines, one for each 2km

south to north, lying between 100m and 307m. This article presents commentary on the results.

Note: in the following discussion the change in the distribution of a species is indicated by stating the number of the 15 survey sections in which it has been recorded in each of the two surveys. Thus [5/1] indicates records from five sections in 2015, an increase from the one section where there was a record in 1975.

Allowance should be made for a degree of under-recording in each of the two surveys.

Grassland

The 1975 survey found that the old railway contained some very species-rich grasslands, most obviously notable for the diversity of orchid species. They had been preserved as fragments of old meadows when the railway was built and had survived because the railway is largely a succession of deep cuttings and high embankments with very little level ground, a pattern dictated by the undulating nature of the landscape. W.H. Auden captures the scene in *Night Mail*:

“Lurching through the cutting, and beneath
the bridge,
Into the gap in the distant ridge.
Winding up the valley and the water-shed
Through the heather and the weather and
the dawn overhead.”

My perception before attempting a re-survey was that scrub encroachment would have eliminated much of the grassland interest. The increase of scrub species has indeed been a problem, mainly by *Crataegus monogyna* (Hawthorn) [15/14] and more locally by *Prunus spinosa* (Blackthorn) [11/5], *Rubus fruticosus* agg. (Bramble) [12/12] and *Ulex europaeus* (Gorse) [10/7]. The roses are more of a delight than a problem: they include *Rosa rubiginosa* (Sweet-briar) [5/1]. *Picea sitchensis* (Sitka Spruce) [8/0] has self-sown from adjacent forestry as well as being planted, but has yet to become prominent.

The two sections that have retained the best grassland floras have both benefited from Countryside Stewardship schemes, which has enabled seasonal grazing and scrub control. A third section is lightly pony-grazed and it too has prospered. One of the grasslands, at Longnewton, was designated an SSSI after the 1975 survey, largely on account of the five species of orchids, which include *Anacamptis pyramidalis* (Pyramidal Orchid), *Gymnadenia conopsea* (Chalk Fragrant-orchid) [4/8] and *Neottia ovata* (Common Twayblade) [8/13]. It has been neglected and was assessed by Scottish Natural Heritage in 2014 to be in ‘unfavourable declining’ condition. The

orchids are still there but much reduced in numbers. Two of the more upland sections are now intensively grazed by sheep and here the diversity has suffered, particularly in respect of the orchids.

The orchid interest of the grasslands is something of a bonus: their interest is wider than that. *Primula veris* (Cowslip) is very plentiful in some of the survey sections north of Hawick, with three separate colonies, each extending for a kilometre. Elsewhere in the Scottish Borders, it is only on the coast that *Primula veris* is now found in anything like this quantity. *Knautia arvensis* (Field Scabious) [9/12] is almost as plentiful, along with smaller populations of *Sanguisorba officinalis* (Great Burnet), *Scabiosa columbaria* (Small Scabious) [1/2] and *Silvaum silaus* (Pepper-saxifrage) [4/6]. In the more upland sections the interest switches to *Cirsium heterophyllum* (Melancholy Thistle) [3/6], *Geranium sylvaticum* (Wood Crane’s-bill) [12/10] and *Geum rivale* (Water Avens) [14/15]. Two of the colonies of *Cirsium heterophyllum* are more or less continuous for a full kilometre, one with a little *Trollius europaeus* (Globeflower) [1/1], and there are some splendid colonies of *Geranium sylvaticum*.

Although the steep banks offer a considerable degree of protection from eutrophication in adjacent fields, there have been losses, although eutrophication may have been only a minor factor. Species that have suffered include *Arabis hirsuta* (Hairy Rock-cress) [0/2], *Polygala vulgaris* (Common Milkwort) [0/4] and *Viola hirta* (Hairy Violet) [0/2].

Ballast

A feature of the old railway in 1975 was the rich plant community that developed on the ballast that had been the foundation for the railway lines and their sleepers. However, exploitation of the ballast as construction material was well underway by 1975 and is still ongoing. In the arable areas almost all the ballast has gone; in some of the upland areas it is still intact over long stretches. The effect on the ballast species has been predictably severe.

Species that have suffered include *Convolvulus arvensis* (Field Bindweed) [0/4], *Hypericum perforatum* (Perforate St John’s-wort)

[6/12] and *Linaria vulgaris* (Common Toadflax) [6/14], joined on the finer cinder by *Sedum acre* (Biting Stonecrop) [1/8], *Senecio squalidus* (Oxford Ragwort) [0/5] and a range of annuals, of which *Chaenorhinum minus* (Small Toadflax) [7/13] is especially characteristic.

Some of the ballast species have found alternative habitats. *Equisetum arvense* (Field Horsetail) [15/15] has penetrated the grassland on the banks, where it remains very widespread and abundant, but seldom produces fertile stems; *Geranium robertianum* (Herb-Robert) [15/14] and *Fragaria vesca* (Wild Strawberry) [15/14] have prospered under hawthorn scrub; *Potentilla reptans* (Creeping Cinquefoil) [14/15] remains very widespread. The *Hypericum* spp. make an interesting study. *Hypericum perforatum* is almost restricted to the ballast and has declined sharply, while *Hypericum ×desetangsii* (Hybrid St John's-wort) [9/3] has found a home in the grassland and may even be increasing. *Hypericum maculatum* (Imperforate St John's-wort) [3/5] remains an uncommon plant of damp woodland margins, where it is native to the area, unlike the other two taxa.

Two species appear to have exploited the rather unfertile grassland left after ballast removal. These are *Geranium molle* (Dove's-foot Crane's-bill) [5/0] and *Veronica serpyllifolia* (Thyme-leaved Speedwell) [15/5].

Woodland

Willows, particularly *Salix caprea* (Goat Willow) [14/15], have colonised extensively, forming a habitat recognisable as woodland rather than scrub. In a few places the railway adjoins woodland with ancient woodland species. Here there has been modest colonisation by *Corylus avellana* (Hazel) [7/3] and *Prunus padus* (Bird Cherry) [2/0]. *Quercus* spp. (Oak) [10/6] has self-sown quite widely, but very few of the seedlings prosper. It has also been planted. The woodland ground flora that has colonised modestly includes such species as *Adoxa moschatellina* (Moschatel) [4/3], *Mercurialis perennis* (Dog's Mercury) [9/7] and *Sanicula europaea* (Sanicle) [4/0].

Wetland

In 1975 the main wetland habitats were at burn crossings and in ditches, where willows might be diverse. A few relatively sizeable wetland areas were enclosed in this way and most of the widespread wetland species of the area have found sanctuary somewhere. Flooding that has followed ballast removal in some cuttings, with consequent disruption to the drainage, has allowed a remarkable number of species to colonise. *Veronica beccabunga* (Brooklime) [14/5] is now very frequent and plentiful, often with *Juncus articulatus* (Jointed Rush) [11/6] and *Cardamine pratensis* (Cuckooflower) [15/10]. These are sometimes accompanied by *Ranunculus flammula* (Lesser Spearwort) [5/1], *Eleocharis palustris* (Common Spike-rush) [5/0] and *Sparganium erectum* (Branched Bur-reed) [2/0]. Surprising colonists include *Carex paniculata* (Greater Tussock-sedge) [1/0], *Carex riparia* (Greater Pond-sedge) [1/0], *Carex vesicaria* (Bladder-sedge) [1/0], *Ranunculus aquatilis* (Common Water-crowfoot) [1/0] and *Salix pentandra* (Bay Willow) [2/1]. *Carex panicea* (Carnation Sedge) [4/3] is now more frequent in damp parts of the former trackway than on the banks of the cuttings and is usually accompanied by *Dactylorhiza fuchsii* (Common Spotted-orchid) [11/11].

The ability to colonise shown by these wetland species is impressive. Many of these species often utilise water-courses to disperse, but this mechanism is not applicable here. The willowherbs and the willows are wind-dispersed. Some species may have been dispersed by farm vehicles. As for the others, the sedges in particular, the most likely medium for dispersal is the droppings of waterfowl, particularly Mallard duck, which often contain some viable seeds.

Ferns

In 1975 *Asplenium scolopendrium* (Hart's tongue) [6/1] was only found on the stonework in Hawick station yards, where it has been lost to re-development, but it is a species that has been spreading in the Scottish Borders, possibly due to climate change, and it is now found in several places on the old railway: in rock

cuttings, on bridges and on retaining walls. *Asplenium trichomanes* ssp. *quadrivalens* (Maidenhair Spleenwort) [5/3] and *Asplenium ruta-muraria* (Wall-rue) [9/4] also appear to have spread. They were already plentiful in rock cuttings, but appear now to be more widespread on bridges, where the smoke from steam trains may have left deposits that inhibited them in the past.

Aliens

The dumping of garden refuse has introduced horticultural species, such as *Cicerbita macrophylla* (Common Blue-sow-thistle) [4/0] and *Lamium galeobdolon* ssp. *argentatum* (Garden Yellow-archangel) [3/0]. While these species only spread vegetatively there are others that often naturalise modestly from their points of introduction. These include *Alchemilla mollis* (Garden Lady's mantle) [4/0], *Hyacinthoides × massartiana* (*H. hispanica* × *non-scripta*) (Hybrid Bluebell) [7/1] and *Meconopsis cambrica* (Welsh Poppy) [4/0].

The re-development of Hawick railway station and yards and the conversion of the other stations as private housing has inevitably led to losses in a wide range of alien species that had found a place there. Even *Fallopia japonica* (Japanese Knotweed) [0/1] has gone.

Some of the alien species that have colonised the old railway since 1975 have done so as part of a more general expansion of their range rather than in response to changes in the railway habitats. These include *Allium paradoxum* (Few-flowered Garlic) [2/0], *Epilobium brunnescens* (New Zealand Willowherb) [2/0] and *Epilobium ciliatum* (American Willowherb) [10/0] (the last was probably overlooked to some extent in 1975).

There has also been some planting of trees and shrubs.

While the list of alien introductions is considerable, it is necessary to keep a sense of perspective. Almost all the introductions remain highly localised and are having a negligible impact on the vegetation communities in which they occur.

Other changes

Some common weeds, such as *Matricaria discoidea* (Pineappleweed) [14/8], have been

introduced by vehicles where farm tracks now cross the old railway. The most notable is *Potentilla anserina* (Silverweed) [8/1], which was formerly almost absent from the railway. *Odontites vernus* (Red Bartsia) [9/2] is now very widespread along the damp ground on the trackway where ballast has been removed. It has largely replaced the *Euphrasia* agg. (Eyebright) [10/14], which was frequent on ballast.

Survey statistics

414 species were recorded in the first survey. 60 of these were not refound in the second survey, of which 33 are considered lost, 10 to have been casual only and 17 to have been overlooked. 125 species were found for the first time, of which 62 are considered to be new colonisation or planting, 10 to be casual only and 53 to have been previously overlooked. 479 species were recorded in the second survey.

The species considered to have been increasing or declining on the Teviotdale railway were assessed from the survey section records, making allowance for those species considered to have been recorded more effectively in one or other of the two surveys. The comment column gives an indication of the factor that has most influenced change in those habitat groups with substantial change.

Conclusion

While most of the habitats on the Teviotdale railway have survived and have acted as refugia for species being progressively lost from much of the countryside of the Scottish Borders, there has nevertheless been an extraordinary amount of change over the 40 year period between the two railway surveys. My long experience as vice-county recorder convinces me that this degree of change is not unusual.

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Habitat group	Species increasing	Species declining	Comment
Arable (native/alien)	1	0	(most casual)
Grassland (native)	5	20	Scrub invasion
Grassland (alien)	12	4	Dumping
Moorland (all native)	0	8	Grazing
Riverside (native/alien)	2	1	
Rock (native/alien)	4	7	Climate change
Ruderal (native/alien)	17	28	Ballast removal
Wetland (all native)	31	3	Flooding of cuttings
Woodland (native)	7	3	
Woodland (alien)	24	4	Planting
Total	103	78	



Fig. 1. Whitrope Tunnel north entrance. Photo courtesy of Waverley Route Heritage Association © M.G. Stoddon

***Salicornia* × *marshallii*, an under-recorded hybrid new to Wales**

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In Britain, the genus *Salicornia* has a cosmopolitan distribution, occurring in appropriate habitats around the coast of the island. *Salicornia* × *marshallii*, the hybrid between *S. pusilla* Woods (One-flowered Glasswort) and *S. ramosissima* Woods (Purple Glasswort) has been recorded at a number of locations around the south-east of Britain, from the Humber estuary to Exmouth, arising spontaneously wherever the two parent species occur. Records from the west of Britain have been confined to Exmouth and two records from the Severn estuary in v.c.c.4 and 5. There are no known records from Wales.

Within its salt-marsh habitat, various *Salicornia* species appear to occur in relatively distinct zones, with some range overlap. *S. procumbens* agg. species occur in the lower salt-marsh, *S. europaea* agg. occur in the middle to upper salt-marsh and *S. pusilla* in the highest reaches of the upper salt-marsh. Personal observation in v.c.45 (Pembrokeshire) and v.c.44 (Carmarthenshire) has shown that in areas of relatively steep salt-marsh the ranges of *S. europaea* agg. and *S. pusilla* can be very sharply defined, with only a few cm. of overlap, while in salt-marshes with a shallow, almost level, gradient the range overlap can be quite large, with both frequently growing together.

On a recent visit to the salt-marsh at Pembrey to look at *Salicornia* in v.c.44 (Carmarthenshire) with joint vice-county recorders Richard and Kath Pryce, *S. ramosissima* and *S. pusilla* were found along with numerous individuals of the hybrid *S. ×marshallii*. This hybrid typically has a mixture of cymes with one, two and three flowers on a single plant, and an appearance intermediate between the two parents. Care must be taken not to confuse an individual of *S. europaea* agg., where some cymes have lateral flowers small enough to be mostly or entirely obscured by the scarious margin, for *S. ×marshallii*. If in doubt, peel back the margins to check for obscured lateral

flowers. Based on observation of an admittedly small number of specimens *S. ×marshallii* also tends to 'disarticulate', as *S. pusilla* does, with the terminal spike detaching from the rest of the plant when pulled by the terminal spike, rather than the whole plant uprooting as *S. ramosissima* tends to do when similarly pulled.

Hybrids were found in many suitable locations where good numbers of the parent plants were growing together. The frequency of the hybrid at Pembrey led me and R. Pryce to hypothesis that *S. ×marshallii* may be present at other sites in Wales where both parents had been recorded. This was backed up when R. and K. Pryce located *S. ×marshallii* in the Afon Gwendraeth estuary near Kidwelly 6-7km to the north. Shortly after this I located a single specimen of *S. ×marshallii* in v.c.45 in the Pembroke River estuary at Goldborough Pill near Pembroke, over 48km away. This specimen was neatly located within the narrow band of overlap between the two parent species.

These further discoveries apparently confirm our hypothesis and indicate that *S. ×marshallii* is relatively frequent in west Wales, probably present in varying abundances in most south and west Wales salt-marshes. The abundance of the first specimens found at Pembrey and their proximity to the extensive salt-marsh of the north Gower coast on the other side of the Afon Llŵchwr estuary would make it highly likely that a detailed search would turn up specimens there, where both parents have been widely recorded. It is also expected that examination of other salt-marshes in the Afon Cleddau estuary would turn up further specimens in v.c.45.

S. ramosissima has been widely recorded in suitable habitats all along the mid and north Wales coast and as far north as v.c.109, Caithness, while *S. pusilla* has not been seen to occur on the west coast of Britain north of Pembrokeshire. This would appear to

preclude *S.* × *marshallii* occurring in mid or north Wales. It should be borne in mind, however, that *Salicornia* identification is considerably difficult, owing to their highly reduced morphology, and under-recording of *S. pusilla* cannot be immediately discounted. On top of the morphological difficulties in *Salicornia* identification, three factors seem to compound identification difficulties: firstly, *Salicornia* perseveres poorly on herbarium sheets because of its highly succulent nature and rapid loss of colour to a dull brown shade (see note at the end of this article for a brief discussion on determination of imperfect, preserved material); secondly the apparent lack of a referee for *Salicornia* in Britain according to the *BSBI Yearbook* makes confirmation of determinations difficult. Finally, it is important to bear in mind that recent molecular studies have expressed doubt on the currently accepted taxonomy of *Salicornia* (Kadereit *et al.*, 2012) (see Stroh *et al.*, 2015) which may result in historical records and specimens needing to be re-determined.

It is worth noting that, while looking for *S.* × *marshallii* at Goldborough Pill, well over 100 individual *Salicornia* plants were examined, including dead, drying specimens, before a single definite specimen of *S.* × *marshallii* was located, along with one or two uncertain specimens. This may have been bad luck, related to the time of year (in late October over half of *Salicornia* at this site were dead and dried out) or, if compared with the relative ease of finding hybrids in v.c.44, may be indicative of the variation in numbers of hybrids arising in salt-marshes with different characters. Further investigation in 2016 may yield a better understanding of how often *S.* × *marshallii* arises, as well as further new sites in Wales.

A note on *Salicornia* preservation

It is commonly accepted that *Salicornia* does not preserve well on a herbarium sheet, owing to the succulent nature of the plant and rapid loss of colouration. While it is true that colour is not preserved, examination of dead, drying material in the field has shown that it is perfectly possible to distinguish between *S. pusilla* and *S. europaea* agg. individuals

with the use of a hand lens and it is hypothesised that enough features are preserved to easily identify *S. procumbens* agg. in a similar condition. Examination of herbaria sheets should present a similar situation, although determination online through Herbaria@home may be impossible due to the need to examine features only visible with a hand lens or microscope. I would agree therefore with the advice in the *Plant crib* (Rich & Jermy, 1998) that permanent collections are best preserved in spirit, but would caution that dried specimens both in the field and in herbaria should not be written off as indeterminable.

Salicornia found at Pembrey (v.c.44) (SS49E & SS49J)

S. pusilla Woods

S. ramosissima Woods

S. × *marshallii*

Salicornia found at Glodborough Pill (v.c.45) (SM90K)

S. pusilla Woods

S. ramosissima Woods

S. × *marshallii*

S. c.f. europaea L.

All names given as in Stace (2010).

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Many thanks to Richard Pryce and Kath Pryce for providing a second concurring opinion on determination and for tramping across various salt-marshes in Carmarthenshire, both with me and not, looking for *Salicornia* and for providing information about their finds.

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Pink-yellow-cream-flowered forms of *Symphytum ×uplandicum* in Yorkshire and Cambridgeshire

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In *BSBI News*, 129 I reported on a probable “yellow flowered” form of *Symphytum officinale* × *S. asperum* (*S. ×uplandicum*) (Russian Comfrey), sent to me by Mike Wilcox from Bradford in Yorkshire (Leaney, 2015). The purpose of this article is to confirm the find, and to provide a detailed description.

What I would now call pink-yellow-cream flowered *×uplandicum* does not seem to have been reported before in the botanical literature, despite the fact that one of the parents, *S. officinale* (Common Comfrey), has two forms (ssp. *officinale* var. *ochroleucon* and ssp. *bohemicum*) with yellow or cream flowers. However, I have now discovered that a “straw yellow” flowered form was known in horticulture in the middle of the last century (Hills, 1976: 59).

The article prompted Alan Leslie to bring to my attention what I would interpret as being another pink-yellow-cream flowered form of *×uplandicum*, which he had found on a road verge in Cambridgeshire, back in 2011. He was puzzled, but put it down as a probable “creamy-white flowered *×uplandicum*” (pers. comm.). This plant was not such a typical example of *×uplandicum*, being much shorter and narrow-leaved, in these and other respects resembling *S. officinale* ssp. *bohemicum*, which grows nearby. A full description of this plant is also given, and the possible derivation of both forms is discussed.

Both sites were visited and material taken for pressing. The descriptions are mostly from these dried specimens, but also from photographs of fresh material taken in the field and at home later, showing the all-important flower colour, calyx shape and stem winging (see colour section). The dried specimens and photographs will be deposited in the Norwich Castle Museum herbarium (NWH) for future reference.

The Bradford comfrey (SE19413637) (v.c.63)

The population consisted of several patches over an area of around 20 m², by the roadside on the edge of grassy waste land, and flowers from around mid May. Stature (c.150cm), habit, leaf shape and colour were all very typical of *×uplandicum*, with enormous dark green lower stem leaves and subsessile to shortly petiolate, lanceolate, cuneate based upper stem leaves. Most strikingly, as shown in the colour photograph (see Colour Section, Plate 4), stem winging was very narrow (c.1mm) and in most cases did not extend down to the next leaf insertion (7 out of 10 wings extended only 1/5 to 2/3 the way down). In addition, the petiole winging of the upper leaves did not broaden enormously at the point of insertion of the petiole, as happens in pure *officinale*, so that what I would call leaf decurrence width was only 1.5 – 6 mm, not (5) 10 – 25 mm.

The indumentum of the calyx and pedicels was of long, dense, curved and rigid bristles, without bulbous bases or hook-tips, mixed with profuse, much shorter, fine, hook-tipped hairs, visible only under the microscope. The stem indumentum consisted of fairly sparse, long, weak bristles with the same sort of very short, fine, hook-tipped bristles mainly confined to the leaf decurrences. The upper leaf surface was covered with fairly long, fine bristles, many with separate bulbous bases.

The calyx was (3/5) 3/4 dissected, with subacute to rounded teeth, and measured 4.5 – 7.5 mm (×18) in the dried state. Dried and pressed detached corollas measured (11) 13 – 14 (15) mm (×10) and in the fresh state the corolla bells were bulbous rather than straight-sided.

All these characters were very typical of *×uplandicum*, but were associated with yellow or cream in the flowers. The material sent by

Mike Wilcox in 2014 showed intense greenish-yellow buds with a pink flush in the open, off white corolla. On visiting this year the buds had cream corolla tubes and a predominantly mid pink bell, opening to a cream tube and cream bell much flushed with pink (see photograph in the field, Colour Section Plate 4). Interestingly, further material sent a few weeks later showed completely greenish yellow buds, much as in 2014, again with an off white corolla, sometimes flushed with very pale pink on the bell (see photographs of detached inflorescences and corollas Colour Section plate 4).

This pink-yellow-cream-pink flowered comfrey cannot be a variant of the peppermint striped form of *S. officinale*, produced by crossing of ssp. *officinale* var. *ochrolencum* with ssp. *officinale* var. *purpureum*. (Perring 1994, 1998), although it may have been taken for it in the past. The ‘peppermint stripes’ in this form denote narrow, well-defined vertical bands of cream and purple-red (not pink) in the open corolla. More importantly, all other features of the peppermint striped form of *officinale* are identical with the typical parent forms of *officinale* ssp. *officinale* (i.e., all stem wings broad and stretching down at least to the next leaf insertion, narrowly lanceolate upper stem leaves, and a very broad leaf decurrence width at the stem junction, as already described).

The Soham comfrey (TL58887235) (v.c.29)

This plant occurred in two patches, each a few metres long, on either side of a minor road, with a small industrial unit on one side and an improved grazing marsh dyke on the other, competing with coarse herbage, mainly comprising *Anthriscus sylvestris* (Cow Parsley), *Heracleum sphondylium* (Hogweed) and *Urtica dioica* (Common Nettle). *Symphytum officinale* ssp. *bohemicum* grew within a few hundred metres (A. Leslie, pers. com.).

The Soham comfrey was very different in appearance from the Bradford plant: not much more than half the height (75 – 100cm), not so erect, and with much more narrowly lanceolate upper stem leaves. Although in general appearance and most characters it would seem to fit into the *S. officinale* / *×uplandicum* complex,

stature, habit and leaf shape more resemble *officinale* ssp. *bohemicum* than typical *×uplandicum*.

Most stem wings did not extend down to the next leaf insertion (5 out of 7 extended only 1/2 - 4/5). Once more stem wing width was only c.1 mm in all cases, not several mm as in *officinale*, and upper leaf petiole wing decurrence at the stem junction was very narrow, at 2.5 – 5mm, not (5) 10 – 25mm as in *officinale*.

The indumentum of the calyx and pedicels consisted of long, broad, rigid, curved bristles without hook tips, mixed with numerous, tiny, fine, hook-tipped hairs under the microscope. Stem indumentum was of long, weak bristles, this time mostly with separate, bulbous bases, and again with the very short, fine, hook-tipped hairs only on the leaf decurrences. The leaf indumentum consisted of short bristles, all with white bulbous bases, mixed with similar white tubercles not bearing bristles.

The inflorescence shape was unusual in that the scorpioid cymes straightened out very early during flower maturation. The calyx was around 4/5 dissected, with strikingly fine, acute tips to the calyx lobes. Calyx length in the dried state was 4.5 – 5.0mm (×10). The open corolla in life was markedly narrow, with a straight-sided rather than bulbous bell. The buds showed a mixture of yellow and pink, often with a yellow tube and pink bell, and when open the corolla was sometimes pale yellow or cream, sometimes pale pink (changing to lavender on withering), or a mixture of the two (see photograph Colour Section plate 4). Detached, dried and pressed corollas were (11) 12.0 – 13.5 (14)mm long (×10).

Two features of the Soham comfrey, inflorescence and flower shape, did not fit so well with it being in the *S. ×uplandicum* complex. The scorpioid cymes straightened out very early during flower maturation, and the flowers themselves were strikingly slender and straight sided, without the bulbous bell found in *S. ×uplandicum*, *S. officinale*, and *S. asperum* (Rough Comfrey) (see photographs Colour Section plate 4). These features of the Soham comfrey might be taken to suggest a hybrid between a member of the *S. officinale* / *×uplan-*

dicum complex and another taxon altogether – rather than being produced by introgression and/or segregation involving the *officinale* / *×uplandicum* complex only. This hybridisation could have taken place either between a yellow-cream taxon within the *officinale* / *×uplandicum* complex and another comfrey species with pink in the corolla, or between a member of the *officinale* / *×uplandicum* complex with pink in the flowers and a comfrey with a yellow-cream corolla.

The only other taxa with the requisite flower colours that conceivably could be involved would have to be either a widespread native or escape, or a foreign taxon in horticulture, where hybridisation is much more likely to occur. This narrows the possibilities to *S. tuberosum* (Tuberous Comfrey), a probable neophyte (Braithwaite *et al.*, 2006), *S. grandiflorum* (Creeping Comfrey), *S. bulbosum* (Bulbous Comfrey) or *S. tauricum* (Crimean Comfrey).

The hybrid between *S. tuberosum* and *S. ×uplandicum* is already known and is nothing like the Soham plant. *S. grandiflorum* (Creeping Comfrey) is a low growing, creeping species with small, ovate, extremely long petioled leaves and again its hybrid with *×uplandicum* is well known, namely *S. ×hidcotense*. This, the Hidcote Comfrey, is a very much smaller and different looking plant from the Soham comfrey, so another nothomorph of this hybrid seems very unlikely. A segregate of *×hidcotense* also seems out of the question, for I have seen several F2/F3 segregants of *×hidcotense* in cultivation and they were all extremely different from the Soham plant, all much resembling the *grandiflorum* parent rather than *×uplandicum* (Leaney, 2015). *S. bulbosum* (Bulbous Comfrey) is also a very low growing plant, in this case rhizomatous, and has exerted corolla scales, so again is a very unlikely putative parent for the Soham comfrey.

The last *Symphytum* taxon to be considered as a putative parent for the Soham comfrey is *S. tauricum* (Crimean Comfrey), a yellow flowered species that used to occur in Worcestershire and still is to be found in the village of Swaffham Prior in Cambridgeshire (v.c.29). This is a little taller than *S. grandiflorum* and

S. bulbosum and does fit the bill in having a vertical rootstock rather than rhizomes, but is a very different looking plant (A. Leslie, pers. comm.). Although it occurs in Cambridgeshire it is a long way (14km) from the Soham population, and seems to have been little grown in cultivation.

Overall it seems clear that both the Bradford and Soham comfrees were hybrid derivatives of *S. ×uplandicum* not involving any other taxa.

Possible derivation of pink-yellow-cream flowered *S. ×uplandicum*

S. ×uplandicum is usually said to have been imported as a F1 hybrid between *S. officinale* and *S. asperum*, with spontaneous hybridisation in the wild being a rare event. The usual forms show a range of colours in the open flowers “including pink, bluish-purple, violet and mauve, but never blue or reddish-purple like the parents, and never with the cream colour of *S. officinale* evident” (Stace, 2015). On the other hand, Stace also states that the hybrid is “thought to arise from crosses of either colour-morph of *S. officinale*” (Bucknall, 1912. in Stace *et al.*, 2015) – in other words from forms with either reddish-purple or yellow-cream flowers. This would imply, therefore, that some at least of the imported Russian Comfrey, although with pink, purple, violet or mauve flowers, would have had suppressed genes for yellow or cream flower colour.

In my last article (Leaney, 2015) I quoted the account by Laurence Hills, Director-Secretary of the Henry Doubleday Research Association, of the first importation of Russian Comfrey from the St. Petersburg Palace garden in 1871, the plants selected being seedlings growing “between the rows” of “sky-blue flowered *S. asperrimum* (*asperum*)” and “cream-yellow *S. officinale*” (Hills, 1976: 27). This supports the assertion of Bucknall that the original plants imported were derived, at least in part, from a yellow-cream flowered form of *S. officinale*, although this flower colour was not usually expressed in the phenotype.

Although there has been no account up to now of yellow-cream flowered *S. ×uplandicum* in the British botanical literature,

Laurence Hills in his book gives a clear description of one such form (Bocking No. 10) in horticulture “distinct in its flower colour, which is straw yellow” (Hills, 1976: 59). It is clear that this comfrey was not a yellow flowered form of *S. officinale*, as he mentions the very narrow and short wings of Bocking No. 10 and describes *S. officinale* in the same list as having “wide wings that continue right down the stems from leaf to leaf”, as well as “cream-yellow or purple flowers” (Hills, 1976: 62).

It is possible that the Bradford comfrey could be the Bocking No. 10 form of *S. ×uplandicum*, which it resembled in having very narrow stem wings as well as yellow-cream in the flowers, but Hills makes no mention of pink in the flowers. It seems, therefore, unlikely that the Bradford comfrey is exactly the same form as Bocking No 10 *×uplandicum*, but it must be very closely related.

Another already described form within the *S. officinale* / *×uplandicum* complex that could correspond to the Bradford comfrey is the $2n = 44$ entity that has been ascribed to *officinale* by Gadella *et. al.* (1974), or to *×uplandicum* by Perring (1994), and which can have either cream-coloured or purplish flowers (Stace, 2015). This form is thought to have arisen by back-crossing between $2n = 40$ *×uplandicum* and $2n = 48$ *officinale* and has been described from Suffolk and Lincolnshire. It has been found to be fertile (Perring, 1994), so could be found away from the parents. The Bradford comfrey could be another example of this form, which should be assigned to *×uplandicum* in my view.

Possible mode of origin of the Bradford and Soham pink-yellow-cream flowered *S. ×uplandicum*

It looks as though the Bradford and Soham comfrees must have arisen in some way from imported F1 hybrids of *×uplandicum*, either by introgression (backcrossing with a yellow cream flowered form of *S. officinale*) or by segregation (the production of F2 or F3 segregants by inbreeding between F1 hybrids with suppressed genes for yellow-cream flower colour). However the pink-yellow-cream

flowered hybrid derivatives arose, it seem clear that $2n = 48$ *officinale* ssp. *ochroleucon* must be somehow involved in the tall Bradford plant, and $2n = 24$ *officinale* ssp. *bohemicum* in the short Soham plant.

In the case of the Bradford comfrey there is no yellow-cream flowered *officinale* in the neighbourhood (Mike Wilcox, pers. comm.) but introgression could have occurred in horticulture long ago when yellow-cream flowered *officinale* ssp. *ochroleucon* may have been growing in large amounts in nurseries along with *×uplandicum*. Such nursery conditions, however, would also be ideal for the production of occasional F2 or F3 segregants with pink-yellow-cream flowers from F1 *×uplandicum* with ‘standard’ flower colour, these segregants then being sold either as *officinale* or as *×uplandicum*.

In the case of the Soham comfrey, since *officinale* ssp. *bohemicum* would appear not to have been grown in nurseries, it seems that the *officinale* ssp. *bohemicum* growing locally must be one of the parents, along with ‘standard’ *×uplandicum*. However, it seems unlikely that the very individual, slender, straight-sided corolla shape, or the straight cymes in early flowering, would occur in an introgressive without segregation somehow occurring, either in the initial introgression or as a result of subsequent inbreeding within the initial introgressive population.

The Soham comfrey would appear to be the first example of a form of *×uplandicum* involving *officinale* ssp. *bohemicum*, which up to now has not been described as crossing with any other taxon within the *officinale* / *×uplandicum* complex (Perring, 1994). I have seen a similar narrow, straight-sided corolla shape in F2 or F3 segregants of *S. ×hidcotense* (Leaney, 2015).

Conclusion

Two new forms of *Symphytum ×uplandicum* are described, one from Bradford in Yorkshire and the other from Soham in Cambridgeshire. Both have pink, yellow and cream flowers, as opposed to the usual flower colour of pink, bluish-purple, violet and mauve. Although a yellow-flowered form has been described in cultivation, it would

appear that forms of *×uplandicum* with yellow or cream in the flowers have not been described before in the wild.

The comfrey from Bradford closely resembles the usual form of *×uplandicum*, differing only in the yellow and cream element in the flowers. It is tall, so would appear to have the robust $2n = 48$ *Symphytum officinale* ssp. *officinale* in its make-up, but the yellow-cream flowered var. *ochroleucon* rather than the carmine flowered var. *purpureum*. It could therefore be named *Symphytum ×uplandicum* nothomorph. *pseudo-ochroleucon*.

The Soham plant, with its short stature, seems to have $2n = 24$ *Symphytum officinale* ssp. *bohemicum* in its make-up. It is quite a different plant from the usual forms of *×uplandicum* and since it is also the first described example of *×uplandicum* involving *officinale* ssp. *bohemicum*, might be suitably named *Symphytum ×uplandicum* nothomorph *pseudoboheemicum*.

These two new forms of *×uplandicum* can be recognised by the diagnostic combination of pink as well as yellow-cream in the corolla, narrow leaf decurrence width on the upper leaves, and narrow stem wings that in many instances do not reach down to the next leaf insertion. The Bradford form may have been mistaken for pink-flowered standard *×uplandicum* because the early flowers are mainly pink and the diagnostic yellow flower colour

may not come out until late in the flowering season. The Soham form much resembles *officinale* ssp. *boheemicum* in stature, leaf shape and habit, and may have escaped detection because the diagnostic pink element in the flower colour is pale and only present in some of the flowers.

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Two new populations of *Potentilla argentea* from an industrial estate in Leicestershire

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Potentilla argentea (Hoary Cinquefoil) is a native perennial of sandy grassland and waste ground, common only in Eastern England (Stace, 2010; see also BSBI distribution maps). Its current conservation status in England is ‘Near Threatened’ (Stroh *et al.*, 2014), having shown a decline of 26% in area of occupancy (A.O.O.), a status it has maintained since the publication of the last Red Data List for Great Britain (Cheffings & Farrell, 2005). It is listed as ‘Rare’ in Leicestershire and Rutland, having three or fewer localities (Jeeves, 2011). During surveys for Atlas 2020, two new populations

were found growing in lawns by the side of roads at the Meridian Business Park, an industrial estate on the outskirts of Leicester City.

The plants were first spotted by Brian Laney on 6th April 2015, while searching for *Poa infirma* (Early Meadow-grass), which has yet to be recorded in v.c.55. A single plant was found in one lawn and 8-10 plants on another one about 500 m away. The plants in both populations were growing on the edge of the lawn nearest the kerb, among an amenity grassland community, typically of *Bellis perennis* (Daisy), *Cerastium fontanum*

(Common Mouse-ear), *Festuca rubra* (Red Fescue), *Holcus lanatus* (Yorkshire-fog), *Lolium perenne* (Rye-grass), *Medicago lupulina* (Black Medick), *Plantago lanceolata* (Ribwort Plantain), *Taraxacum* agg. (Dandelion), and *Trifolium repens* (White Clover), and favoured open areas with some bare soil. The lack of halophilic species in the community suggests that these roads have not been salted in the winter, which was confirmed by inspection of Leicestershire County Council's online map of road gritting routes. The lawns have been regularly mown and the plants were much flattened, with long, woody stems growing flush to the ground amongst the other vegetation, which made precise determination of the population size difficult without attracting unfavourable attention from security guards. On a repeat visit to the site on 16th July, several sheared-off flower heads were found, along with a single flowering stem which had escaped the mower (see photo montage, inside back cover). Given its location, the plants could easily have been transported to this site by vehicles. However, these new populations occur in hectad SP59, for which there are 23 records of this species (Table 1), but they are all in and around Croft, about five miles away, mainly in Croft Quarry, Croft Pasture S.S.S.I., and Croft Road Verge Nature Reserve. Both the Croft sites and the

industrial estate have the siliceous soils that favour the growth of *P. argentea*. Adjacent hectads SP49 and SK50 contain a further 21 records, mainly from Barrow Hill Quarry and Groby Pool, the total for these three hectads comprising 67% of all records (Table 1). So, these three hectads to the west and south of Leicester are a stronghold for the species, and it may well have occurred here before the business park was built. Although lawns in an industrial estate might be considered an usual site for *P. argentea*, its occurrence here suggests that industrial estates and business parks with suitable soils are profitable areas to search, and they may hold further populations of this declining species.

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Table 1. Records of *Potentilla argentea* in Leicestershire and Rutland

Hectad	Location	Number of Records*			Total
		to 1899	1900-1999	2000-present	
SK50	Groby, Groby Pool	6	9	0	15
SK51	Buddon Wood, Montsorrel, The Brand, Swithland	2	8	2	12
SK71	Great Dalby	0	1	0	1
SK72	Melton Mowbray, Scalford	0	2	0	2
SK81	Oakham	0	6	0	6
SP49	Potter's Marston, Earl Shilton	0	6	0	6
SP59	Croft	6	12	5	23
	Total	14	44	7	65

* There are 38 records of *P. argentea* for v.c.55 in the BSBI Distribution Database and 28 specimens in Herb. LSR. As many of the herbarium sheets do not have precise locations or grid references, it is not known whether they match database records, but most have a different year.

Points arising from *Flora Gallica* (2): Common and Early Dog-violets

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In addition to more familiar characters, *Flora Gallica* (Tison & de Foucault, 2014) introduces a diagnostic leaf feature for *Viola riviniana* Rchb. and *V. reichenbachiana* Jord. ex Boreau, which I have been unable to find elsewhere in the literature, although Boreau (1857) makes a rather vague distinction on leaf hairs. Here is a translation of *Flora Gallica*'s full key couplet:

1 Calyx appendages <12% of the corresponding sepal, not accrescent at fruiting; upper leaf face hairy with glabrous veins (observe the apex with a lens in oblique light); stigma densely hairy; spur concolorous with petals

V. reichenbachiana

1 Calyx appendages >12% of the corresponding sepal from flowering, accrescent at fruiting; upper leaf face entirely hairy or entirely glabrous; stigma sparsely hairy; spur sometimes (not always) paler than petals

V. riviniana

This leaf hair character also appears in another recent French flora, Tison, Jauzein & Michaud (2014), with some line illustrations (frankly, not very helpful) and a note that hybrids between *V. reichenbachiana* and *V. riviniana* have the leaf pilosity of the latter. As it is not mentioned in the British floras, in identification guides such as Poland & Clement (2009) and Rich & Jermy (1998), nor in the other western European floras I have been able to lay hands on, I wonder whether this character has been overlooked (which would be surprising, given the motivation for finding good separating characters between these species) or has been found of no value.

The question of hybrids is interesting, as neither of the French works does more than mention their existence, and presents no view on them. Many Continental botanists take a broader view than British writers of what qualifies as a hybrid. This spectrum may include many plants with a fairly high degree

of pollen fertility at least: see citations in Stace, Preston & Pearman (2015).

In Hampshire, plants of *V. riviniana* with purple spurs can be common and may have led to some over-recording of *V. reichenbachiana*, especially as these spurs are often narrower and less distinctly notched than the more typical form. In other characters they tend to match *V. riviniana* closely. They have sometimes gone under the infraspecific *nemorosa*. In the woods of the Hampshire chalklands they make up much of the first flowering of the species, overlapping or following directly on *V. reichenbachiana*, while later-flowering plants in the same territory chiefly have pale, broad, strongly notched spurs. On the relatively fertile brown-earth bracken and grass heaths of the New Forest, all *V. riviniana* have very pale chunky spurs and richly coloured petals. They are mostly robust plants but on more impoverished ground they may give way to the smaller var. *minor* when they can cause less experienced botanists some confusion. *V. reichenbachiana* is rare on the Forest and appears confined to stream-side woods, where these cut down into calcareous clays and marls, so there is considerably more physical separation between the species.

Taking a narrow view of hybridisation, I have recorded the hybrid *V. ×bavarica* only twice in the past 15 years, and only after finding a very high degree of pollen sterility. The plants concerned were also notably floriferous and continued to flower late into the season (unlike the purple-spurred *riviniana* mentioned, which appear to be highly pollen-fertile in several samples taken from central Hampshire woods). The conclusive hybrids also showed the irregular variation in sepal appendage length noted by Partridge (2007), not only on the same plant but within the same flower.

I plan to investigate the leaf hair characters in the coming season to see how these correlate

with the well-known diagnostic characters. I would be very interested to hear of your observations if you have both species growing in your area, and particularly if confirmed hybrids, or purple-spurred forms of *V. riviniana*, are present.

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Points arising from *Flora Gallica* (3): ‘Onion Couch’

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All the British floras and monographs in recent use dealing with grasses have mentioned the var. *bulbosum* (or ssp. *bulbosum*) of *Arrhenatherum elatius* (False Oat-grass), often known as ‘Onion Couch’. Most works (e.g. Stace, 2010; Hubbard, 1968) make a fairly imprecise distinction between plants with unswollen basal internodes and those with corm-like swellings. Some (e.g. Sell & Murrell, 1996; Clapham, Tutin & Moore, 1987) have made a distinction between unswollen internodes and those with swellings at least 6mm in diameter, without mentioning intermediates.

I suspect that, like me, most people who have pulled up *Arrhenatherum* will often have come across plants with a string of pear-shaped swellings which barely make 6mm, often rather less crowded along the stem than on convincing plants. Only Cope & Gray (2009) discusses these intermediates arising from interbreeding, and only this book mentions another character (leaf colour) said to distinguish the two varieties.

At first when trying to record the varieties, guided by the books I then had to hand, I tended to record any plant with conspicuous swellings at the base as var. *bulbosum*. When Jauzein (1995) appeared, his illustrations of the two made it very clear that he put all plants

with pear-shaped swellings firmly into the var. *elatius* camp. Unfortunately, he does not discuss intermediates, nor does he give any measurements to discriminate between the two. However, at this point I became much more cautious about what I attributed to var. *bulbosum*.

The new *Flora Gallica* (Tison & de Foucault, 2014) gives a fuller diagnostic description of the two subspecies (as it ranks them), and tries to set the boundaries for these and for intermediates of nothohybrid origin. Here is a translation of the key from that work:

- 1 Rhizome with internodes not tuberose, subcylindric, all ≤ 2.5 mm diam.; 1st cauline internode with a slightly inflated base (<4mm diam.) or uninflated; aerial parts remaining green in summer; inflorescences mostly 10-20cm long, occupying 10-20% of their total stem length (except for out of season re-flowerings) ssp. *elatius*
- 1' At least one rhizome internode and/or base of the 1st cauline internode strongly inflated (> 4mm diam.) 2
- 2 Rhizome with 3-6 consecutive tuberose internodes (excluding the 1st cauline internode), these all discoid (length/breadth ratio < 1) and > 6mm diam.; 1st cauline internode with a generally globular basal inflation;

aerial parts disappearing in summer; inflorescences mostly 20–40cm long, occupying 20–35% of their total stem length

ssp. *bulbosum*

2' Rhizome with 0–2 consecutive tuberose internodes (excluding the 1st cauline internode), globular to ovoid (length/breadth ratio ≥ 1) or in part discoid, sometimes ≤ 6 mm diam.; 1st cauline internode generally tear-shaped; aerial parts staying green in summer; inflorescences variable

ssp. *bulbosum* × ssp. *elatus*

British readers need to interpret ‘rhizome’ carefully here: the authors clearly mean all internodes below that uppermost before the normal part of the culm, which it can be argued is legitimate usage, although this section will normally be vertically oriented and carry remains of sheaths. On the other hand several British floras state or imply that these are culm internodes.

This description gives quite a narrow circumscription to var. *bulbosum*, and it could be worth re-examining British material in this light. The *Flora Gallica* authors consider both subspecies and the intermediates as occurring throughout France, but ssp. *bulbosum* to be in severe decline in some parts of France, such as the south-east. Meanwhile the intermediates are apparently on the increase and are particularly characteristic of dry road banks below wood margins, whereas ssp. *bulbosum* is the plant of cultivated ground, generally kept otherwise weed-free, and to a lesser extent of hedges. In Hampshire, plants that fall under

this description of *bulbosum* seem to be most characteristic of arable on light soils (but now rare there) and of open sub-coastal grasslands. The latter may reflect recorder bias, but it would mirror the distribution across the Channel noted by Rouy (1913), where *bulbosum* is said to predominate in Brittany and Basse-Normandie. Rouy also states that *elatus* generally has glabrous nodes whereas *bulbosum* nodes are usually pubescent. In the works cited here, this character is otherwise only put forward in Clapham, Tutin & Moore (1987) and Sell & Murrell (1996).

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Identification of *Brachypodium pinnatum* segregates

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The aid to field recorders distributed with the last *BSBI News* (Stroh *et al.*, 2015) is going to be extremely helpful, but it is unfortunate that it has only become available more than half-way through the current decade.

Many of the maps on the BSBI website show great variation in the degree to which its advice has been correctly anticipated, I would guess none more so than in the case of *Brachypo-*

dium pinnatum (Heath False-brome) and *B. rupestre* (Tor-grass). The advice in the booklet is that “... the diagnostic character (prickle hairs) are [*sic.*] microscopic and apparently unreliable. The recording of *B. pinnatum* agg. will therefore be needed until better discriminating characters are found”. But from 2010 recorders in perhaps 15 English vice-counties have managed to supply records

of *B. pinnatum* s.s. Others have taken the same view as the booklet's authors. This is most obvious in Kent, where the most recent publication (Philp, 2010) does not separate the two taxa, as "the taxonomy ... has still to be resolved", and the only subsequent record of *B. rupestre* is my own.

It is regrettable that in drawing attention to the diagnostic prickly hairs Stace (2010: 1047) has said that they can only be detected by visual examination with at least 50× magnification. In this case the sense of touch is more useful. The monograph by Schippmann (1990) illustrates these hairs on the underside of the leaves with microphotographs, showing them densely all over the surface in *B. pinnatum* and along the mid-vein only in *B. rupestre*. The hairs have a round basal part and a narrow apical part, so it is obvious that they all point the same way. In his text Schippmann points out that the two species can be distinguished in the field by holding the tip of the leaf firmly in one hand, and running a finger-tip of the other hand away from the leaf tip, avoiding the mid-vein. I find that the roughness in *B. pinnatum* is also evident in the herbarium.

In my home vice-county (v.c.16) there are, at the time of writing, ten records of *B. pinnatum* s.s. in the Distribution Database. One of them was taken from the notebooks of R.A.

Boniface and dates from 1946, two are taken from lists of species associated with national rarities made in 1985-86, and all the rest are by Eric Philp, sometimes with P. Heathcote, in 1991-2002. Clearly all ten of these should be corrected to *B. pinnatum* s.l. The same is probably true of many more records of *B. pinnatum* s.s. The only exceptions should be current records and those based on specimens examined after 1990. Identifications based on the descriptions (as subspecies of *B. pinnatum* s.l.) in *Flora Europaea* (Smith, 1980), which do not mention leaf indumentum, should be ignored.

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Grasses of the Sefton Coast, north Merseyside

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Members of the family Poaceae (grasses) comprise one of the largest groups of flowering plants and are of great ecological and commercial importance. World-wide, there are about 11,000 species, the *Handbook of grasses of the British Isles* describing 220, together with many sub-species and hybrids (Cope & Gray, 2009).

Extending in a gentle arc for about 30km from the mouth of the Mersey to the Ribble Estuary, the Sefton Coast (v.c.59, South Lancashire) supports a wide range of habitats, including the largest sand-dune system in

England and extensive salt-marshes. A recently updated inventory of vascular plants for the coastal zone lists 1,345 vascular plants (species, subspecies and hybrids) of which 1,204 occur in the dune system (Smith, 2015). The inventory includes a surprisingly high total of 105 grass taxa, 92 being full species, six subspecies and six hybrids, while one is a variety. Ninety-seven were recorded in the dune system, the remaining eight being found in the rest of the coastal zone. Twenty-six (25%) of them are non-native and two (2%) are considered extinct.

It seems remarkable that the Sefton Coast supports 42% of British grass species, bearing in mind that many are restricted either to southern parts of the country or montane habitats and are therefore unlikely to occur here. Most of them are relatively common and widespread but 13 (12%) of the species are regionally or nationally notable (Table 1, p. 37)). The latter include *Mibora minima* (Early Sand-grass), said to be the smallest grass in the world, and abundant on dunes at Southport, in one of its few British localities (Smith *et al.*, 2011). Another national rarity is *Corynephorus canescens* (Grey Hair-grass), mainly known from East Anglia and Jersey but found in some quantity on Southport & Ainsdale Golf Course (Smith, 2008). The dune system also supports important populations of the Nationally Scarce *Vulpia fasciculata* (Dune Fescue), this being largely confined to dunes and sandy shingle on west and south-west coasts.

A majority of the coastal grasses are associated with the sand-dunes, including the characteristic dune-building species: *Ammophila arenaria* (Marram), *Elytrigia juncea* (Sand Couch) and *Leymus arenarius* (Lyme-grass), these being abundant on the youngest embryo and mobile dunes. The hybrid *Elytrigia* × *laxa* (*E. repens* (Common Couch) × *E. juncea*) is occasionally found, while *Festuca arenaria* (Rush-leaved Fescue) is also present, although its status requires clarification. Slightly older fixed-dunes are initially dominated by *Festuca rubra* (Red Fescue), together with several *Poa* species (meadow-grasses). However, over time calcium carbonate is leached from the sand (Salisbury, 1925), leading to more acidic soil conditions and an increase in grasses such as *Agrostis capillaris* (Common Bent) and *Anthoxanthum odoratum* (Sweet Vernal grass). Open patches in the fixed-dunes form an important habitat for a suite of winter-annuals, including *Aira praecox* (Early Hair-grass), *A. caryophyllea* (Silver Hair-grass) and the regionally notable *Phleum arenarium* (Sand Cat's-tail), together with *Vulpia bromoides* (Squirreltail Fescue) and *V. fasciculata*.

Areas of fixed and semi-fixed dune are increasingly being colonised by the tall, nutrient-demanding *Arrhenatherum elatius* (False Oat-grass) and *Dactylis glomerata* (Cock's foot), perhaps reflecting eutrophication caused by scrub invasion and aerial deposition of nitrogen (Jones *et al.*, 2004). Older dune grasslands often contain some of the latter two species but also, more locally, the distinctive *Avenula pubescens* (Downy Oat-grass), *Trisetum flavescens* (Yellow Oat-grass) and *Briza media* (Quaking-grass).

Seasonally-flooded dune-slacks and other freshwater wetlands are characterised by *Agrostis stolonifera* (Creeping Bent), with occasional extensive stands of *Phragmites australis* (Common Reed) or *Phalaris arundinacea* (Reed Canary-grass). *Calamagrostis epigejos* (Wood Small-reed) is rare but dominant where it occurs. Drier slacks often have abundant *Holcus lanatus* (Yorkshire-fog), while a few deeper water-bodies support the regionally notable *Catabrosa aquatica* (Whorl-grass) and *Glyceria* spp. (sweet grasses).

The eastern fringe of the duneland includes areas of dune-heath and acid grassland. Here, *Festuca ovina* (Sheep's-fescue), *Deschampsia flexuosa* (Wavy Hair-grass) and *Nardus stricta* (Mat-grass) are important components, while *Danthonia decumbens* (Heath Grass) and *Festuca filiformis* (Fine-leaved Fescue) are harder to find. Damper areas within this grassland type may support *Agrostis canina* (Velvet Bent).

Salt-marshes at the mouths of the Ribble and Alt Estuaries and in places along Birkdale Green Beach provide a rather different grassland community. Early colonisers are *Puccinellia maritima* (Common Saltmarsh grass) and *Spartina anglica* (Common Cord-grass), the latter being much less prevalent and vigorous than some decades ago. The upper marsh is dominated by *Festuca rubra* ssp. *litoralis*, sometimes with large patches of *Parapholis strigosa* (Hard-grass), while areas affected by tidal drift and freshwater run-off have abundant *Agrostis stolonifera* and large stands of *Elytrigia repens*, often of a rather

glaucous form. *Elytrigia atherica* (Sea Couch) appears to be extinct in the vice-county (Greenwood, 2004) but its hybrid with *E. juncea* (*E. ×acuta*) still occurs in a few coastal sites.

Finally, several non-native species may appear as casuals on disturbed ground or strand-lines, including *Anisantha diandra* (Great Brome), *Avena* spp. (oats), *Echinochloa crus-galli* (Cockspur), *Panicum miliaceum* (Common Millet), *Phalaris canariensis* (Canary-grass) and *Triticum* spp. (Wheat). A number of other alien grasses are potential additions to the list.

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Table 1. Regionally and nationally notable grasses found on the Sefton Coast.

NR = Nationally Rare; NS = Nationally Scarce; VU = Vulnerable; NT = Near Threatened (italics = England Red list, 2014); SCI = Species of Conservation Importance in North West England

Taxon and conservation status	English name	Occurrence	Main habitats
<i>Briza media</i> NT	Quaking-grass	Occasional	Dune grassland
<i>Catabrosa aquatica</i> SCI VU	Whorl-grass	Occasional	Ditches, ponds
<i>Corynephorus canescens</i> NR SCI NT NT	Grey Hair-grass	Locally frequent	Fixed dunes
<i>Festuca arenaria</i> SCI	Rush-leaved Fescue	Occasional	Mobile dunes
<i>Festuca filiformis</i> SCI	Fine-leaved Sheep's-fescue	Occasional	Dune grassland, dune heath
<i>Mibora minima</i> NR NT SCI	Early Sand-grass	Rare	Fixed dunes
<i>Nardus stricta</i> NT	Mat-grass	Locally frequent	Dune heath, dune grassland
<i>Phleum arenarium</i> SCI NT	Sand Cat's-tail	Frequent	Fixed dunes
<i>Poa compressa</i> SCI	Flattened Meadow-grass	Rare	Fixed dunes
<i>Puccinellia distans</i> SCI	Reflexed Saltmarsh-grass	Occasional	Saltmarsh
<i>Trisetum flavescens</i> SCI	Yellow Oat-grass	Occasional	Dune grassland
<i>Vulpia fasciculata</i> NS	Dune Fescue	Abundant	Fixed dunes, disturbed ground
<i>Vulpia myuros</i> SCI	Rat's-tail Fescue	Rare	Disturbed ground

Where did the words ‘lizzory’ and ‘lezzory’ come from?

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At the end of the 19th and the beginning of the 20th century, George Simonds Boulger wrote his well-known and authoritative book *Familial trees*. In this he said that *Sorbus torminalis* (Wild Service-tree) was known in the Cotswolds as the ‘lizzory’ or ‘lezzory’. Boulger perhaps had seen the Reverend Richard Webster Huntley’s 1868 *Glossary of the Cotswold (Gloucestershire) dialect*, which has the unembellished entry:

LIZZORY, LEZZORY. The Service-tree

Boulger thought these words might derive from *alizier*, an Old French name for the Wild Service-tree, although he did not speculate as to why this only happened in part of Gloucestershire.

Huntley lived at Boxwell and Boulger was Professor of Natural History at the Royal Agricultural College in Cirencester, both in the Gloucestershire Cotswolds, so they were in a good position to know what local people called the tree. The Wild Service-tree grew, and still grows, in woods to the west of Cirencester and to the south-west of Boxwell, and is relatively widespread elsewhere in the Gloucestershire Cotswolds.

The Wild Service-tree has a local name or names in many parts of England: Chequer-tree in Kent and Sussex, Maple Cherry in Pembrokeshire for example. Some of these are still current or well-remembered. My father and his boyhood friends used enthusiastically to gather the fruit in Epping Forest 100 years ago and called them ‘Sarvers’ (a corruption of ‘Service’). Very often those who used the local names did not know the tree was also called the ‘Wild Service’.

Boulger mentions the dialect names in his chapter on *Sorbus torminalis*, but Huntley’s ‘Service-tree’ could also mean the true Service-tree *Sorbus domestica*, the background knowledge of which has increased considerably in recent years since its discovery in the wild in South Wales, Cornwall and

Gloucestershire (Hampton, 2015). However, I think it is probable that only the Wild Service-tree is meant by lizzory or lezzory as the recent sites for *domestica* are not in the Cotswolds.

After the references by Huntley, Britten & Holland (1886) (who cite Huntley), and Boulger, lizzory and lezzory are frequently mentioned in the literature as dialect words for the species, but so far I have not found anything earlier than Huntley. There is nothing in Wright (1904) and neither of the two words resemble other British names for the tree: they appear to be dialect isolates. Part of my purpose in writing this note is to try and find out whether either of these words were known to be used, either in the past or today, by Cotswold people other than by reference to the written records of Huntley, Britten & Holland, Boulger and their successors.

The Oxford English Dictionary (1989) has no entry for ‘lizzory’ or ‘lezzory’, but it does for the obsolete word ‘lizary’. It says this is an abbreviated version of ‘alizari’ meaning ‘madder’, the dye obtained from plants of the genus *Rubia* and also the name of the plants themselves. The dictionary describes the use of the word with a quote in translation by William Hamilton from the French of Count Claude Louis Berthollet (1791): “When we wish to obtain a fine bright colour we mix several kinds of lizary together.”

Under ‘alizari’ (a word still embodied in the name of the pigment ‘alizerin red’) the Oxford English Dictionary says, quoting from Ure (1875): “The root of the *Rubia peregrina*, called in the Levant *Alizari*, was the material to which dyers had recourse and large quantities of it are at the present day imported into Europe from Smyrna, under the name of Turkey roots.”

Madder is a red dye of great antiquity derived mainly from the roots of two plants of the Rubiaceae, the bedstraw family, Oriental or Dyer’s Madder *Rubia tinctorum*, and Wild Madder *Rubia peregrina*. The words ‘alizari’

and ‘lizary’ seem to refer mainly to Wild Madder, as is borne out by this French website dealing with Persian carpets:

“la *Rubia peregrina*, appelée aussi lizari ou alizari, pousse en Iran, tandis que la *Rubia tinctorum* est cultivée en Europe méridionale, dans le Caucase et en Turquie.” (*Rubia peregrina*, also called ‘lizari’ or ‘alizari’, grows in Iran, while *Rubia tinctorum* is cultivated in southern Europe, the Caucasus and in Turkey.)

According to Sandberg (1996) the best madder, called ‘alizari’ or ‘lizzari’, came from places like Edirne (Adrianople) and Izmir (Smyrna) in Turkey, while Packer (1830) wrote that the madder used for Adrianople or Turkey Red is called *lizary*, and “furnishes a dye incomparably finer than that produced by any other madder.”

Wild Madder is a native British plant that occurs, often near the coast, mainly in the west and south-west, whereas Oriental Madder is found only as an introduced casual. Another member of the Rubiaceae, the ubiquitous Goosegrass or Cleavers *Galium aparine*, the roots of which were occasionally used to produce a red dye (Jackson & Bergeron, 1997-2014), has the local name in Northumbria of ‘lizzie-in-the-hedge’ (Grigson, 1958), which could be related to ‘lizary’ too.

What does this have to do with the Wild Service-tree? There are two possibilities. Firstly, Antonio Bertoloni (1833-1854) in his *Flora Italica* wrote of the tree: “Decoctione corticis junioris lanae rubro colore inficiuntur.” (A decoction of the young bark colours wool red). Although I have read many accounts of the uses of the Wild Service-tree in Britain and Europe, this is the only reference I have come across to a red dye being made from it. Nevertheless, this might well have been known to the people of Gloucestershire and the tree therefore regarded as a substitute for, or alternative to, *lizary* and simply given the same name.

The Cotswolds is, of course, sheep country and in the past there was an important cloth-making industry from Cirencester and along the valley of the river Frome to Stroud, Thorn-

bury and many other places on the western Cotswold scarp and in the Vale of Berkeley. Much dye was used here, including madder, some of which was, no doubt, from Oriental Madder either cultivated in Britain or imported from abroad, and some Wild Madder.

A clue to a related possibility is in an account by Frances Claxton (c.1999) on her Pioneer Millennium Award Project work on the true Service-tree *Sorbus domestica*, in Britain. Referring to those growing on the cliffs of the Severn estuary, she said: “The species that are consistently associated with *S. domestica* in Gloucestershire are *S. torminalis* and Wild Madder *Rubia peregrina*.”

Wild Madder, as an important dye which gives a rather different red colour than Oriental Madder, would almost certainly have been harvested from the wild.

The idea that Wild Service-tree was ‘lizary’ could simply be a mistake. Someone asked of the tree “what is that?” and, since they grew together, the informant thought they were pointing to the Madder rather than the Wild Service-tree. However, it could be that Wild Madder was known, quite correctly, as ‘lizary’ by the many Gloucestershire people who worked in the cloth-making and dyeing industries and the Wild Service-tree simply became the ‘lizary tree’, *i.e.* ‘the tree that grows with the *lizary*.’

A third possibility is that the name does indeed derive, as Boulger suggested, from the French *alizier* and the resemblance to ‘lizary’ is coincidental. The French word *alise*, meaning ‘a Wild Service fruit’ has come into English as Chaucer’s word ‘aleys’ and in ‘French ales’ (often incorrectly spelt ‘hales’ or ‘hailes’), the West Country name of the Devon Whitebeam *Sorbus devoniensis*, but in all the many British dialect names for the Wild Service-tree there is no other like ‘lizzory’ or ‘lezzory’ and, as mentioned above, Boulger’s hypothesis therefore seems rather unlikely.

However, following the Edict of Nantes in 1598, many Huguenots settled in the Cotswolds, where they were an important influence on the emerging cloth industries. Local people possibly adopted their French

word for the Wild Service-tree but modified it to ‘lizzory’ because it was similar to the existing name for the Madder plant. The Huguenots, on the other hand, might have already conflated the name of the tree and the dye before their arrival since ‘alizari’ was well known in France. This possibility is strengthened by the existence of the Late Latin word *alizariae* thought to derive, by French lexicographers (Estienne, 1549; Du Cange, 1833-87), from *alizier* and to mean ‘a place planted with Service trees’, though it could also mean ‘[female] workers with madder dye or with madder-dyed cloth’ or ‘cloth dyed with madder or of a colour similar to these’. (J. Dillon *pers. comm.*).

Whatever the origin of ‘lizzory’, the story has a remarkable twist. In modern Iran the English name for the Wild Service-tree is thought, at least by some, to be ‘lezzory’ as, for example, in the title of the project undertaken (2002) at the Research Institute of Forests & Rangelands in Teheran by Mohsen Nasiri: “Asexual propagation of lezzory (*Sorbus torminalis*) through cutting and tissue culture.”

A possible explanation for this is that the word travelled to Iran with the celebrated orientalist Edward Granville Browne, who was born at Uley, near Dursley in the Gloucestershire Cotswolds. He was particularly familiar with Iran (or Persia as he knew it) and, in 1893, published a book called *A year amongst the Persians*, describing his travels there in 1887-8. If he knew the Wild Service-tree in his home area only as the lezzory he might have told the Iranians that this was its English name.

There is also an interesting tangle of words referring to rosaceous trees, and possibly involving ‘lezzory’ in the Basque language. Although Basque is a non-Indo European language isolate it has borrowed from and lent to many other languages. The Wild Service-tree is known as *mazpil*, *aizpil* and *basagurbe* (which translates as ‘Wild Service’). *Gurbe(a)* is Basque for the fruit of the true Service-tree *Sorbus domestica*, and *gurbeondo* for the true Service-tree.

The Rowan, or Mountain Ash *Sorbus aucuparia* is known in Basque as *otsalizar*,

with variants such as *atso-lizzara*. *Otsa* means ‘wild’ and *lizar*, *leizar* and *lizzara* are Basque for an Ash, the latter word attested from the 10th century (Trask, 2008). There is, of course, often much conflation of the various vernacular names for *Sorbus* species. In German, for example, the Rowan is known as *Eberesche* (literally ‘wild boar ash’) but so, sometimes, is the true Service. Because of this tendency to liken the true Service and other *Sorbi* with pinnate leaves to Ashes it seems a remarkable coincidence that the Basque word *lizarra* should have such a close resemblance to the Cotswold dialect word *lizzory*. However, it is difficult to imagine what the connection might be.

In conclusion I return to my question: is there anyone who can remember lizzory, or lezzory, being used as part of the living language of the Gloucestershire Cotswolds rather than as words acquired from a written source and does Huntley’s 1868 glossary contain the only mention not copied from, or paralleled by, earlier material?

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BSBI and its relationship with the National Biodiversity Network

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On 31st March and 1st April 1950, the BSBI organised an important conference considering how to record plants and what should be recorded. S. Max Walters described in a general way “the study of the distribution of higher plants, with particular reference to the British Flora.” Walters paid tribute to the work of H.C. Watson in providing, some 100 years previously, a mapping system for Britain based on the 1852 political county boundaries, with a small number of exceptions, which would stand the test of time and provide constant boundaries, allowing comparative studies of the British flora and fauna. In terms of plant distribution, such maps exaggerate the true distribution of plants.

It was, however, left to Professor A.R. Clapham, of the University of Sheffield, during the last talk at the conference, to propose that, with the adoption by Ordnance Survey of the metric 100km square mapping system, that an atlas be produced on the basis of reporting distribution by 10km square (Clapham, 1951). He described “their [10km. squares] great advantage as being considerably smaller than vice-counties and can give much

more precise information about distribution within the general range”. After some debate, the BSBI agreed to the proposal to produce the atlas; obtained the necessary finance and appointed S.M. Walters as project director, with Dr Franklyn Perring in day-to-day control. Within some eight years the mainly amateur botany community had obtained sufficient data to produce a world first atlas (Perring & Walters, 1962).

It was some ten years later, around 1972, that I started to look at wild flowers again having been introduced to them at junior school. I joined Rotherham Naturalists' Society, which held occasional excursions out of town, and began to realise that there is more to plants than just geographical location. I was encouraged to join the BSBI and acquired the first *Atlas*. The *Atlas* showed that one of my home squares, SK49, had just 206 plant species recorded. In no time at all, I realised that I had recorded well over 206 species in that square and decided that in future all my records would be made available to Rotherham Museum, where Bill Ely operated one of the first biological record centres.

It took the British Trust for Ornithology many years to follow the botanists, with their first atlas in 1976, followed by a second in 1988-91. To the surprise of many, data analysis showed many changes, including a considerable change in farmland bird populations (Gibbons *et. al.*, 1993). Such volunteer recording provided the evidence required to justify stewardship payments on farmland. In addition, unexpectedly, the atlas methodology influenced conservation (Preston, 2013). Similar results were obtained following repeat surveys of both plants and butterflies in the late 1990s (Preston *et. al.*, 2012).

The National Biodiversity Network

In 1986, the National Federation for Biological Recording was established. Its members included many of the leading forward thinkers in the practice of biological recording, including Sir John Burnett, Charles Copp from Clevedon and Paul Harding, then head of the Biological Records Centre at Monks Wood. In early discussions, it became apparent that a national strategy for the future of biological recording was becoming essential. Sir John established a charity, The Co-ordinating Commission for Biological Recording, which obtained funding (in part from the Department of the Environment) to carry out a study and produce a report.

In the Executive Summary of the CCBR report (Burnett *et. al.*, 1995), the opening paragraph is worth quoting:

“Since the end of the nineteenth century, when national legislation was introduced to protect birds and seals and local authorities used by-laws under the Local Government Act, 1888 to protect plants, concern for the environment has grown with increasing rapidity. Over the last 40 years, since the establishment of the Nature Conservancy in 1949, it has become accepted that informed policy and decisions on issues such as land use, planning, conservation and scientific enquiries, such as the detection of global warming, require a sound factual basis. An essential, crucially important element therefore is the public availability of accurate and extensive biological records.”

The report opened the pathway to the formation of the National Biodiversity Network Trust, which today provides a major element of such a service. The NBN Trust has established data standards, quality controls and protocols for establishing databases. By the beginning of November 2015, The NBN Gateway had around 110 million records, covering many groups of plants and animals.

In the meantime, the BSBI seems to have ploughed an independent furrow, without quite having the financial clout or the number of members of organisations such as the BTO. and Butterfly Conservation. It has made some significant progress in interpreting the British and Irish flora, outlined in papers presented at the September 2012 Conference celebrating 50 years since the 1962 *Atlas* (Braithwaite & Walker, 2012).

At the National Biodiversity Network Trust conference held at the Royal Society on 15th November 2013, we learned that the European Habitats Directive protects 89 species and 77 habitats for which Britain has international responsibility. “What is the evidence? Is it accessible? Is it open and transparent? Do we know what we need to know to support these designations?” (Ed Mackey, Scottish Natural Heritage, presentation).

What has the BSBI contributed in recent years to the NBN Gateway?

Take for example *Trifolium pratense* (Red Clover). This is an important species pollinated by long-tongued bumblebees. There is anecdotal evidence that with so-called agricultural improvement to meadows and pastures, the species is in decline and, with it, the long-tongued bumblebees essential for its pollination. Looking on the NBN Gateway (14th December 2015) I noted that there are 128,842 records, of which 46,151 (35.8%) come from various BSBI sources. The balance comes from approximately 130 other data providers, including local records centres and the National Trust. I then asked the NBN Gateway to provide a map with the date ranges 1962-1999 (yellow), 2000-2009 (brown) and 2010-2015 (red) (see Fig 1, Colour Section, plate 1). Using the on-line BSBI hectad atlas

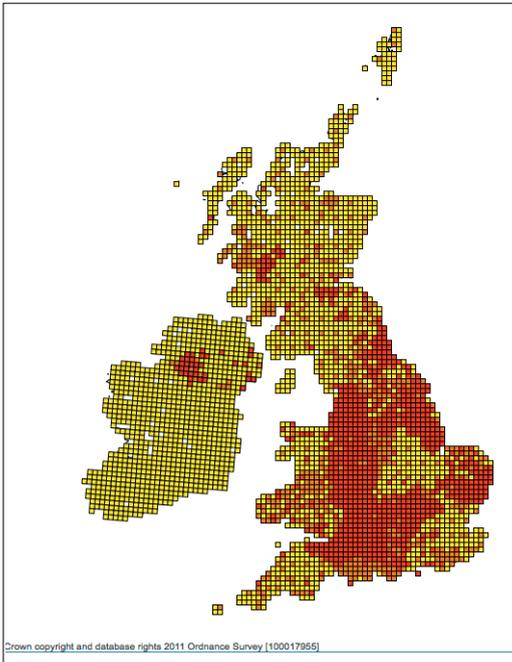


Fig. 1. Distribution of *Trifolium pratense* (Red Clover) according to the NBN Gateway, accessed 14/12/2015 (see p. 41)

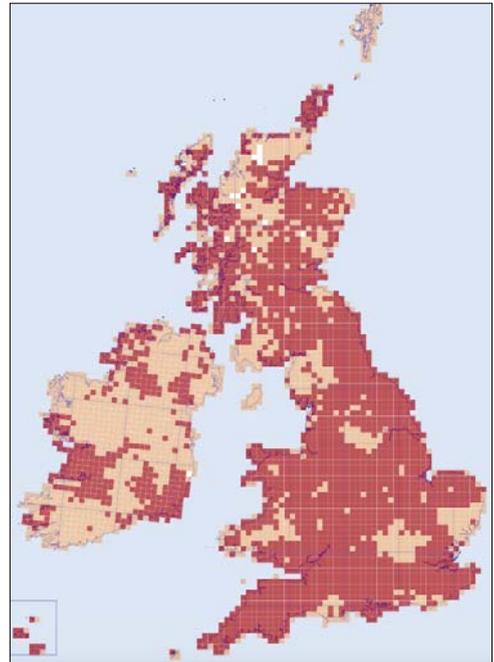


Fig. 2. Distribution of *Trifolium pratense* (Red Clover) according to the online BSBI Database, accessed 14/12/2015 (see p. 41)

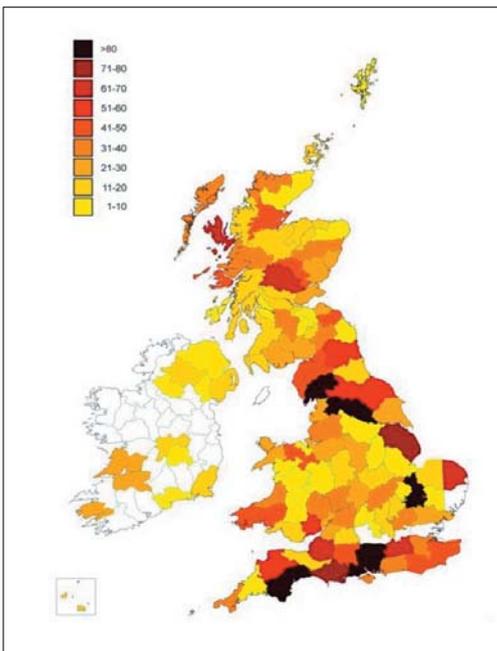


Fig. 3. The number of populations surveyed for the Threatened Plants Project within British and Irish vice-counties (see p. 44)



Carex comans at the foot of a street post in Caerleon (v.c.35) in October 2011. Photo © G. Housome (see p. 55)



Solanum rostratum



Guizotia scabra ssp. *schimperii*

Both photos taken at Easbourne (v.c.14) by R. Lucas © 2015 (see p. 52)



Ian Evans – with Award prize Swarovski binoculars. Photo S. Taylor © 2015 (see p. 61)



1990 version of a hedge school for young naturalists in East Cork. Photo Kevin Maher © 1990 (see p. 66)



Pelargonium inodorum, established at Ryde Canoe Lake, Isle of Wight. Photo C. Pope © 2015 (see p. 54)



Fruiting inflorescence of *Carex comans* at Hindhead (v.c.17) in June 2015. Photo © G. Hounsome (see p. 55)



Aerial view of Wildfowl and Wetlands Trust Reserve, Arundel (v.c.13) – green pins indicate distribution of *Najas marina*



Reed bed channel



Large clump of *Najas marina* in reed bed channel

All above photos taken at Wildfowl and Wetlands Trust Reserve, Arundel (v.c.13) by M Shaw © 2015 (see p. 18)



Pyes Pit, North Norfolk, a marl-pit pond recently restored by the Norfolk Ponds Project.

Photo C. Sayer © 2015 (see p. 18)



Small fragment of *Najas marina* from Pyes Pit, Norfolk. Photo E. Anderson © 2015 (see p. 18)



Pink-yellow-cream flowered form of *Symphytum ×uplandicum*, Bradford, Yorkshire (v.c.63). Main branch, stem winging and flowers, 26/5/2015; detached inflorescences and corollas three weeks later.



Pink-yellow-cream flowered form of *Symphytum ×uplandicum*, Soham, Cambridgeshire (v.c.29), 15/6/2015.
All photos R.M. Leaney (see p. 26)

with the date ranges up to 2009 (light brown) and 2010 to 2015 (dark brown) (Fig. 2 Colour Section, plate 1) we see a better, more complete recording picture, but still with gaps. I really cannot be bothered to sort out how many times I have recorded Red Clover in Dorset, all sent *via* the local records centre to the County Recorder, and they are still in a black hole.

The ability of recorders to see good records missing from distribution maps was described by Chris du Feu, a volunteer recorder speaking at the 2015 NBN Conference, as “demoralising”. He asked: “Why supply records if they are going to be wasted?” A common message from many of the speakers was the importance of open data. Rachel Stroud (NBN Acting Chief Executive) raised the issue of data providers agreeing to provide data under four license categories. In a question raised from the floor, it was asked “what is the point in having licenses, when a data provider is willing to make data available at full resolution, but when the recipient record centre or national society just wants to sit on the data?” Christine Johnson, from the Outer Hebrides Biological Recording Group, told the conference that there were just eight locally resident recorders available and that any help from visitors received *via* a national recording scheme or the NBN Gateway would considerably help their local recording effort. In what was a difficult situation following the recent death of the NBN Chief Executive, John Sawyer, Dr Andy Clements, Chief Executive of the British Trust for Ornithology and NBN Trustee, at the end of the conference, handed over a disc with 142 million recent bird records, to be made publicly available through the NBN Gateway. This was received to great acclaim from the delegates.

As a BSBI member of over 40 years standing, I urge the BSBI to reciprocate or provide good scientific reasons why we are not

joining the open data revolution that is becoming increasingly transparent across all aspects of the scientific community.

Footnote:

The 10km square SK49 mentioned in the text above now has the highest number of records for a 10km square on the NBN Gateway. It is largely an urban and industrial area, with no significant nature reserves. The records are generated by the local recording community and supplied to Rotherham Biological Records Centre, forwarded to the NBN Gateway.

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The BSBI Threatened Plants Project – progress and plans for publication

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Although fieldwork for the Threatened Plants Project finished in 2013, albeit with a little mopping up in 2014, it has taken us longer than planned to carry out the analyses needed for the write-up. We would like to apologise for this delay and once again say a huge thank you to all of you that contributed to such a valuable dataset. On a more positive note we can now report that the analyses have been finished and draft accounts have been completed (at the time of writing) for around ten species. This note provides a brief summary of the overall findings, our immediate plans for publication in 2016 and details of how you can get involved and provide feedback.

Overall results

Results for each species will be presented as short ‘dossiers’ in the final publication. Here we just present a brief overview of the main findings.

Sites surveyed

In total, 3,817 populations were surveyed across the whole of Britain and Ireland, including 1,993 (51%) of the 3,941 populations that were pre-selected for survey (Table 1). 1,011 of pre-selected populations were re-located across all 50 species, giving an overall re-find rate of 51%. A much higher proportion of additional populations were re-found (81%), which is not surprising, as recorders tended to select populations that they knew were still extant prior to the survey. The majority of the analyses are based on the pre-selected survey results, as this represents an unbiased sample of populations across the national range. However, the additional site information has been used (and reported) wherever possible, for example to help characterise habitats, management, threats, *etc.*

Table 1. Number of populations surveyed as part of the BSBI's Threatened Plants Project between 2008 and 2014

Site-species populations	Extant (%)	Null (%)	Total
Pre-selected	1011 (51)	982 (49)	1993
Additional	1477 (81)	347 (19)	1824
Total	2488 (65)	1329 (35)	3817

Overall there was large variation in the total numbers of sites surveyed, ranging from just 16 populations for *Fallopia dumetorum* to 255 populations for *Glebionis segetum* (13 and 126 pre-selected populations for the same species respectively (Figure 1, p. 44). Most species were in the range of 13 to 75 populations surveyed for both pre-selected and additional sites. However, these figures do not take into account the number of populations that recorders were asked to revisit. When these data are included (*i.e.* pre-selected surveys are

expressed as a proportion of the number of sites pre-selected for survey) most species fall within the range of 31-70% (Figure 2 p. 46).

Surveys were carried out in virtually all British vice-counties, with a slight bias towards southern and northern parts of England and Scotland, where there were higher concentrations of the target species and higher participation levels (Fig. 3, Colour Section plate 1). Fewer surveys were carried out in Ireland, partly due

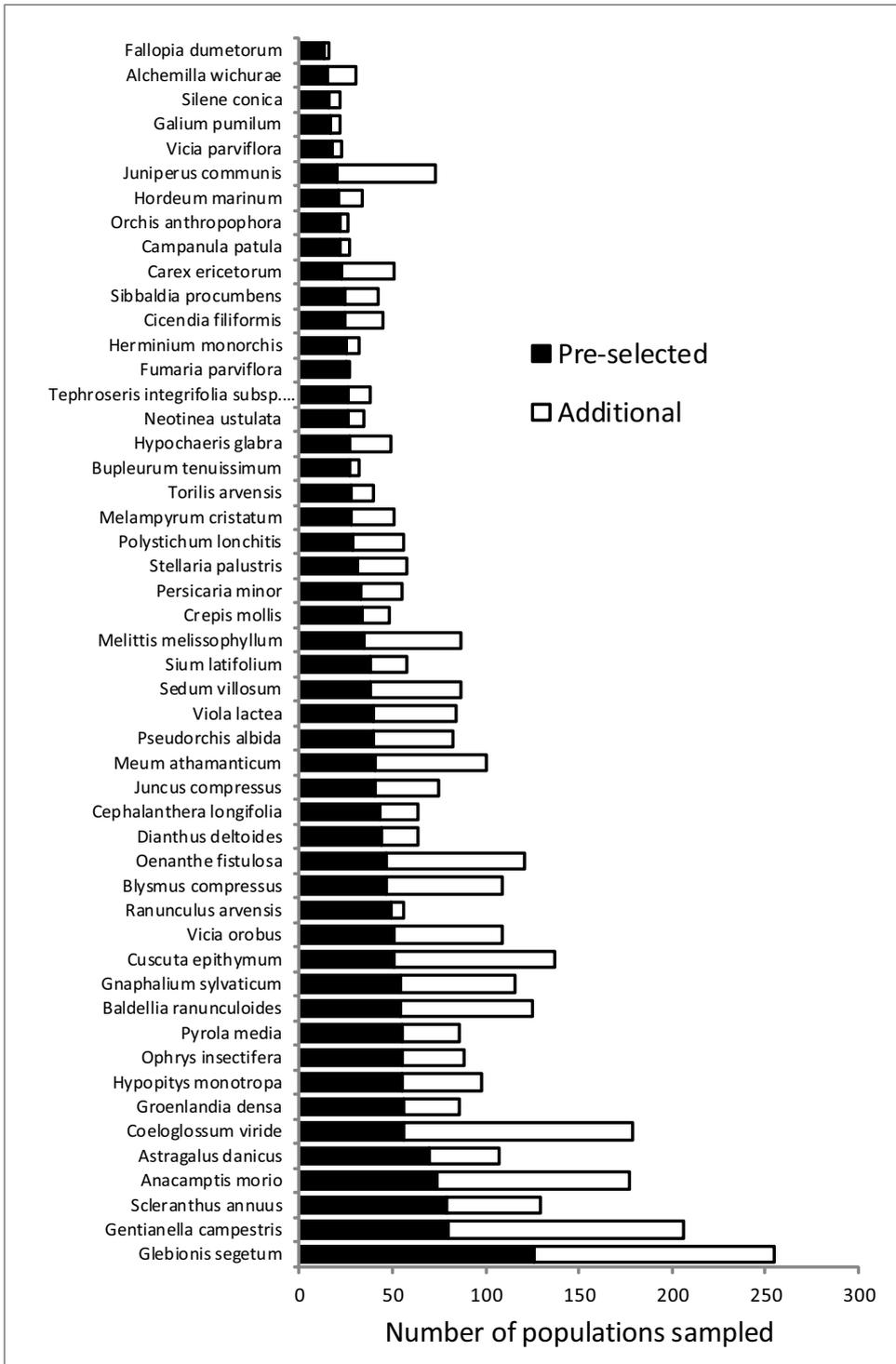


Figure 1. The total number of sites (pre-selected and additional) surveyed for 50 species covered by the Threatened Plants Project.

to the lack of botanists, but also because many of the species selected are not considered to be threatened in Ireland. As a consequence Ireland has now run its own version of the project – the Irish Species Project.

Broad habitats

Surveys were undertaken in a range of broad habitats, especially woodlands, arable, calcareous

grassland, fens and marshes (Table 2). The proportions of pre-selected sites re-visited was broadly similar across all habitats, whereas the re-find rates were more variable, in particular for species associated with montane habitats, where most populations were re-found, as compared with arable and standing waters, where the re-find rates were much lower.

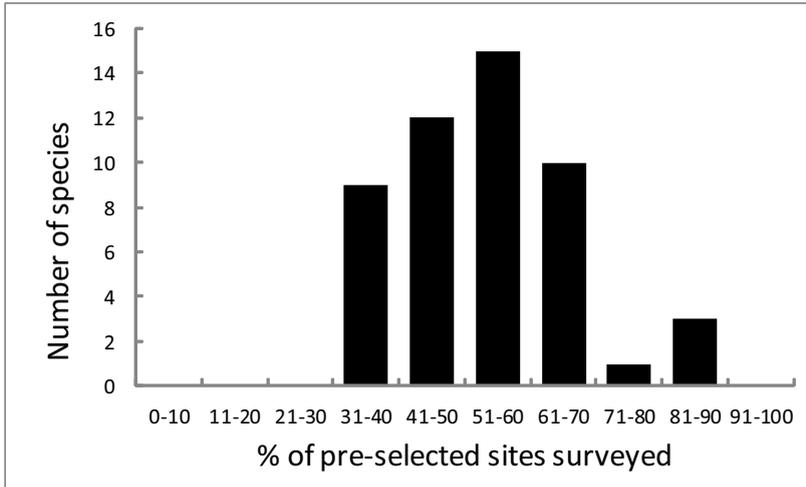


Figure 2. The proportion of pre-selected site-populations surveyed for the 50 species covered by the Threatened Plants Project.

Table 2. The number of site-populations surveyed in relation to U.K. Broad Habitats. The proportion of site-populations within each habitat that were visited and re-found are given as well as the total number of site-populations (pre-selected plus additional).

Broad habitat	Pre-selected	% re-visited	% re-found	All sites
Deciduous wood	223	60	56	380
Conifer wood	55	60	62	86
Boundary	168	59	52	322
Arable	307	45	28	507
Neutral grassland	136	44	57	286
Calcareous grassland	527	56	55	1049
Acid grassland	43	35	65	71
Heathland	115	57	64	266
Fen, marsh & swamp	201	45	52	433
Standing water	143	38	36	266
Montane	24	48	88	42
Inland rock	51	68	65	109

Threats

When visiting site-populations, recorders were asked to record any perceived threats to the target populations, where extant, or give a probable reason for loss when a population was not re-found. 37 broad threat categories were derived from the information gathered and the results for the top ten threats are given in Table 3. The results for the pre-selected sample and the total sample (including additional populations) was remarkably consistent, with the same top ten threats being ranked in the same order and accounting for

just over 77% of all the threat assessments made. Chief amongst these were factors associated with management, in particular abandonment or agricultural intensification (e.g. eutrophication). Interestingly, the threats posed by invasive native species, presumably linked to changes in management and eutrophication, were ranked much higher than invasive non-natives (ranked 8th and 26th equal respectively), despite the general assumption that invasive non-natives are currently one of the main threats to native species.

Table 3. The top 10 reported threats to populations of the 50 species covered by the Threatened Plants Project.

	Pre-selected	%	Rank	All	% all	Rank
Lack of management	336	17	1	582	16	1
Under-grazing	255	12.9	2	464	12.7	2
Over-grazing	178	9	3	338	9.3	3
Agricultural intensification	144	7.3	4	265	7.3	4
Increased shade	120	6.1	5	240	6.6	5
Invasive species (unspecified)	111	5.6	6	233	6.4	6
Eutrophication	116	5.9	7	210	5.8	7
Invasive native species	104	5.2	8	193	5.3	8
Road/urban development	91	4.6	9	148	4.1	9
Disturbance caused by humans	72	3.6	10	145	4	10
Total - top 10 threats	1527	77.1	1527	2818	77.3	
Total - all 37 threats	1981	100	1981	3647	100	

Presenting the results

Funding permitting, we hope to publish the findings as a booklet in 2016. This would include a general introduction to the survey, with methods and an overall summary across all 50 species. The majority of this text has already been written. However, the bulk of the

booklet will comprise summaries for each species, incorporating the analyses and information on the sample survey, survival, threats, population characteristics, habitat and management (Table 4). Much of this information will be included as appendices so that the accounts are more readable.

Table 4. Information that will be presented for all 50 species included in the project.

Section	Results included in section
1. Sample survey	Number of preselected and additional sites surveyed; % null and extant; how well range sampled.
2. Survival	Analyses of survival in relation to i) preselected record resolution and ii) date-class, iii) environmental zone, iv) habitat, and vi) whether located on a S.S.S.I./N.N.R. or not.
3. Threats/reasons for loss	Assessment of threats for extant populations and reasons for loss where a species is no longer present.
4. Population Characteristics	Population characteristics including range in altitude, population size and extent, and plant density.
5. Habitat	Occurrence within National Vegetation Classification plant communities and equivalent European Eunis Level 2 habitats; list of closest associates.
6. Management	Summary of management carried out on preselected and additional sites.

Your help and feedback

If you are interested in helping to write some of the accounts then we would love to hear from you. Contributors would need to have a good working knowledge of the species in question and, ideally, plant ecology and monitoring methods more generally. A basic

understanding of statistics would be useful but not essential. We hope to produce drafts for all species by the end of March 2016 (we estimate about 2-3 days to complete one account). We would also welcome feedback on the information given above or the project more generally.

Adventives & Aliens News, 7

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There have been a few records of the North African native *Erodium trifolium* (Heron's bill) from at least two different English vice-counties in the last year or so (see v.c.10). It self-sows readily once installed in gardens and is seemingly being pushed by the trade at present, so more records should be forthcoming. What seems to be the first British record, for Sutton-on-Hone (v.c.16) by J.R. Palmer in 1999, might have passed almost unnoticed in the pages of the *Wild Flower Magazine* (449: 8), where it is described as "an extensive weed on walls and roadsides". It might well still be present there.

I have included another record of *Pratia pedunculata* (Blue Lawn-lobelia), not least to indicate how quickly a species not on many botanists' radar several years earlier can become a presence, at least in one particular habitat, in this case dry, well-drained turf. *P. angulata* (Lawn-lobelia), by contrast, probably prefers the cooler, moister conditions that prevail in more northern/western localities.

It is always enjoyable to speculate on the possible means of introduction of our alien plants, even though all too frequently genuine clues are lacking, and we can do no better than make more or less educated guesses. I recently saw what looked to be a dried infructescence of *Lepidium virginicum* (Least Pepperwort) in a floral arrangement on a grave in an East Sussex church yard. Is it being imported for such a purpose? Is it being gathered up accidentally with something else that is? And might this explain, in part at least, the recent sprinkling of records, a further three of which are detailed below? Note in particular the

circumstances of the v.c.14 records, and *c.f.* *Bupleurum rotundifolium* (Thorow-wax)? If anyone has further observations that seem to corroborate this possibility, or that suggest another, please let me know.

I also have a request for records of two more non-native species that seem to be increasing their ranges in the British Isles: *Portulaca oleracea* (Common Purslane) and *Gnaphalium luteo-album* (Jersey Cudweed), the latter treated as a rare native in a few places where it has a longer history. I have included records of both to give an idea of habitat. *P. oleracea* always (?) appears late in the season; indeed it is one of those species that can undergo a dauntingly rapid growth spurt, materialising 'suddenly' on ground that had seemed bare only days before.

Please keep sending your records, with the usual details, to the two addresses given above. Many thanks.

V.c.10 (Isle of Wight)

Lepidium virginicum (Least Pepperwort). Ryde (SZ610923), 2015, P. Stanley: on strand line.

Erodium trifolium Cav. (Heron's-bill). Ryde (SZ598914), 5?/2015, P. Stanley (det. E.J. Clement): one large plant at foot of wall on industrial estate; Brightstone (SZ419832), 5?/2015, P. Stanley (det. E.J. Clement): half a dozen plants on a mown road verge. Its lower leaves are generally ovate-cordate, sometimes three-lobed (thus the specific epithet?). The petals (up to 1.4cm long) are white with purplish-red veins, the two upper ones having red-purple blotched bases. This asymmetrical marking of the petals reinforces an impression

of zygomorphic flowers and this might explain why it is frequently being sold as *E. pelargoniflorum*, *Pelargonium* species having strongly zygomorphic flowers. However, that is a quite different plant, with mucronate sepals (non-mucronate in *E. trifolium*) and is unknown (?) in cultivation.

V.c.11 (S. Hants.)

Lepidium virginicum (Least Pepperwort). Nea Meadows LNR (SZ202937), 1/9/2012, E. Pratt & D. Leadbetter: flowering and fruiting in small quantity in car park. Recorded here again in July 2015 by F. Woodhead (comm. M. Rand).

Pratia pedunculata (Blue Lawn-lobelia). Wickham (SU573109), 2015, G. Copley (det. E.J. Clement): several lawns at Manor Close, for many years. It has now colonised a grass verge.

Cynodon dactylon (Bermuda-grass). Milton Common (SU6732701091), 12/9/2015, M. Berry & E.J. Clement: dominant in sward for several metres both sides of a mown path. This site was not listed in *The Flora of Hampshire* (Brewis *et al.*, 1996), the earliest detailed record I can find being by R. Jones in 2009, but apparently known here since 2000. Inclusion of this species in a section dedicated to aliens is somewhat contentious, as it could be native in other of its southern coastal sites outside Cornwall. Very easy to overlook even when in flower in September/October (assuming it is not mown).

V.c.13 (W. Sussex)

Portulaca oleracea (Common Purslane). Thorney Island (SU7533602411), 19/8/2007, Sussex Botanical Recording Society (SBRs): many plants on earth strip at side of concrete track. Because its vegetative parts turn red in full sun and it grows so densely here some years, it is rumoured that the site can be picked out in colour aerial photographs, although I have not tested the claim on Google Earth.

Potentilla norvegica (Ternate-leaved Cinquefoil). Lavington Common (SU9484718676, 9478218642, 9489318701), 29/7/2015, SBRs: three plants near car park, The Plantation. These are certainly the first Sussex

records since 2000, possibly since the late 1970s.

V.c.14 (E. Sussex)

Pteris multifida Poir. (Spider Brake). Burwash (TQ675247), 12/5/2015, F. Rumsey (conf. A. Paul): established in well at Rose and Crown. For details of other records and advice on identification see *BSBI News*, **104**: 42-43, and Colour Section, Plate 3 of the same issue for a photo. The first Sussex record.

Calocedrus decurrens (Torrey) Florin (California Incense-cedar). N. of Haywards Heath (TQ3237526439), 19/2/2015, P. Harnes & C.A. Stace (det. C.A. Stace): single seedling on a wall adjacent to planted trees. Almost certain to be overlooked and under recorded. The first Sussex record.

Portulaca oleracea (Common Purslane). Hastings (TQ826094), 19/9/2004, J. Rose: many plants on rough ground by miniature railway line. Still present in 2015 (pers. comm. J. Rose).

Lepidium virginicum (Least Pepperwort). Brighton (TQ3282605747), 23/9/2014, A. Spiers: one plant on disturbed grave in Wood Vale. In 2007 Tony recorded it from near a florists at Elm Grove, Brighton.

Sedum forsterianum (Rock Stonecrop). Mayfield (TQ5881327026), 18/3/2015, M. Berry & J. Linsell (det. M. Berry): in two places on rock wall below entrance to school with abundant *S. spurium* (Caucasian Stonecrop). Far less frequently naturalised than *S. rupestre* (Reflexed Stonecrop) in Sussex, and apparently more shy flowering.

Tolmeia menziesii (Pick-a-back Plant). Chelwood Gate (TQ4095728690), 27/5/2015, M. Berry, J. Linsell & H. Proctor (det. M. Berry): by footpath in damp wood. Far less frequently naturalised than *Tellima grandiflora* (Fringe-cups) in Sussex, probably requiring a higher humidity.

Indigofera heterantha Wall. (Himalayan Indigo). Eastbourne Seaside (TQ6232200188), 13/7/2012, M. Berry (conf. E.J. Clement): self-sown plant in an alleyway between terraced houses, since extirpated. A shrubby legume cultivated occasionally, this is the only seedling I have found to date. A not

yet fully woody example could be misidentified as *Onobrychis*, but has an indumentum of medifixed hairs.

Gnaphalium luteo-album (Jersey Cudweed). Hastings (TQ822108), 14/8/2004, J. Rose (conf. P. Harmes): 15 plants in pavement cracks, Parker Road; (TQ822104), 5/9/2015, J. Rose: some 25 plants in pavement cracks, forecourts of houses, St Mary's Terrace.

V.c.15 (E. Kent)

Gaillardia ×grandiflora (Blanket Flower). Littlestone-on-Sea (TR08272361), 18/7/2015, M. Berry & R. Wells: naturalised extensively on sand dunes. First noted by Eric Philp in c.1991 (pers. comm. G. Kitchener).

V.c.39 (Staffs)

Callitriche terrestris Raf. (Terrestrial Waterstarwort). Ashford Nurseries (SO864879), 2014, C. Westall (det. R. Lansdown): on soil surface of a bonsai tree imported from

Holland, grown on to obtain fruits. The second British record for this native of the eastern U.S.A. and Canada. Could this exploit shaded, moist niches of the sort favoured by *Solerolia solerolii* (Mind-your-own-business)?

Verbascum phoeniceum (Purple Mullein). Trysull (SO854938), 2014, C. Westall: one plant on a grassy bank, Woodford Lane. This has been known as a bird-seed alien in the past, but is more likely to be of garden origin in the present case. See Clement *et al.* (2005): 242.

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Some interesting plants of 2015

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Initially, a sedge species (*Carex*) was found in 2010 in Bradford (SE13) (v.c.63), and attempts to identify it were problematic. It was not a native species and it was quite difficult to speculate what the country of origin was. Material was initially sent to J. Koopman (who was doing a sedge flora of Europe), and he suggested a variant of *C. muricata* ssp. *pairae* (Prickly Sedge), var. *capitata*. However, this just did not fit the characters of this taxon or any other in the *C. muricata* agg. More material was sent to Anna Molina (part of a team that worked on this aggregate based in Spain), who suggested it could be a hybrid, but the suggested parentage was very unlikely and it showed no signs of infertility.

Five years later, the sedge is still there at this former mill site, but may be lost at some point due to the site being up for re-development. Looking at floras online it appeared to be nearer to some of the sedges in North America. A contact there (P. Raven) put me in touch with a *Carex* specialist and I sent material in mid-summer 2015.

The sedge was identified by Anton Reznicek as *Carex bracteosa* Kunze (ex. Kunth), known from (at least) Chile, S. America, and as it is not found elsewhere in English-speaking parts of the world there appears to be no English name. It was a good match for that species; but should not be confused with the sedge *Carex scopulorum* var. *bracteosa* (L.H. Bailey) F.J. Hermann, which is in a different section, having separate male and female parts.

Carex bracteosa has small utricles, less than half the size of sedges in the *C. muricata* agg. It has some similarities to *C. muricata* ssp. *pairae* in its narrow leaves and short rounded ligules. The heads are all clustered at the top, rarely with a very small interruption between them, and mostly there is a long bract subtending the lowest cluster (some measured up to 6 cm long). However, the very small utricles have a spongy base, as in *C. spicata* (Spiked Sedge), but, of course, the ligule is quite different in that species, which also has much larger utricles.

Two other plants found this year are both hybrids. The first is a hybrid in the genus *Pilosella* (mouse-ear-hawkweeds). This year (2015) I tried to find a couple of the non-native *Pilosella* taxa that were known in Cheshire (v.c.58). Armed with some grid references, I found the site for the first of these, *P. caespitosa* ssp. *colliniformis* (Yellow Fox-and-cubs), still growing where it was last recorded in Lymm, along the Trans-Pennine Trail (SJ78). There were no other *Pilosella* species growing with this one but it was nice to see this plant.

The second species was at a site called Ashton's Flashes (SJ67). The species of *Pilosella* at this site is *P. praealta* ssp. *praealta* (Tall Mouse-ear-hawkweed). It too was still there, although at first it was difficult to pick out. Searching the site, I came across this species growing with *P. officinarum* (Mouse-ear-hawkweed). On close scrutiny, I found small, rather depauperate plants (about three) that had intermediate aspects and were neither one nor the other. As they were depauperate I grew one of these on. It was then certain that it was the hybrid between the two (no other species of *Pilosella* were at this site). The former species has more or less glabrous leaves on the underside and a cluster of rather small, and few to fairly numerous heads at the top of the rather slender stems (reminiscent of a small flowered *Crepis* (hawk's-beard) rather than a typical *Pilosella*). The hybrid, which currently appears to be called *P. ×acutifolia* (pers. comm., F. Krahulec), has a thin coating of stellate hairs on the underside and more going up the stem. The stem is similar to that of *P. ×stoloniflora*, with 2-4 branches, each with an intermediate flower, which more closely resembles the *P. officinarum* parent, but smaller. The flowers in this case are all yellow. Contrary to Sell & Murrell (2006) and Stace (2015), the F1 *P. ×stoloniflora* that I know in a quarry in Harden, on the outer reaches of Bradford (still there in 2015), generally has yellow flowers, although one plant had pale orange flowers. There appear to be no backcrosses at this site. In both these hybrids, they seem to produce some seed, as, although appearing fertile, the achenes are hollow, so

both these plants are apparently sterile. It may be that both involve the pentaploid form of *P. officinarum*. The present subspecies of *P. officinarum* maybe better as varieties (Stace, 2010), but could benefit from further study, perhaps at a genetic level, as they are usually referable to one of the subspecies given in Sell & Murrell (2006).

Another difficulty lies with the subspecies of *P. praealta* (ssp. *praealta* and ssp. *thaumasia*), which may be referable to varieties? Subspecies *thaumasia* occurs at Langcliffe, near Settle, on the Hoffman lime kiln. I counted 50 plants still there in 2015 on the side of the kiln. It had also escaped on to the bare ground of the quarry on the opposite side beyond the ditch, but it was rather depauperate there and rare, although *P. officinarum* was growing nearby. While some of the plants had more than one stem (each ending in c.6-25flowers.), a few of these stems seemed rather leafier, like stolons, but they too had flowers at the end. Only three plants had what could be called leafy stolons, which were loose and not rooting anywhere, although the side of the lime kiln may not be conducive to the stolon finding any purchase. As only three had stolons of any sort (all the rest were a basic rosette) it is difficult to say if subspecies is a useful rank as it could be a response to environmental conditions. No hybrids were seen at Langcliffe.

The genus *Pilosella* in the British Isles needs further work. Several plants from Britain close to *P. aurantiaca* (Orange Fox-and-cubs) and some other similar examples were sent to the European expert F. Krahulec and I hope to receive the results on those in due course. I noticed that some of those that look like *P. aurantiaca*, with more loose-flowered branches at the top, and with larger, paler orange flowers, sometimes had additional small, yellow flowers later in the season. As many have few to no stellate hairs on the under surface of the leaves, it is possible that they are the result of a cross originating from a tall yellow-flowered species with *P. aurantiaca*. Being fertile, they might be considered a species in Europe rather than having any hybrid binomial. One plant from Saltaire in

Bradford, on the canal wall (v.c.63 side), was completely yellow-flowered, with about eight heads at the top of the stem (not like the long branches of the presumed F1 *P. ×stoloniflora* or *P. ×acutifolia* etc.), but when grown from its fertile seed it had the pale orange flowers of some of the intermediates seen elsewhere. Some of these plants could be taken for those said to be introgressive back-crosses of *P. ×stoloniflora*, which is possible, but plants in Cheshire recorded as the latter may be some other taxon, although the situation seems more complex for the time being. More to follow...

The second hybrid is a hybrid rush known (as far as I know) only from a few places in Sweden, (Kirschner, *et al.*, 2002). This is *Juncus articulatus* × *J. bulbosus* (Jointed Rush × Bulbous Rush). Plants from Sweden were tested for their chromosome number and it was found to be $2n=60$. I have seen material from Sweden, but it is not possible to know which subspecies of *J. bulbosus* was involved, although it seems likely that the hybrid in Sweden involves *J. bulbosus* ssp. *kochii*, and this is certainly the case here for the plants found so far. Like the Swedish plants, those found here are seed-sterile.

The first plants were found at a site called Tarn Moor (v.c.69), 1/8/2015, and later some more material was found in the Malham Tarn area (v.c.64), 6/8/2015. (The latter turned out to be another site for *Luzula multiflora* ssp. *multiflora* × *L. multiflora* ssp. *congesta*, (a Heath Wood-rush hybrid) which I previously found in the area on Malham Tarn Moss). Material of the rush hybrid is presently being kept in cultivation. A plant from Sandwick, Cumbria, sent to me as *J. bulbosus* by Val

Hack, was initially thought to be this hybrid, but from a search of the site and a more critical view of the specimen, it seems it was just a form of Bulbous Rush. However, this is what got me interested in looking for the hybrid. It is not an easy hybrid to pick out. It is more similar to *J. bulbosus*, often with proliferous heads and thin stems, which can bear vegetative plantlets with bulbs (as it does at the base). However, it is generally an upright plant, which has small capsules, similar to, but shorter than *J. articulatus*, occasionally with slightly concave sides, although it appears not to be emarginate at the apex, as in *J. bulbosus* ssp. *kochii*. The capsule is not, or is barely exerted from the tepals. The tepals, (unlike both parents in general) remain clasped around the seed-sterile capsule. If you think you may have this hybrid it is best collected from August onward in order to assess fertility and I would welcome specimens.

The three main plants mentioned, *Carex bracteosa*, *Pilosella praealta* ssp. *praealta* × *P. officinarum* and *Juncus articulatus* × *J. bulbosus* appear to be new to the British Isles.

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Spines galore!: pigeon-feed aliens in an Eastbourne garden

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In late September 2015, Paul Harnes (BSBI Recorder for v.c.14) sent me photos of some alien plants BSBI member and fellow Eastbourne resident Ralph Lucas had found in his garden (approx. grid ref.: TV600.992). As Ralph's house is situated very close to where I

live, I contacted him to see if I might be able to take a look. He very kindly agreed to my request and, on 2nd October, showed me the site where a potting shed had once stood and a concrete terrace had been pulled up, the plants growing from the stony, rubbly ground thus

exposed. Affixed to an adjacent gable end was a disused dovecote, the connection between this object and the profusion of bird/oil-seed aliens beneath it surely indisputable.

There were several plants of *Solanum rostratum* (Buffalo-bur), their stems and fruits clothed in golden spines (see Colour Section, Plate 2); two plants of *Xanthium strumarium* (Rough Cocklebur), with its curious Burdock-like appearance; and numerous statuesque plants of flowering/fruitlet *Datura stramonium* (Thorn Apple). Moving from this spiny extreme to the still hispid, bristly, spurred part of the spectrum, there was *Echinochloa crus-galli* (Cockspar), *Sinapis alba* ssp. *alba* (White Mustard); with the likelihood of *Setaria verticillata* (Rough Bristle-grass), judging from Ralph's description of a grass that had disappeared by the time of my visit, but the panicles/spikelets of which had almost to be cut from the coat of his pet dog! He has promised to send me a piece for identification should it reappear. Lastly, the completely unarmed duo of *Abutilon theophrasti* (Velvetleaf) (one not uncharacteristically wilted plant), and *Guizotia scabra* ssp. *schimperii* (Sticky Niger) (see Colour Section, Plate 2); the latter not scabrid at all but viscid and glistening with short glandular hairs. These last two also broke the dominant North American theme of the site, being from S.E. Europe/S.W. Asia and E. Africa respectively. Additional species identified from the site are listed below. It is uncertain whether or not those enclosed in square brackets were brought in with the bird/oil-seed used for pigeon feed, or were already present in the seed bank. However, nearly all were growing in unusual abundance and are identified as frequent bird-seed aliens by Hanson & Mason (1985). If others come to light I will endeavour to publish them in 'Adventives & Aliens News'. Whilst a very respectable total for an area of no more than 10×5m, there are some interesting absences. I could not find a single plant of *Helian-*

thus annuus (Sunflower), and you might have expected other members of the Malvaceae beside the *Abutilon*, e.g. either one or a combination of *Malva pusilla* (Small Mallow), *M. parviflora* (Least Mallow), and *M. nicaeensis* (French Mallow), given the supposed vector. *Cannabis sativa* (Hemp) and *Carthamus tinctorius* (Safflower) might have been thought likely also.

Much of today's bird-seed is far 'cleaner' and less species diverse in composition, the variety on offer here probably indicative of the less stringent quality control practised until the recent past – although for a more involved discussion of this see Hanson & Mason (1985), p. 239.

Additional species recorded thus far:

Amaranthus c.f. *retroflexus* (Common Amaranth), *Ambrosia artemisiifolia* (Ragweed), *Phalaris canariensis* (Canary-grass), *Panicum miliaceum* (Common Millet), [*Chenopodium album* (Fat Hen), *C. polyspermum* (Many-seeded Goosefoot), *C. rubrum* (Red Goosefoot), *Silene latifolia* (White Campion), *Solanum lycopersicum* (Tomato), *S. nigrum* ssp. *nigrum* (Black Nightshade), *Helminthotheca echioides* (Bristly Ox-tongue).]

Acknowledgements:

I would like to thank Ralph and his wife, Antonia, for allowing a stranger into their garden and being so hospitable to him; Paul Harnes and Alex Lockton for drawing my attention to the site in the first place; and Eric Clement for scrutinising an earlier draft of this note and suggesting amendments.

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A naturalised *Pelargonium* on the Isle of Wight (v.c.10)

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On 27th September 2015, Sue Blackwell found an unusual and distinctive plant in the geranium family which she did not recognise. It was growing on a steep, south-facing, sandy bank of the boating lake along the Esplanade at Ryde on the Isle of Wight. This is a well botanised site. The bank, which regularly receives fresh supplies of blown sand from the beach across the road, has a surprisingly rich sand dune flora of small winter annuals. However, no-one had previously noticed this plant, despite the fact that it had clearly been established here for several years. At first, Sue thought that it was an *Erodium*, although it did not quite match any of the descriptions in Stace (2010). However, with Eric Clement's help, it was subsequently recognised as a *Pelargonium* species.

There were at least ten plants of varying sizes scattered down the slope and the plant shows signs of spreading. The older plants had woody bases and bore simple, lobed leaves with cordate bases. At the time of discovery, the plant was flowering prolifically. Flowering continued throughout October and into November. Each peduncle bore clusters of around five small, deep magenta flowers, the upper two petals with darker markings. Each flower had between three and five (average four) stamens (see Colour Section plate 2).

Reference to Miller (1996) demonstrates that the plant clearly lies within section *Peristera* of the genus *Pelargonium*. This section comprises short-lived, often weedy species, which are pioneers of disturbed land and of little horticultural merit. The small flowers are borne on very fine pedicels in many-flowered heads. The magenta flowers have between three and five stamens and the cordate leaves

have only a weak pelargonium smell when crushed. Although the plant superficially resembles *Pelargonium grossularioides*, it keys out as *Pelargonium inodorum* Willd. in Miller (1996). This species is found wild not in South Africa but in Australia and New Zealand.

Pelargonium inodorum (Kopata Geranium) is listed in Clement & Foster (1994) as a wool casual, with no modern records. The origin of the current plants is unclear. There are no gardens or municipal bedding displays in the immediate vicinity and the plant does not seem to be grown horticulturally in this country. However, the canoe lake is a popular venue for holiday makers. Reference to the web shows that this species has become naturalised in southern California (U.S.D.A.).

This would appear to be the first record for a naturalised *Pelargonium* species in this country, away from the Isles of Scilly.

Acknowledgement:

I am extremely grateful to Eric Clement for his encouragement, support and enthusiasm in producing this article.

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Commonwealth *Carex* in the community

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There are 1,500-2,000 species of *Carex* in this world, around 75 of which are native to the British Isles. The *RHS Plant Finder* (Cubey & Merrick, 2011) includes another 60-70 taxa that can be bought and so might escape into what urbanites optimistically call 'the wild', although they rarely seem to do so. Clement & Foster (1994) list all the alien species that have occurred in the past and Jermy *et al.* (2007) give a little more information on the more frequent ones, although most have not been found for some time. Stace includes *C. buchananii*. Over the past few years I have occasionally come across tufts of sedges with very narrow, reddish-greenish-brownish leaves, clearly not native, in a variety of sites (see Colour Section plates 1 & 2). To the unpractised eye, of which I have two, they all look the same, so in the interests of correct determination I looked into it a bit further.

There are difficulties. I assumed that all qualifying sedges were from New Zealand, and so key-outable in Moore & Edgar (1970), but that may not be so. The names on pots of sedges in garden centres are not remarkable for taxonomic correctness and accurately determined reference material is not easy to come by; the deportment of a sedge at home in the southern hemisphere might be quite different from that of a struggling street weed in the northern one. To give a final twist, I am not clear which characters are immutable or diagnostic: the number of styles/utricle shape is reliable enough but a sedge in the streets of Caerleon (v.c.35), self-sown from a municipal planter, had the elongated culms and striate female glumes of *C. testacea*, a species with two styles, which it could not possibly have been because it had trigonous utricles.

Four species commonly sold have narrow, bronzy leaves: *Carex buchananii* Berggr. (Silver-spiked Sedge), *C. comans* Berggr. (New Zealand Hair-sedge), *C. flagellifera* Colenso (Glen Murray Tussock-sedge) and *C. testacea* Sol. ex Boott (Speckled Sedge).

Records for the first two of these, taken from the BSBI Distribution Database on the 6th November 2015, are as below. There are no records for *C. testacea* and *C. flagellifera* is not one of the taxa listed in the database.



Carex buchananii



Carex comans

The *C. buchananii* records are from v.c.c. 28 (W. Norfolk), 29 (Cambs), 76 (Renfrews), 77(Lanarks), H6 (Co Waterford), H12 (Co Wexford) and H21 (Co Dublin); the *C. comans* records are from v.c.c. 1 (W. Cornwall), 6 (N. Somerset), 17 (Surrey), 34 (W. Gloucs.), 40 (Salop), 58 (Cheshire) and 63 (SW Yorks.).

All have very narrow leaves, usually ≤ 2 mm across, and separate male and female spikes. Extremely detailed species descriptions are available on-line from the New Zealand Plant Conservation Network, so I will not repeat them here, but this is a simple key to the five species mentioned in this note:

- | | | | |
|---|---|------------------------|---|
| 1 | Stigmas 3, nut trigonous | <i>C. comans</i> | |
| 1 | Stigmas 2, nut biconvex | | 2 |
| 2 | ♀ glumes obtuse, midrib not reaching apex | <i>C. devia</i> | |
| 2 | ♀ glumes acute, midrib excurrent, sometimes markedly so | | 3 |
| 3 | ♀ glumes pale/silvery; culms in fruit no longer than leaves, ±erect; lowest spike distant | <i>C. buchananii</i> | |
| 3 | ♀ glumes reddish-brown; culms in fruit much elongated, trailing; spikes ±contiguous | | 4 |
| 4 | ♀ glumes with abundant short reddish-brown striae; utricles ribbed | <i>C. testacea</i> | |
| 4 | ♀ glumes evenly reddish-brown coloured, at least proximally; utricles ±smooth | <i>C. flagellifera</i> | |

In the past few decades the main source of alien sedges has shifted from wool shoddy to the horticultural trade and species found have changed accordingly. Eric Clement kindly gave me access to the relevant part of his herbarium, which included a fifth species, *C. devia*, not recently found outside gardens. Plants in his herbarium from 'wild' situations

are all either *C. comans* or *C. buchananii*, consistent with the species that records in the BSBI Distribution Database might lead you to expect. However, a self-sown plant in Jersey in 2015, as yet too young to flower, may have come from *C. flagellifera* planted nearby, so other species may occur.

I must emphasise that all this is very much a work in progress and I will write more when I know more. I myself have found only *C. comans*, but I would be pleased to see other escapes.

Acknowledgements:

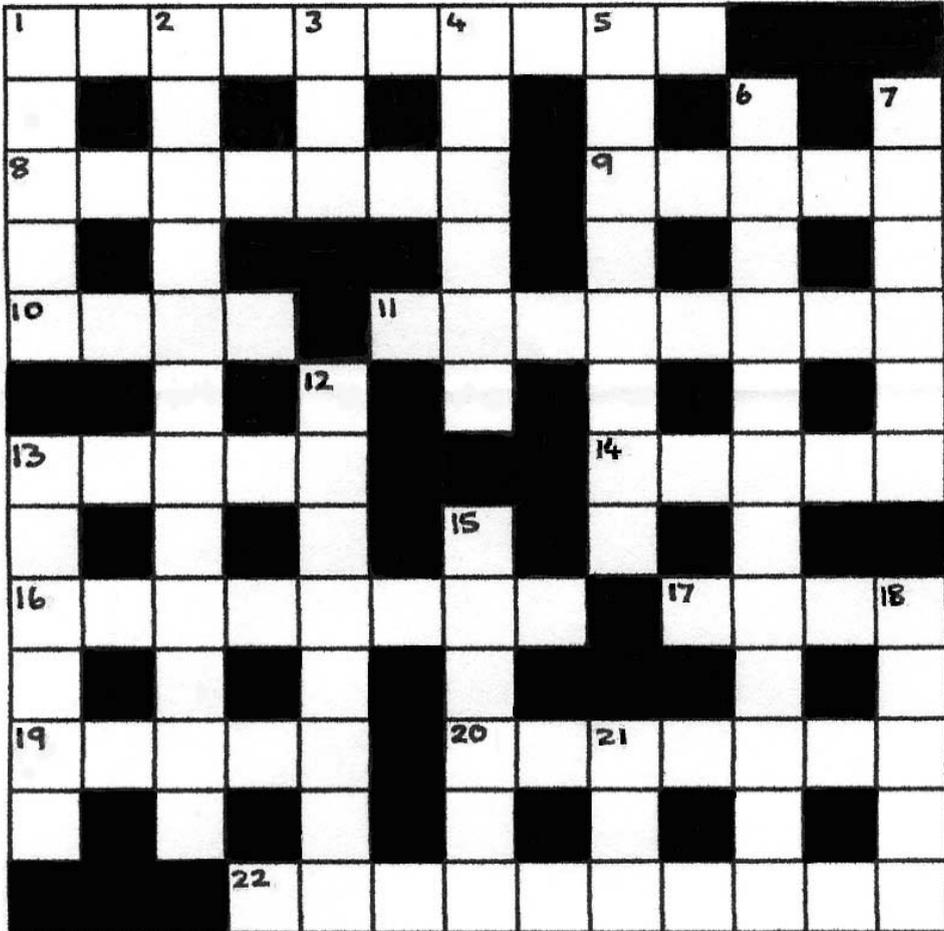
I would like to thank Eric Clement for lending me material from his herbarium and for helpful comments on this note, Mark Spencer for giving me access to the Natural History Museum herbarium, Dave Dawson for providing information from the *Flora of New Zealand*, and Jenny and Brian Dunford and Barry Philips for providing living sedges for me to look at.

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BOTANICAL CROSSWORD 27

by CRUCIADA



Across

1. Strawberry, for example, that looks like ersatz fish (10)
8. Young tree found in trench with heather (7)
9. Astute ethological inclusion of dentition (5)
10. Is it all right to give artist ladies' fingers? (4)
11. Impose duty of hatred for swamp cypress (8)
13. Left Austen heroine with bit of grass (5)
14. Feature of Alchemilla leaf, say, shown as wrong and frankly useless (5)
16. Giantess assembles new brooms (8)
17. Specific reference to top section of a national flower (4)
19. Bear found in homogeneous group of trees (5)
20. Embarrassing mistake made with plant in flower (7)
22. Minded rose's mutation of inner stem cortex (10)

Down

1. What a nuisance to have no basil, garlic, pine nuts etc. (5)
2. Trial at which former fairy's gone mad (12)
3. Welshman picks some of proverbially fresh flower (3)
4. Weary botanist can go back after first cup of this reviver, perhaps! (6)
5. Turned back, having set error incorrectly (8)
6. Film star Hudson got up to gas about sacred song (12)
7. French field produced quantities of mashed potato (6)
12. Transmitted while alive or dead (6, 2)
13. Catalytic enzyme made from silage (6)
15. A bomb exploded on circle of woody grass (6)
18. Sporangia found in Sweden or America (5)
21. Mineral reposit carelessly removed from lemon-scented fern (3)

NOTICES

BSBI Photography Competition 2015

JIM MCINTOSH, *BSBI Scottish Officer, Royal Botanic Garden Edinburgh, 20A Inverleith Row, Edinburgh, EH3 5LR*; (jim.mcintosh@bsbi.org)

A record 220 images were entered into the BSBI Photography Competition in 2015. They formed a colourful display mounted at the Scottish Annual Meeting at the Royal Botanic Garden in Edinburgh in November 2015. Those attending the meeting were asked to vote for their favourite picture in each of the four categories – winter, spring, summer and autumn. Ninety votes were cast in each category and congratulations are due to the four winners. They were: Ian Francis for his Winter entry Teasel *Dipsacus fullonum*; Sarah Eno, Great Horsetail *Equisetum telemateia* (Spring); Cathy McKirdy, ‘Hanging Around!’ (Summer) and Ian Strachan’s Spear Thistle seed head (Autumn). The winning image for Autumn by Ian Strachan appears as the cover image of this issue of *BSBI News* and that for Winter by Ian Francis is on the back cover. The Spring and Summer winners will appear in subsequent issue of *BSBI News*.

The display was also mounted at the BSBI Annual Exhibition Meeting in London at the end of November, where it provided an amazing variety of plant colour and form, which was enjoyed by those attending. We are very grateful to Summerfield Books who kindly provided four £25 Book Token prizes, to Natalie Harmsworth for organising the competition and preparing the fantastic display of photographs and to all those who entered or voted.

BSBI Photography Competition 2016

We plan to repeat the competition in 2016, but with new categories. There will be just two simple and very broad categories: 1) Rare species and 2) Common species. Photographs should be taken in Britain or Ireland and be of flowering plants, conifers, ferns, horsetails, club-mosses or stoneworts. But they do not have to be taken during 2016 and you do not have to enter both categories. However, there is a limit of two images per category per entrant. The winners will be selected by a popular vote by those attending the Scottish Annual Meeting again.

Send your entries to: Natalie Harmsworth (natann29@freeuk.com) by 21st October 2016.

Please submit the largest possible files sizes. Copyright of images will remain with the photographer.

However, the BSBI claims the right to exhibit the entries, and to use them to further its aims generally and to promote the BSBI and its photography competition.

The BSBI also claims the right to edit or use images in combination with others.

Full details will appear on the BSBI website shortly, but in the meantime get those cameras out and get snapping!

NEWS OF MEMBERS

Profiles of new Honorary Members

The following citations have been compiled for our new Honorary Members, as confirmed at the AGMs in 2014 and 2015

Lynne Farrell

Lynne has been a professional botanist for nearly 40 years, working mainly for the official government conservation agencies in Britain.

She started her career at Monks Wood Experimental Station as a botanical assistant before leaving to attend the New University of Ulster, where she attained a degree in Biology. After spending two years working in the Irish Republic, she returned to become Franklyn Perring's botanical assistant at the Biological Records Centre. This was when she first became involved in the BSBI, taking on the role of Field Meetings Secretary. Part of her BRC. remit seemed to involve attending the Annual Exhibition Meeting, producing exhibits and talking to all the botanists who attended – a very busy day!

Whilst working for Scottish Natural Heritage, Lynne was secretary to the Scottish Committee, and also a Vice-president for four years.

In 1995 she became vice-county recorder for v.c.103 Mid Ebudes, Mull, Coll and Tiree, and she is working towards a 'New Flora of Mull'. She recently published a popular booklet entitled *Wildflower walks on Mull*, aimed at informing the many visitors to the island.

Lynne took on the role of Hon. Gen. Sec. in 2009 and after five years helping see the Society into its new form, is stepping back to allow someone else to have a go! She will still be involved in the BSBI though, as a Trustee and as Joint-Chair of the Meetings and Communications Committee.

Ian Robert Bonner

Born in 1942, Ian joined the BSBI in 1961, having been enthused by Cecil Prime and the South London Botanical Institute. After gaining a Botany Honours degree at the University College of North Wales, Bangor, he followed a career with the Nature Conservancy in Wales, Scotland and northern England, then in 1991 returned to Wales as Director of Conservation for the Countryside Council for Wales. He took retirement in 1998 to concentrate on botanical matters.

He has always found field botany an enjoyable hobby – contributing to recording schemes in Surrey, Shropshire and Cumbria,

and especially getting to know the Ardnamurchan area of Westernness during family holidays. Since retirement, apart from enjoying six years as a trustee of the National Trust and also of Plantlife, field botany has become a principle pursuit. He co-ordinated the Anglesey and Ardnamurchan data for the *New Atlas* and is joint recorder for v.c.c.52 and 97. A rare plant register for Anglesey was published in 2006, which is updated annually.

He served on the BSBI Council from 2001-2004, and as BSBI President between 2011 and 2013.

Simon Leach

Simon joined the BSBI in 1982 and has recently retired from his position as a Vascular Plants Specialist with Natural England, based in Taunton, Somerset. He worked with Natural England, and its predecessors, the Nature Conservancy Council and English Nature, for 35 years, firstly in Scotland and Northern Ireland. Then he moved to England, initially with the England Field Unit, which undertook so much habitat survey for SSSI purposes in the 1980s. During all these appointments he worked with our vice-county recorders, who recall him with much respect!

He was a major contributor to the *New Atlas*, not only in writing accounts, but mainly by commenting and improving so much of the text, and we have worked with him for many years in the Red List Group and its predecessors, to our major advantage.

He is a member of the Records Committee and the co-recorder for v.c.5 S. Somerset, and is busy recording the flora of Taunton on a half-km square basis.

He has a strong interest in coastal vegetation and the colonisation of some of its constituent species inland, writing on these habitats in Coll and Tiree, and has taken a particular interest in the spread of *Cochlearia danica* and other halophytes on inland roadsides – even to the extent of recently describing the tentative identification – at 70 mph – of *Suaeda vera* on the M6 in Warwickshire; but as it was in the centre reservation this is still to be confirmed!

In 1987 he re-discovered *Halimione pedunculata* in Britain, which had not been seen since 1935. He was the lead editor of the BSBI Conference Report *Botanical links in the Atlantic Arc* and contributed several papers at the meeting.

Simon has been hugely supportive of the close relationship between the BSBI and Natural England, and we wish him well in full-time retirement, especially continuing to work with us, as long as not in the cricket season!

David Streeter, MBE, FLS, FSB

David Streeter was born in 1937 and has been a BSBI member since 1955. He served two spells on the BSBI's Council and was an enthusiastic and knowledgeable Chairman of our Conservation Committee during the 1990s. His advice was constantly sought on our role in the wider conservation world, and with his support, the Society changed the focus of its conservation efforts from piecemeal direct intervention to concentrating on making certain that our research and records were available for others.

His two plant identification books (known as 'Garrard & Streeter' and the *Collins Flower Guide*) have been the alternative to Rose's

Wild Flower Key over the last 30 years (and with far better illustrations and an extremely pithy and relevant text) and as such his name will be known to many in the Society, who have much to thank him for.

In addition we should note and honour his association with the wider conservation world, in the awareness of the close historical and continuing relationship between field botany, plant ecology and conservation practice. The list of offices held by him illustrates how widely he has been able to spread his influence. In addition he has been an editor of the New Naturalist series for many years.

Sylvia C.P. Reynolds

Having obtained a degree in botany from Trinity College Dublin, Sylvia spent time overseas before returning to Ireland in 1977. She joined the BSBI in 1983 and has been vice-county recorder for Co. Limerick (v.c.H08) since that date, a role culminating in the publication of her *Flora of County Limerick* in 2013. She has published nearly 60 papers in the *Irish Naturalists Journal*, *Watsonia* and other outlets, and was author of the *Catalogue of alien plants in Ireland*, published

in 2002. She is an honorary research fellow of the National Botanic Gardens, Dublin, and received the National Botanic Gardens Gold Medal for contributions to Irish botany in 2013. On a personal note and aside from botanical recording, Sylvia especially relishes spending time with her husband Julian at their Limerick cottage beside the River Shannon, looking after the trees they have planted there and visiting grandchildren in London and Vancouver (see inside front cover).

Ian and the late Pat Evans, first recipients of the NBN Gilbert White Adult Award for Terrestrial and Freshwater Wildlife Recording

TREVOR JAMES, 56 Back Street, Ashwell, Baldock, Herts., SG7 5PE;
(trevorjames@btinternet.com)

The winners of the first ever U.K. Awards for Biological Recording and Information Sharing were announced at the Merchant Taylors' Hall in York during an evening ceremony on Thursday, 19th November 2015. These awards, sponsored this first year by Swarovski Optik U.K. Ltd., have been developed by the National Biodiversity Network Trust, the National Forum for Biological Recording and the Biological Records Centre.

The following is taken from the citation for Ian and Pat Evans, who received one of these awards jointly, as supplied by the NBN Trust:

“Gilbert White adult winners Ian Evans and the late Pat Evans were a husband and wife team who had been tireless exponents of and ambassadors for biological recording for many years. They submitted 14,295 records to the Highland Biological Recording Group database in multiple taxonomic groups, including butterflies and moths, mammals, fungi, lichens, dragonflies, vascular plants, annelids, molluscs, arachnids, fish, amphibians, reptiles, and many different insect groups.

Pat Evans co-authored the *Flora of Leicestershire* and the *Flora of Assynt*, while Ian Evans has held many committee positions in the Highland Biological Recording Group and was involved in the publication of *Wildlife of Scourie* in 2006 and *Wildlife of Rogart* in 2007. The couple were instrumental in founding the Assynt Field Club in 1986, a local club devoted to natural history and biological recording, which is still thriving today”.

Pat Evans, of course, was also BSBI vice-county recorder for v.c.108 West Sutherland for many years, after the couple moved from Leicestershire to Scotland in the 1980s, and was joined in this role by Ian after 2013. An obituary of Pat, who died in April 2015, has been compiled by Ian for the 2016 *Yearbook*. Ian was also a stalwart of the nascent movement to set up county biological records centres in the 1970s, mostly then based in museums (see Colour Section plate 2).

As Ian was unable to travel from Sutherland to York to receive the award in person, this was received on his behalf by Ro Scott

Presidents' award 2015

IAN DENHOLM, *4 High Firs Crescent, Harpenden, Herts., AL5 1NA*; (i.denholm@herts.ac.uk)

Each year the Presidents of the BSBI and the Wild Flower Society award a certificate and modest cash prize in recognition of an outstanding contribution to British and Irish botany. In previous years the works recognised have included county floras, more general botanical texts, and notable exhibits at the BSBI's Annual Exhibition Meeting. This year, Dr Ian Denholm (BSBI) and Sir Ghillea Prance (WFS) have chosen to celebrate the publication in 2014 of volume 2 of *Flora of Great Britain and Ireland* by Peter Sell and Gina Murrell. Volume 2 (Capparaceae – Rosaceae) is the penultimate member of a magnificent five-volume set that will be completed by the appearance of Volume

1 next year (the volumes have not been published in numerical order). We greatly regret that owing to Peter's death in October 2013 it is not possible to present an award to him in person, but we will be guided by Peter's son Tim in making a donation to an appropriate charity in Peter's name.

Following Peter's death and Gina's retirement from the Cambridge herbarium, a number of distinguished botanists stepped in to guide volume 2 to publication. At Gina's request we are delighted to acknowledge the contributions of Arthur Chater, Gwynn Ellis, Philip Oswald, Chris Preston and the late Roy Perry in finalising the content, and Jane Bulleid's proof-reading.

Diary for 2016

CHRIS METHERELL, *Woodsia House, Main Street, Felton, Northumberland, NE65 9PT*; (01670-783401; chris@metherell.org.uk)

Date	Committee, etc.	Location
Saturday 16 January	Committee for Ireland	Dublin
Friday 22 January	Committee for Scotland	Perth
Tuesday 26 January (p)	Records and Research	London
Wednesday 27 January	Board of Trustees	London
Wednesday 3 February	Meetings and Communications	London
Wednesday 10 February (p)	Training & Education	Shrewsbury
Thursday 11 February	Publications	London
Saturday 27 February	Committee for Wales	Aberystwyth
Wednesday 13 April	Council	London
Wednesday 27 April	Board of Trustees	London
Saturday 14 May	Committee for Ireland	Dublin
Thursday 19 to Monday 23 May	Annual Spring Meeting	Blencathra
Saturday 27 August	Committee for Ireland	Dublin
Friday 2 to Sun 4 September	Recorders' Conference	Shrewsbury
Saturday 17 September	Irish AGM	Dublin
Wednesday 28 September	Meetings and Communications	London
Wednesday 12 October (p)	Records and Research	London
Thursday 13 October	Publications	London
Wednesday 26 October	Training & Education	Shrewsbury
Wednesday 2 November	Council	London
Saturday 5 November (p)	Scottish AGM	Edinburgh
Wednesday 23 November (p)	Board of Trustees	London
Saturday 26 November	BSBI AGM/AEM	Wallingford

REQUESTS

Collecting Seed for Kew’s Millennium Seed Bank Project

KEVIN WALKER, *BSBI Head of Science, Room 14, Bridge House, 1-2 Station Bridge, Harrogate, North Yorkshire, HG1 1SS*; (kevin.walker@bsbi.org)

STEPHANIE MILES, U.K. *Collections Coordinator, R.B.G. Kew’s Millennium Seed Bank, Wakehurst Place, Ardingly, West Sussex, RH17 6TN* (s.miles@kew.org)

Last spring we asked BSBI members for help with collecting seed for Kew’s Millennium Seedbank. The U.K. Flora Seed Collecting Project is funded by the Esmée Fairbairn Foundation and will run until the end of March 2019. More general information on the Millennium Seed Bank can be found at: <http://www.kew.org/science-conservation/collections/millennium-seed-bank>.

The key aims of the project are:

1. To ensure as many species from the U.K. native flora are conserved as seed collections in the Millennium Seed Bank and made available for research, conservation and education. We currently have seed collections from just under 95% of the U.K.’s bankable species in storage. We have estimated that 97% should be achievable by the end of the project. Data collection and information sharing during and beyond the project will contribute to knowledge of species distribution and reproductive potential.
2. To conserve and make available further seed collections from un-sampled populations of threatened flora, species where MSB collections are very small or of low quality, and species that are likely to be valuable for conservation or research, for example in programmes such as biological control trials.

In 2015 we had a great response from BSBI members, with at least 54 collections made for 52 species. These ranged from common species such as Ramsons *Allium ursinum* and Wood Sorrel *Oxalis acetosella* to very localised rarities such as *Dactylorhiza incarnata* ssp. *ochroleuca* and Heath Lobelia *Lobelia urens*. Personally we have found the work very rewarding. For instance, one of the authors (KJW) confidently set out to collect seed of *Salix pentandra* (Bay Willow) near to

his home in Harrogate, where it is not uncommon. However, he could only find male catkins, which was perplexing, as all the books say that it is monoecious. Every population checked was the same – no female catkins and therefore no seed in 2015. Are the books wrong? Is it just a one-off (climatic) event? Or are all the plants he is looking at hybrids? We need to look again next year. On the plus side we have had the first collection of *Myosotis stolonifera* to be conserved at the MSB from anywhere in the world. Whilst collecting seed of this species in Upper Nidderdale, KJW found scores of new populations, mainly in areas that would have normally been ignored as being too dull! As a result we now have a much better idea of its habitat, which can be no more than a trickle of water within a sea of moorland. We are sure others had similar experiences which all add to a deeper understanding of our local floras.

Having said all that, there is still a sizeable number of species that we require seed for (see Table 1 p. 64) and we are once again seeking volunteers to help collect seed in 2016. We are also looking for an enthusiastic volunteer to help coordinate the work for the BSBI. This role will mainly involve recruiting, supporting and coordinating other volunteers and liaising with Kew and BSBI staff, but it could also involve promoting the work via social media. If you are interested in either role then please contact Kevin Walker (kevin.walker@bsbi.org) for further information, including the list of taxa for seed collection priorities, guidelines and instructions on how to receive collecting materials. All volunteers will be offered a ‘behind-the-scenes’ guided tour of the Kew’s Millennium Seedbank at Wakehurst Place in West Sussex and be reimbursed for travelling expenses incurred during collection trips.

Table 1: Numbers of British species for which Kew MSB does not hold seed or only holds very low quantities.

Priority	Description	Taxa
1A	Bankable species lacking seed (not necessarily threatened)	66
1B	Threatened taxa (includes infraspecific) lacking seed	48
2	Threatened, but less than 500 seeds or regenerated seed collection only in M.S.B.	81
3	Not threatened, with less than 1200 seeds, or threatened, with 500-1200 seeds in M.S.B.	103

Can you help by ‘crowd-funding’ *ex-situ* plant conservation?

ROBBIE BLACKHALL-MILES, 10 Goodman Street, Llanberis, Gwynedd, LL55 4HL;
(fossilplants@gmail.com)

I am one of a new generation of innovative horticulturalists blending the spheres of gardening and conservation. My back garden is quite literally a botanic garden and houses a collection of early evolutionary plants and many others alongside a national collection of *Banksia* species. I specialise in finding the key to growing horticulturally difficult plants and use these skills to aid the conservation of threatened species.

I am currently in the process of setting up a research nursery in order to further my work with the *ex-situ* conservation of these plants. My initial emphasis will be on members of the Proteaceae, particularly *Spatalla* and *Mimetes*. Both these genera have seed distributed by ants, known as myrmecochory, and the seed can remain dormant in the ground for many years waiting for a suitably hot fire to pass through and break its dormancy. In fact, one species, *Mimetes stokoei*, has been declared extinct twice, as no living plant could be found, only to rise out of the ashes of a fynbos fire, phoenix like.

I recently undertook an expedition to high altitude areas of South Africa’s Western Cape Province, working with the relevant South African authorities, in order to study and collect seed of many species that have not previously been cultivated and are little known in their native habitat. These plants are increasingly subject to the pressures of climate change, the increased risk of insufficiently hot fire and reduced rainfall that climate change

brings with it. All this, alongside a non-native, invasive, species of ant from Argentina that doesn’t bury seeds properly and *Phytophthora*, and these plants are destined for disaster.

The other group on the top of the agenda are the Middle Eastern *Iris* in the section *Oncocyclus*, again distributed through myrmecochory and having a seed dormancy of potentially 30 years. These plants are particularly threatened through over-harvesting for cut flowers and the worldwide horticultural trade as well as overgrazing, climate change, urbanisation and politics. Through treating the seed in a specialist manner I have previously achieved germination in just a matter of weeks and it is this kind of work that I would build upon should the nursery come to fruition.

Until now I have funded this work myself by working in the horticulture industry but for me to continue I am asking people to support what I am doing through giving to my crowd funding campaign. Crowd-funding is the practice of funding a project or venture by raising monetary contributions from a large number of people.

You can find out more about my plans for a Plant Conservation Research Nursery and support them at www.crowdfunder.co.uk/plant-conservation-research-nursery. Alternatively you can get in touch with me at fossilplants@gmail.com, or by letter at the above address.

I do so hope someone may be able to help.

OFFERS

Botanical Research Fund

MARK CARINE, *Hon. Secretary, The Botanical Research Fund, c/o Department of Life Sciences, The Natural History Museum, Cromwell Road, London, SW7 5BD; (m.carine@nhm.ac.uk)*

The Botanical Research Fund is a small trust fund which makes grants to individuals to support botanical investigations of all types and, more generally, to assist their advancement in the botanical field. Grants are available to amateurs, professionals and students of British and Irish nationality. Where appropri-

ate, grants may be awarded to applicants in successive years to a maximum of three. Most awards fall within the range of £200 - £1000.

The next deadline for applications is 28th February 2016.

For further details, potential applicants are encouraged to contact me (as above).

A good home wanted for publications

ALAN SHOWLER, *12 Wedgwood Drive, Hughenden Valley, High Wycombe, Bucks., HP14 4PA*

The following journals are available to anybody who is interested:

BSBI Welsh Bulletin: volume 37 (1983) – volume 94 (2014).

Scottish Newsletter: volume 9 (1987) – volume 37 (2015).

Botanical Abstracts: volumes 1 – 29 (complete).

These are free, if collected; or for the cost of postage. Phone: 01494 562082

Journal run on offer

PROFESSOR SIR GHILLEAN PRANCE F.R.S., V.M.H., *The Old Vicarage, Silver Street, Lyme Regis, Dorset, DT7 3HS; (siraiain01@yahoo.co.uk)*

I am downsizing my library.

I have a full set, from volume 1 to the present, of *Taxon*, the journal of the International Association for Plant Taxonomy. This is available to anyone who might like it; either

by collection from Lyme Regis in Dorset or by payment of the costs of transport.

If interested please contact me by e mail (as above).

BSBI journals available

PATTY M PHILLIPS, *Barrett's Barn, Bridge Farm, Snitterby Carr, Gainsborough, DN21 4UU; (patty.bridgefarm@phonecoop.coop)*

Is anyone interested in my collection of *BSBI Abstracts & BSBI News*, 1994 onwards – free

of course if collected; or for the cost of postage. It would clear a shelf

TRAINING

Many pathways to identification skills

JUDY CASSELLS, *Bridge House, Guileen, Middleton, Co. Cork, P25 PW50, Ireland;*
(judycassells@gmail.com)

Last September's issue of *BSBI News* prompted me to look back on my own methods of teaching identification skills over the years, covering just about every age group. For youngsters on a summer holiday wanting to do something different, a butterfly net, a bug box and the *Oxford Book of Insects* easily captured their imagination. We caught, observed, identified and released countless butterflies and moths during those weeks. It struck me then, not only how absorbed they became in the process of identification but also how even small children were able to pick out the correct species from a page of almost identical ones. How they did that I do not know! I may not have put them on the road "towards a lifelong interest in the cataloguing of diversity" (Goulder & Scott, 2015) but they proved more than competent at dealing with it and were happy to do it over and over again (see Colour Section plate 2).

Which brings me on to John Richards' statement that the teaching of field identification skills is not suitable material for a University syllabus. On the contrary, I feel that a practical session running parallel with the theory has always provided a perfect environment to spark a flame of interest in this area, whereas specific outdoor activities like quadratting did not. Later on, charged with teaching identification skills in a University department, I knew that an element of theatre would be required during the practical classes to create that spark. Addressing the most disinterested-looking student, I would set the scene thus:

It is a Friday afternoon, practical class has ended and there is a staff meeting in progress, so no-one else is available. In the meantime, a member of the public requires immediate identification of a troublesome weed. The honour of the Department is at stake but the last bus leaves in 20 minutes. It is possible, you declare, to identify the plant using

Clapham, Tutin & Warburg's *Flora of the British Isles* (my version used to weigh 1.3 kg and had 1,269 pages) and still have time to catch the bus.

Student looks aghast. They know absolutely nothing about this process. You hand them C.T.&W. and a tightly-sealed bag with an encouraging smile. The bag is opened with some trepidation and all fall back with disgust from the unpleasant smell of . . . onions. All that is needed then is some disingenuous guidance. Suggest the index; it leads to *Allium*. Emphasise the fact that from absolutely nowhere they have hurtled over three-quarters of the way into the Flora and landed improbably in the correct genus on the strength of a single character. How much further can they go? You kindly replace C.T.&W. with Webb's *An Irish flora*, to ease the passage. Webb conveniently separates your species from five others by means of another easily-noted character, a three-angled stem, for, of course, your species is *Allium triquetrum*. Your student has acquired hangers-on and hero status and wishes to do more, and there is more. It may be manipulation and over-simplification but it does the trick. These same students eventually attained a level of understanding that enabled them to construct natural, workable keys – no mean feat.

Eventually I became involved with identification workshops for gardeners who knew their plants very well and wished to know more from a taxonomic point of view – interestingly we called the workshops *Family Matters*. Here, it was more a case of preventing them from being overwhelmed by nomenclature. These were the same people whose gardens I used to plunder before plant science practicals, for gardeners are wonderful sources of all those plants with the diagnostic and family characters you seek. Who else would have *Tibouchina* in their conservatory,

the better to demonstrate geniculate stamens, or a choice of *Daphne* species for their petaliferous sepals. It was nice to repay their generosity. I was not surprised to read that Faith Anstey had reached the same conclusion as I did – that the family approach is a most useful launchpad for focusing new acolytes. Finally, I do wholeheartedly agree with John Richards that “the identification of plants is fascinating, life-enhancing and addictive”. That’s it in a nutshell. I have reason to believe it is life-prolonging too!

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Field biology skills: help offered

SUE HELM, *Lime Tree House, High Street, Bampton, Oxfordshire, OX18 2JN*;
(sue@shelm.co.uk)

In view of the recent comments on the lack or otherwise of field biology skills, it seems timely to flag up the fact that the Ashmolean Natural History Society of Oxfordshire (A.N.H.S.O.) Education Group is about to enter its 15th year of running plant identification courses.

The courses attract a wide range of students and it is true that many (perhaps a majority) are honing their identification skills to compensate for a lack of this type of study within their chosen university courses. Many students are now working with ecological consultancies or with organisations such as local Wildlife Trusts and while some have been funded by their employer, many are self-funding in order to develop skills. Other students are often amateur conservationists, landowners or gardeners wanting to know how to identify plants on their patch or simply doing identification as interesting in its own right.

The courses range from a monthly ‘Basic’ course to continuation courses in more difficult taxa. The chosen text is Clive Stace’s *New flora of the British Isles* and students are required to deal with a rigorous, scientific approach to species identification. By the end of the course they will be armed with the ability to tackle the differences between closely related plants and will have been made aware of the fact that, as Paul Ashton and Sarah Taylor note (*BSBI News*, **129**: 6-7), they are often likely to have to call on many cogni-

tive skills in order to reach a satisfactory conclusion.

The ability to identify plants may be a skill for work or conservation but it is also, importantly, very often a source of joy to students when they look closely at a specimen and are, to quote one such, “bowled over by the beauty and intricacy of nature”. Many do indeed find something life-enhancing or even addictive (John Richards, *BSBI News*, **130**: 25) and join the Oxfordshire Flora Group’s outings, including those of the ‘Botany Loop’, which have become a popular and friendly, informal way of doing some field work with other enthusiasts.

Separately, but within the theme of enthusing and encouraging field skills, the Education Group occasionally takes a ‘Road Show’ to wildlife events in the Oxfordshire area that are aimed at young children. Using displays and a pair of basic microscopes (bought with funds from a kind donation within A.N.H.S.O.), children can look down the lens and, with some explanation and assistance, recognise that, for example, a daisy is made up of many flowers. Some simple keys were developed as a game that proved far too simple; the kids were way ahead in working the system! However, they did love the process and did wonder at what they were seeing. Perhaps, by doing more of this in early years, some small percentage of these children might remember

their enjoyment and return when mature to notice and consider the flora.

With 15 years experience the Education Group has a good base of expertise. If anyone is thinking of setting up plant identification courses please do get in touch.

For information about the A.N.H.S.O. Plant Identification Courses go to: www.anhso.org.uk and follow the link to Education Group, or email: educationgroup@anhso.org.uk.

Botany for beginners: one way to get started with plant identification

ELAINE HEPTONSTALL, 2 Swedish Close, Foxton, Leics., LE16 7RQ;
(eandn.foxton@btinternet.com)

When did you first become interested in plants? For me it was when I was 13 and went to northern Italy for the first time. Thrilled with the variety of flowers, I gathered, pressed and filled an exercise book – and then forgot about it when I was 14 and met my first boyfriend! It was only recently that I came across the University of Leicester Botanic Garden's course 'Botany for Beginners' and was able to continue this study again with other enthusiasts.

The course structure

The course runs from April to September. There are six modules, each running over a weekend and focusing on 70-100 wild or naturalised plants of a particular habitat, such as woodlands, meadows, plants in and by water, 'weeds' and trees. You spend Saturday in the lab at the Botanic Garden looking at live specimens which have been collected locally and you learn how to use identification keys and hand-lenses to identify them. There are plenty of reference books available to help, such as Rose & O'Reilly's *The wildflower key* and Poland & Clement's *Vegetative key to the British flora*. Sunday is spent looking at the plants in the wild. You might visit a flower-rich nature reserve managed by the local Wildlife Trust, or hunt for plants along a local canal tow path, or right in the middle of Leicester on some waste ground.

Tutors and 'buddies'

The course is led by a qualified and enthusiastic tutor, who is assisted by local BSBI members and past students, who come back as

'botanical buddies' to support new students. Working through an identification key with a 'buddy' is very helpful when you are puzzling over plant identification. Being in a group means there can be social moments too, such as enjoying a picnic together in a meadow or a cherry scone and cream in a tea-shop at the end of the day!

Follow-up sessions

Each module also includes a follow-up session held in the University of Leicester herbarium to look at pressed specimens of any plants from the list which you have not seen yet. The list only includes plants which grow in at least ten sites in the county, so there are no rarities or difficult hybrids to worry about. You also learn more about BSBI resources on the website, like the maps showing you which plants grow where; and, throughout the course, you can go along to field meetings run by the local BSBI group, get to know the BSBI members in your area and pick up even more identification tips.

You receive a certificate showing which modules you completed, but the course is not accredited at present. The main outcome from this course is that you learn how to use a range of different identification keys to identify around 500 of our more common wild plants in the lab and in their habitats – although that does not guarantee that you will be able to remember them all next time you are out plant-hunting on your own!

I thoroughly enjoyed this course and would recommend it to anyone who wants to get more out of being outside, anywhere, because

we have appreciated how plants can grow in surprising places!

Moving on

The University of Leicester Botanic Garden also runs an intermediate level course in ‘Plant Identification Skills’, which attracts people from the East Midlands region. I have joined this course to keep improving my botanical skills, but I already feel able to start making a contribution at a national level. I have been able to team up with a more experienced botanist to record for the next BSBI Atlas and survey a square in the new National Plant Monitoring Scheme. Through the winter there

is the recording of mosses and liverworts and the New Year Plant Hunt to help fill the gap until the spring flowers come through, and another year of serious recording begins all over again!

‘Botany for Beginners’ and ‘Plant Identification Skills’ are run by the University of Leicester Botanic Garden with Leicestershire & Rutland Wildlife Trust, the Botanical Society of Britain & Ireland and NatureSpot: <http://www2.le.ac.uk/institution/botanicgarden/collections-1/adult-programmes>
For the National Plant Monitoring Scheme, see: www.npms.org.uk

Field biology skills: perspectives from a field botanist under 30

ROBERT P.C. SHAW, *The Greenhouse, Spring Gardens, Whitland, Carmarthen, SA34 0HR*;
(robert@westwalesbiodiversity.org / robpcshaw@gmail.com)

A recent article by Ashton *et al.* (2015) in *BSBI News* 129 and two replies by Goulder & Scott (2015) and Richards (2015) in *BSBI News* 130 have denounced, discussed and attempted to ameliorate concern over the ‘crisis point’ (Ashton *et al.*, 2015) that the decline in field biology skills has reached. I thought it telling that there was no perspective from a young(ish) field biologist and have taken it upon myself to provide my subjective thoughts. Of the three articles, it was Richards (2015) which I thought best addressed the subject: for all the good intentions from lecturers, no amount of Biology lectures will make you a good field naturalist, nor will they especially make you want to be a good field naturalist without some prior interest in field skills. To take the most pertinent comparative example from Richards, lectures on the History of Art will not make you either a good artist, nor even interested in creating art, although it will probably make you knowledgeable on the subject of art. To put it another way, you can teach someone about something, but you can not teach someone to be interested in something.

There are a few things that I feel were instrumental in developing my botanical skills from being passively interested in plants to actively studying, then engaging with others as a ‘field

botanist’, and neither of these came from being talked at in a classroom or lecture theatre.

The first is the use of online recording, in my case iRecord, providing an easy platform to compile my sightings. Prior to this I used to compile incidental records in a rather scattered manner in various notebooks and scraps of paper but they were rather disparate and never made their way off paper. It is also important not to underestimate the positive effect of vanity and competition in providing a strong impetus to improve one’s own knowledge, and while I have little interest in ‘listing’ or ‘collecting’ sightings for their own sake, there is something both rewarding and compelling about seeing the numbers of one’s records and species sightings increasing over time as a measure of one’s own improving skills and persistent dedication. This is something which others whom I have questioned have to varying degrees not been as interested in but obviously for some people it is a powerful tool to assist recording.

Secondly, the benefit of going out in the field with people who are as interested as you are in a particular taxon and far more knowledgeable. This produces a dilemma which I believe the BSBI continues to work hard to overcome: the young botanist may be as keen and interested in plants as the next BSBI member, but

overcoming a perceived ‘barrier to entry’ founded on lack of confidence of one’s own skills can be difficult. It can be particularly mortifying to put your skills to the test and then make a repeated series of incorrect identifications. With this in mind it was only in 2015 that I really felt confident enough to be more than a passive observer on various BSBI outings, and, sure enough, it turns out that there’s really nothing to be worried about. Everyone I have met through the BSBI or other recording outings has been very encouraging. This is something which everyone whom I questioned seemed to agree with: BSBI members tend to be incredibly friendly and willing to help with identification and to pass on knowledge to anyone who shows an interest in plants!

It is also interesting that a quick scan through the authors of these articles shows that, of a combined total of eight authors, six appear to work at various universities while one works for the Field Studies Council. I raise this because it seems obvious that no amount of bemoaning a loss of skills will make up for the difficulty in securing employment in a relevant biological field for a young person. I have to fundamentally disagree with Goulder & Scott (2015) that “if employers require highly specialised skills and knowledge they might be expected to provide appropriate task-specific training, or allow time for skills to be learnt on the job”. The unfortunate reality is that most often, due to chronically restricted funding for the environmental sector producing a highly competitive job market, an employer is far less likely to offer on-the-job training than they are to offer the job to someone older and with more experience that no amount of graduate enthusiasm can surmount! One of the things everyone I consulted seemed to agree on is that funding cuts and a lack of employment opportunities makes pursuing a career in botany that much harder and it would therefore seem logical that unfortunately this discourages some people from study. Good field skills take many hundreds of hours of study, both in the

field and at home and it takes a certain type of person to pursue that without the support of a related career. I know that my own employment in the environmental sector has complemented my development of field skills through everything from introductions to other recorders to the opportunity to visit a range of botanically varied sites as part of my work. In a ‘Catch-22’ style dilemma I would therefore put employment in an environmental sector job as a third factor helping me to develop field skills in botany and other taxa, which are often crucial to securing the said employment in the first place.

As a final melancholic point on the subject I would draw attention to the perspective differences between myself and older botanical recorders. In words that struck me quite deeply, Michael O’Donovan, writing in *BSBI News*, **130** on foraging, wrote: “In truth, the countryside has never had so little to offer and it is no wonder young people struggle to get meaningfully involved in it [...] and wilderness is more easily imagined in digital form than realised in the field”, which corresponded with my most pessimistic thoughts on botanical recording: surely the loss of field skills and decline of the amateur naturalist has not occurred in a vacuum and is simply a symptom of the continuing catastrophic loss of biodiversity in the UK over the past decades, which now provides far less to inspire the potential naturalist than it once did, replaced instead by a generation often acutely aware of worsening global environmental issues but generally not interested in recording or studying the minutiae of decline?

Acknowledgements:

I am indebted to the following active younger BSBI members who kindly replied to my queries about their recording as I attempted to write this article: Oisín Duffy, Mairéad Crawford, George Garnett and Ryan Clark. I know far more can be written on the subject than I have touched upon in this brief article. All opinions stated are my own.

BOOK NOTES

Botany where you are, by John L. Presland

This is a book for amateur naturalists, intended to stimulate increased interest in and enjoyment of botany through exploring in their local areas. It is based on actual botanising carried out in the parish of Winsley in Wiltshire over 40 years. The author attempts to communicate and share his knowledge and enthusiasm for a wide range of botanical activity, covering plants, algae, fungi and lichens, their communities and relationships with animals, recording, conservation and biodiversity, plant abnormalities and their implications for inheritance and evolution, non-natives and the

future. In the process he paints a portrait of the botany of his parish and creates a botanical autobiography. The book is profusely illustrated in colour.

John Presland studied natural sciences at St Catharine's College, Cambridge, became a biology teacher, then pursued a career as an educational psychologist. Botany has remained a major interest for over 50 years. His earlier book *Botany for naturalists* was published by CreateSpace last year.

The book is available from booksellers, paperback, £24.72. (ISBN-10: 1495952118)

OBITUARY NOTES

We are delighted to announce that from January 2016, Chris Preston, 19 Green's Road, Cambridge, CB4 3EF, has agreed to take over as the Society's Obituaries Editor.

Since the publication of *BSBI News* 130, we regret to report that the news of the deaths of the following members, including several of long standing and one Honorary member, has reached us. We send regrets and sympathies to all the families.

Mr M B Fewkes of Derby, a member since 1996.

Rev G Graham OBE BA MSc of Bishop Auckland, Co. Durham a member since 1956 and an Honorary member since 2003, joint author of *BSBI Handbook No. 7 Roses of Great Britain and Ireland* (1993) and author of the magnificent *The Flora*

and vegetation of County Durham (1988). He was also a Vice-county Recorder for Co. Durham (v.c.66) from 1976 to 2001 and referee for the genus *Rosa* from 1983 to 1997.

Mr S Graham of Beckenham, Kent, a member of only a few months.

Mr V Johnstone of Whitchurch, Hants., a member since 2002 and Referee for the genus *Symphytum*.

Mr G S Salisbury of Hemel Hempstead, Hertfordshire, a member since 1991.

Dr E G F Tinsley of Skipton, North Yorkshire, a member since 1966.

Obituaries of some of these will appear in *BSBI Yearbook* 2017.

RECORDERS AND RECORDING

Panel of Referees and Specialists

JEREMY ISON, 40 Willeys Avenue, Exeter, Devon, EX2 8ES; (Tel.: 01392 272600; Mob.: 07970 309205; Jeremy_ison@blueyonder.co.uk)

The following changes have been made since the September issue of *BSBI News*. Full details are included in the 2016 Yearbook.

I regret to report the recent death of our *Verbascum* referee **Mr V. Johnstone** and the position is now vacant.

Rodney Burton has regretfully resigned from *Medicago*, *Galium* & *Conyza*.

Martin Rand has agreed to take on *Conyza*.

In case it has been missed previously **Bert Reid** has withdrawn from being a

referee/database holder for *Taraxacum* and **John Richards** is now sole referee.

John Richards is also willing to act as referee for plants from Greece.

The following referees have recently moved house: **John Bailey**, (*Persicaria* and *Fallopia* (aliens)); **Trevor Dines**, (*Solanaceae*); **Chris-Page**, (*Equisetum*); **Nick Stewart**, (*Charophyta*).

Contact details are required for **Fiona Cooper** (*Populus*) and **Andrew Norton** (*Geranium*).

Panel of Vice-county Recorders

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

There are three notable VCR retirements to report, amassing between them over 100 years of service!

Dr Geoffrey Halliday, Recorder for Westmorland (v.c.69) since 1974 and Cumberland (v.c.70) since 1989, and referee for *Arenaria* and *Minuartia*, is perhaps best known to BSBI members as the author of the *Flora of Cumbria* (Halliday, 1997), a comprehensive and meticulously researched account of the vascular plants of the third largest county in England. It is a book that continues to set the standard for all modern-day floras, revealing “the extraordinary variety and beauty of the county” through wonderfully readable text and beautiful illustrations. One of the lasting legacies of the *Flora* project was the formation by Geoffrey in 1974 of the Flora of Cumbria Recording Group, a group that is still active today and counts amongst its members three outstanding botanists who are to take over as joint Recorders for the two counties: **Mike Porter**, **Jeremy Roberts** and **Phill Brown**. Mike, now the first point of contact for enquiries, recently co-authored

with Geoffrey the *Rare plant register for Cumbria*, a companion to the *Flora*, updating distributions for many of the rare and threatened plants of the area. Although Geoffrey is stepping down as VCR, ‘retirement’ is rather a loose term when it comes to botanists, and I trust that we may soon be reading more about his ongoing studies investigating and mapping the flora of east Greenland, a project he began in 1961, and clearly a labour of love.

Geoffrey Wilmore, who has retired as Recorder for south-west Yorkshire (v.c.63) after 22 years, continues to be an influential figure in the conservation of habitats and species in the county, both as an ecological consultant and as a long-term member of the Yorkshire Naturalists’ Union. Geoffrey has written two fascinating books about the county: *Alien plants of Yorkshire* (Wilmore, 2000), a detailed account of the study of alien flora at a time when many were still ignoring such species (how times change!), and the beautifully presented *South Yorkshire plant atlas* (Wilmore, Lunn & Rodwell, 2011). The latter book is particularly notable for both the

description of the vegetation types occurring in the county, the precision of records (monad), a very informative and enjoyable chapter detailing botanical hotspots, and, as in the *Flora of Cumbria*, the use of altitude in the presentation of maps. **Louise Hill** and **Kay McDowell**, who will take over from Geoffrey as Recorders for v.c.63, were active participants in the plant atlas surveys and such continuity is very pleasing and bodes well for the future.

Walter Scott, who retires as Recorder for Shetland (v.c.112), holds the record (by some margin) as the longest serving Recorder for the BSBI – an incredible 55 years, covering recording for all three Atlases. Walter has an unparalleled knowledge of the local flora, and happily has conveyed his substantial expertise in three excellent publications: *The flowering plants and ferns of the Shetland Islands* (Scott & Palmer, 1987), *Some aspects of the botany of the Shetland Isles* (Scott, 2011) and *British northern hawkweeds* (BSBI Handbook no. 15) (Rich & Scott, 2011). Walter is also the lead author of the *Rare plant register for Shetland*, published in 2002, a valuable work for anyone visiting Shetland and hoping to track down its rarities. We have much to thank Walter for, not least the discovery of three species endemic to these Isles – *Pilosella flagellaris* ssp. *bicapitata*, *Taraxacum serpenticola*, and *T. hirsutissimum* – and it is fitting that the endemic *Hieracium scotii*, found near Sandness on the west Mainland, is named after him.

In Wales, Anglesey (v.c.52) has a new joint Recorder, **Dr Hugh Knott**, who will be scouring the vice-county with **Ian Bonner**; and **Gillian Foulkes** becomes joint Recorder with **Kate Thorne** in Montgomeryshire (v.c.47).

In Ireland, **Robert Northridge**, already Recorder for County Fermanagh (v.c.H33) and clearly a glutton for punishment, has generously agreed to take on Recorder duties for County Cavan (v.c.H30) until the end of the current Atlas project in 2020.

There are currently vacant positions for Recorders in the following vice-counties: 33 (East Gloucestershire), 77 (Lanarkshire), 81 (Berwickshire), 109 (Caithness), 112 (Shetland), H04 (Mid-Cork), H05 (East Cork), H24 (County Longford) and H34 (East Donegal). Dorset (v.c.9) also requires a co-recorder, particularly to help with the organisation of field coverage for the Atlas.

If you wish to apply to become vice-county recorder for any of the counties listed above – and I am convinced there must be many of you out there with the relevant skill set and enthusiasm – please do get in touch with your relevant Country Officer – Jim McIntosh for Scotland (jim.mcintosh@bsbi.org), Maria Long in Ireland (maria.long@bsbi.org), and Pete Stroh, England (as above).

Finally, as always, thank you to all VCRs, past and present, for your dedication, help and expertise.

Species accounts that provide information for botanists, conservationists and land managers: can you help?

KEVIN WALKER, *BSBI Head of Science, Suite 14, Bridge House, 1-2 Station Bridge, Harrogate, North Yorkshire, HG1 1SS*; (kevin.walker@bsbi.org)

PETER STROH, *c/o Cambridge University Botanic Garden, 1 Brookside, Cambridge, CB2 1JE*;
DAVID PEARMAN, *'Algiers', Feock, Truro, Cornwall, TR3 6RA*.

Information on the biology and ecology of British and Irish plant species is patchy and often difficult to access as much resides in publications that are not widely accessible. For example, the excellent species monographs published in the series *Biological Flora of the British Isles* in the *Journal of*

Ecology are only available to individuals with access to the journal. These have been running for 74 years, but by the time KJW last looked (2013) it had only covered 327 species – an average of 4.5 species per year. This means we will have to wait another 200 years before the entire flora has been covered! As field

botanists we have found these an invaluable source of information on the British flora and have only been frustrated by the lack of species covered. In recent years similar accounts have been produced for Central Europe in the journal *Perspectives in Ecology, Evolution and Systematics*. However, these also have limited accessibility (very few are free to download) and lack information useful for management or conservation. The publication of *Scarce plants* (Stewart, Pearman & Preston, 1994) and the third edition of the Red Data Book (Wigginton, 1999) hugely improved the situation for many British and Irish species, as for the first time we had critical reviews of the available literature (many written by BSBI members, and the accounts are all available on the Online Atlas webpage <http://www.brc.ac.uk/plantatlas/>). Many useful accounts have been published since then, but these are scattered across the literature, often in books covering specific groups (*e.g.* Preston & Croft, 1997; Foley & Clarke, 2005) or as part of ecological projects (*e.g.* Grime, Hodgson & Hunt, 2007). So at present we are still lacking authoritative, accessible accounts for many British and Irish species.

Over the last few years the BSBI has been working on species accounts - mini-biological floras if you like – for a range of Nationally Rare, Scarce and Threatened species, prioritising those that lack accounts. This work has been funded by three GB country conservation agencies (Natural England, Scottish Natural Heritage and Natural Resources Wales) together with the National Trust, and to date we have produced around 80 accounts. These follow a standard format and provide information on identification, biogeography, habitats, ecology, threats and management. The aim has been to provide relatively short (2-3 pages) accounts that combine a review of the literature with knowledge and observations of the species on the ground. We feel that BSBI recorders with access to scientific literature are uniquely placed to do this. They are by no means comprehensive but we hope they capture the salient information needed by field botanists, academics and conservation and management practitioners to carry out their work. They are all free to download as pdfs on

the BSBI website (http://www.bsbi.org.uk/species_accounts.html), together with a master list of all species, showing where existing accounts of one sort or another might be found.

Most of the species we have covered so far are threatened in Great Britain, *i.e.* Critically Endangered, Endangered, Vulnerable, Near Threatened (Cheffings & Farrell, 2005), as these are the highest priorities for plant conservation. They also tie in with projects we have been working on, including a review of the status of species in Teesdale and Scarce grassland plants, but the longer term aim could be to provide accounts for all species classified as threatened on the current Red List (around 365 species, excluding critical taxa, hybrids and subspecies), in preparation for its next review planned for after the completion of Atlas 2020.

For some years previously the BSBI had invited members to write accounts for species, and about 60 were produced. These are valuable and interesting, being primarily based on the considerable expertise of the authors, but they do not fit with the format/criteria described above and in particular often do not incorporate key literature. Whilst there is a place for both formats, a standardised approach would be of great benefit, and we would be very interested in hearing from authors of past accounts if they wish to revise their text/format.

The majority of recent BSBI accounts have been researched and written by KJW and PS but we would like to involve a much wider group in their production. Bear in mind that you will need access to journals (preferably electronic), have some knowledge of the species they intend to cover and some experience of writing for a scientific audience. We estimate 2-3 days on average to write a single account, depending on the available literature (which can be large for some species). The only incentives we can offer are a small honorarium and the chance to share your expert knowledge with the wider botanical, scientific and conservation community. If you are interested in getting involved we would love to hear from you. Please contact Kevin Walker at the above address in the first instance.

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NOTES FROM THE OFFICERS

From the Head of Operations – JANE HOULDSWORTH

7 Grafton Gardens, Baxenden, Accrington, Lancashire, BB5 2TY;
(Tel.: 07584 250 070; jane.houldsworth@bsbi.org)

Just a very short note to let you know that I am now back at work after taking maternity leave this spring and summer.

Thank you to all for your kind words following the arrival of Esme in March.

Please note that my contact address has changed and is shown above.

Scottish Vice-county Recorder vacancies, From the Scottish Officer – JIM MCINTOSH

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

The BSBI Committee for Scotland is looking for keen field botanists to fill a number of Vice-county Recorder vacancies in Scotland – in Berwickshire, Lanarkshire, Caithness and Shetland.

The focus for all Recorders is helping to fulfil the aims set out in the BSBI's *Recording the British and Irish flora 2010-2020*. Currently its main aim is a full hectad survey by a sample of tetrads or better for Atlas 2020. The principal task is therefore the collection, validation and maintenance of vascular plant records in the vice-county for the BSBI's Atlas 2020 project.

Being a reasonably competent botanist is important, but knowing one's limits is even more so. No one can be an expert in all aspects of a county's flora – especially when just

starting out as a Recorder; and our referees are on hand to support and help with identifications and confirmations. Living in or near the vice-county is an advantage, but is not essential – some Recorders live remotely and operate very successfully. But you would have to be able to spend at least two or three week's survey time in the Vice-county each year. Competency with computers, particularly e-mail, the internet and MapMate, is very desirable, although training with MapMate can be provided.

You would have the full support of the BSBI Committee for Scotland, Scottish Officer and fellow BSBI staff. Neighbouring and retiring Recorders are always happy to help with general advice and support. The positions may be available as time-limited Atlas 2020 Vice-

county Recorder-ships, if that would be more attractive to applicants.

If you are interested in any of these vacancies, please e-mail me with your C.V. by 31st March.

From the Welsh Officer – *POLLY SPENCER-VELLACOTT*

POLLY SPENCER-VELLACOTT: *c/o Natural Resources Wales, Chester Road, Buckley, CH7 3AJ*
(Tel.: 03000 653893 (Wednesday-Friday); polly.spencer-vellacott@bsbi.org)

Now the dust has settled after the renewal of our grant from N.R.W., it seems a good time to summarise the achievements under the last grant. The grant funds not only the work of the Welsh Officer, but also provides some support to the central work of the BSBI, where that relates to Wales. During the period of the last grant, the Welsh project saw various achievements:

- Over 900,000 records from Wales were uploaded to the Distribution Database (including historical data).
- Over 250,000 records were made in Wales (already uploaded to the DDb).
- 40 of the species accounts now available on the BSBI website (www.bsbi.org.uk/species_accounts.html) are for species (threatened species, species of conservation concern) found in Wales.
- Detailed survey of nearly 200 rare plant species-sites in Wales (some on S.S.S.I.s, but also species that are sometimes features of S.S.S.I.s but also found on non-protected sites).
- The publication of three new Rare Plant Registers – Breconshire, Denbighshire and Merionethshire – and the update of electronic data for four more (Anglesey, Cardiganshire, Montgomeryshire, Radnorshire – these data have been provided to N.R.W. and to the local record centres).

- A range of training meetings in Wales on groups including *Rubus*, *Taraxacum*, conifers, *Euphrasia*, *Fumaria*, *Polypodium* and winter trees.

I hope I have not missed out too many here.

The Welsh Officers have also been able to provide general support to the vice-county recorders, especially in using MapMate and recording strategies for Atlas 2020.

The Welsh Officers' blog (<http://bsbicymru.blogspot.co.uk>) has enabled members to see some of the Welsh Officers' activity (especially in the field season) and 11 of the 13 Welsh vice-counties now have pages on the BSBI website.

These achievements are obviously the result of work by many people, the vice-county recorders, others who record in Wales and the numerous other BSBI staff and volunteers besides myself and Paul Green. It is great to be back with a successful grant behind us and another three (well, 2.5 now) years ahead of me. I am just back from a MapMate workshop with a small group of vice-county recorders, and look forward to working with more over the winter, getting out in the field season again for more rare plant monitoring, recording and training meetings.

From the Irish Officer – *MARIA LONG*

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

For this edition of *BSBI News* I had planned to write a note focusing on the BSBI Dublin Local Group. But I thought better of it ... I asked one of the instigators of the excellent group to pen some words instead! So below is

a note from Róisín NigFhloinn. I have gone out with this local group many times, and it has been both inspirational and educational. The atmosphere is always friendly and fun, and the learning seems to happen by osmosis! All

members are to be congratulated on the parts they play in making it enjoyable and worthwhile.

In other news, the BSBI in Ireland had our biggest ever number of field meeting days this year, and each one was well-attended. The ‘rough crew’ are proving to be a popular and valuable team, with a number of outings this year to wonderful places, to see wonderful rare plants. (These are botanists who like a challenge, *e.g.* a mountain to climb before botanising. Get in touch with Rory if you want

to be on the mailing list and hear about outings: rlhodd@gmail.com.)

The Irish Species Project 2014-16 is coming to an end, and a large amount of data has been collected. Review and analysis by Committee for Ireland members will begin in early 2016. The surprisingly successful ‘New Year Plant Hunt’ will again take place between 1st and 4th January, and people are already looking forward to it. Finally, our now-annual Irish conference will take place on 12th-13th March, so put the dates in your diary please!

BSBI Dublin Local Group

by RÓISÍN NIGFHLOINN

Arriving back in Dublin’s Fair City in early 2014 (following a few years working in Bristol) one of the first things I did was to attend the BSBI’s 50th Anniversary and Annual Conference in the beautiful and historic National Botanic Gardens with my good friend, and budding botanist, Kate-Marie O’Connor. We both thoroughly enjoyed the conference and by the end of it we thought it would be great if there was a local BSBI group in Dublin that we could go on field outings with. What better way to improve your plant identification skills while meeting new people with similar interests in ecology, and botany in particular! So, at the end of the weekend we approached Maria Long, BSBI Irish Officer, and enquired if there was an informal local group that we could attend. Maria was very helpful and encouraging, and suggested that we set one up. She put us in touch with fellow BSBI member, Sean Meehan, who had also enquired about setting something up around the same time. As interest and numbers grew we found it was possible to hold monthly outings with several in attendance.

People of all ages, experiences and knowledge bases attend the Dublin Local Group now, which is open to anyone who is interested (just contact me, rnigfhloinn@gmail.com, or Maria, maria.long@bsbi.org). We visit sites all over Dublin (and occasionally in neighbouring counties), usually picking the next site to visit by general consensus at the end of each

outing. This is a great way to keep the momentum going and allows all in attendance to help to organise the field trips. The main aims of outings are to visit an area of botanical interest (whether that is due to a deficiency in records, or the presence of known rarities, or simply to visit an interesting or varied site) and to enjoy the outdoors while appreciating and learning about the plant diversity. Apart from the pure enjoyment of seeing interesting or beautiful plants, or learning something new, the benefits of these informal meetings include: encouraging people with new or improving plant identification skills; making plant records and thus contributing to Atlas 2020 efforts (which are submitted through the local Vice-county Recorder David Nash); and sharing knowledge and conversation with people of all different ages and backgrounds... not to mention the occasional stop for tea, cake or the pub (especially after a cold blast of the Irish wind and rain!).

Since early 2014, the BSBI Dublin Local Group has visited a variety of sites, from Glenasmole in the south to Lough Shinny in the north, with guidance from some highly regarded botanists and input from eager newbies like myself. It’s proven to be a great success so far. The outings offer those that attend a wealth of new knowledge and help to refresh one’s memory, all the while being thoroughly enjoyable. I look forward to each field trip, and can honestly say that I am disap-

pointed when I can not make one. This is because of all of the lovely people involved, the encouragement of those new to botany alongside those with more expert knowledge, and last but by no means least, the fascinating Irish plant-life that is just waiting on our doorstep! The future of the BSBI Dublin Local Group looks bright (as well as the potential for other local county groups to be set up

in your own county – contact Maria if you are interested) and we all look forward to welcoming more keen botanists to the group in 2016 and into the future!

I will finish with a recent movie quote: “*Mars will come to fear our botany powers*” (Mark Watney, the astronaut who loves Botany!).

New Year Plant Hunt 2016 - reaching out to younger botanists and non-members: a message from the Publicity & Outreach Officer – *LOUISE MARSH*

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

By the time you read this, the New Year Plant Hunt will be all over and we hope that it will have proved an even bigger success than last year (see *BSBI News*, **129**), when Ryan Clark took over as Co-ordinator. You can download Ryan’s presentation from the Annual Exhibition Meeting webpage: http://www.bsbi.org.uk/exhibition_meeting.html; and the two New Year Plant Hunt posters exhibited at the BSBI Exhibition Meeting can be downloaded from this page: <http://bsbipublicity.blogspot.co.uk/2015/12/bsbi-new-year-plant-hunt-2016-how-to.html>

Many non-members and less experienced botanists, including younger plant-lovers, who first heard about the BSBI through previous New Year Plant Hunts, have continued to engage with us via social media and several have gone on to join the Society and make an active contribution. Botanist George Garnett (born 1999) first discovered the BSBI two years ago, when he spotted the New Year Plant

Hunt on Twitter. After his very successful talk at the AEM George said: “I can’t believe this will be my third New Year Plant Hunt – that was what got me into plant ID properly. To think I could hardly name any then and now look...”

A full report on the New Year Plant Hunt will follow in the next issue of *BSBI News*, due out in April, but for now you can read how it went on the following pages, which are also a great way to keep up with all the latest botanical news until the next issue of *BSBI News* is published:

- on the News & Views blog: http://www.bsbi.org.uk/news_-views.html
- on our Facebook page: <https://www.facebook.com/BSBI2011>
- on the BSBI Twitter account: <https://twitter.com/BSBIbotany>
- You can also contact the Plant Hunt Team on: nyplanthunt@bsbi.org

BSBI Annual Exhibition Meeting - reaching out to younger botanists and non-members – from the Publicity & Outreach Officer – *LOUISE MARSH*

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

The AGM. and AEM

This year’s Annual Exhibition Meeting and Annual General Meeting took place on Saturday 28th November at the Natural History Museum, London. 205 botanists enjoyed nine speakers and 44 exhibits, and many also took

part in three herbarium tours and three tours of the Natural History Museum Wildlife Garden. Exhibits spanned a wide range of subjects, from aspects of the British and Irish flora to training opportunities, and from BSBI projects to interactive displays on how social media

supports beginner botanists. Some of these exhibits are now available via our News & Views blog: http://www.bsbi.org.uk/news_views.html. Colour photos are on the inside front and back cover and one in B/W on p. 82

The presentations

The morning's talks focused on the botanical delights to be found right across the BSBI's geography, including the most far-flung outposts, while afternoon presentations were aimed also at the less experienced botanist and covered the Identiplant on-line botany course, the National Plant Monitoring Scheme and the BSBI's New Year Plant Hunt. Our keynote speaker, Mick Crawley, closed the day with a hugely popular talk about 'Aliens'.

You can download presentations from the Exhibition Meeting webpage: http://www.bsbi.org.uk/exhibition_meeting.html

The feedback

We had a higher proportion than usual of both younger botanists and also non-members visiting the AEM for the first time. While feedback forms indicate that Mick's presentation was by far the most popular of the day, there was special mention for two talks by younger members: 16 year old George Garnett told us about the plants of Guernsey, and Ryan Clark (22) offered his observations as Co-ordinator of the New Year Plant Hunt.

Attendance was higher than last time we held the AEM at the Natural History Museum (205 visitors rather than 192), which made the venue a little cramped at busy times, and we were all slightly dismayed to find the adjacent café closed, necessitating rather a trek for tea. Apart from these two criticisms, feedback was very positive, with particular mention for good advance communication, the high quality of the talks and the opportunities offered by the BSBI to younger members.

Thank you!

Many thanks to all of you who attended, to the Organising Team put together by the Meetings & Communications Committee, and including young botanists Kylie, Ryan, Waheed and Oli (and Kylie's sister Natalie, enlisted for the day) and to Fred Rumsey, Caroline Ware and Mike Waller at the NHM. We are very grateful to the NHM for hosting this very successful AEM

AEM 2016

Next year's AEM will be held at the Centre for Ecology & Hydrology, Wallingford, Oxfordshire on Saturday 26th November. We are looking into holding a conference the day before – look out for the flyer in the September issue of *BSBI News*. Details will be posted on the Exhibition Meeting webpage: http://www.bsbi.org.uk/exhibition_meeting.html

From the Hon. Field Meetings Secretary – JONATHAN SHANKLIN

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

The outline list of field meetings that was displayed at the Annual Exhibition Meeting has been slightly revised, with some changes of date and some additional meetings, and the full details will be presented in the *Yearbook*. If there are any further changes, these will be made to the version on the B.S.B.I. Meetings web page (<http://www.bsbi.org.uk/meetings.html>), which is the place to go for any final updates.

Also on the Meetings web page is the outline list, but now with the inclusion of local meetings. I was going to stop compiling this, but enough people said please continue, so I

will endeavour to do so. If your local meeting is not there, do send me a copy of your programme so that I can include them. I hope that many of you will be able to attend at least one of these field meetings, which are a core part of what the BSBI has to offer its members.

Arrangements for the 2016 BSBI Spring Meeting at the Field Studies Council's Blencathra centre in Cumbria in May are progressing. A flier and booking form is included with this issue of *BSBI News* and you can also book online from the Meetings web page. I am hoping that the weather will be drier than of late, although the long range prognosis is for

continuing mild and wet weather. If nothing else, this may mean that we have a good range of plants that are in flower early. Do come, as the meeting is designed to be suitable for all levels of experience.

Looking further ahead we are beginning to plan for the 2016 Annual Exhibition Meeting,

which is being held at the Centre for Ecology and Hydrology at Wallingford on 26th November. If you have any suggestions for talks or events that you would like to see at the meeting do let us know and we will try to implement them.



BSBI Atlas 2020: aims, outputs and ideas

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Winter is traditionally the time to begin the task of translating warm days in the field into cold digital wonders. It is not always a fun job, granted, but it is clearly crucial if hard-won records are to see the light of day, and it can actually be a nice way of reliving earlier adventures. This is usually the 'Atlas 2020 coordinators corner' bit of *BSBI News*, but as 2020 gets ever closer, we thought that it was timely and hopefully helpful to summarise again the Atlas project rationale, what we may hope to achieve, and in particular to canvas your views about how the results should be presented.

To begin at the beginning, the publication of the first *Atlas of the British flora* in 1962 was a landmark event for biogeography. For the first time species' distributions were displayed on a standardised grid at a national scale. This may seem obvious to us today but at the time it was a pioneering approach that was soon to be replicated for other taxon groups, and has since become the standard approach for mapping species distributions across the globe.

A second *New atlas of the British and Irish flora* was published in 2002, based on field-work that many of you will have been integral to between 1987 and 1999. Recording for a third Atlas, covering the period 2000-2019, is, as you know, well underway and, as in the last Atlas, will help to answer a number of key questions:

- How has our flora changed?
- Why has our flora changed, and what has caused these changes (both positive and negative)? For example, what have been the relative impacts of major environmental changes, such as population growth, pollution, development, climate change, and alterations in land management?
- How have changes in recording behaviour influenced our understanding of the flora in recent times *e.g.* recording fashions, advances in taxonomy and technology, increased volunteer participation, recording of aliens, *etc.*?

Thanks to the unrivalled expertise and colossal efforts of BSBI volunteers, the Society is fortunate once again to be in an excellent position to provide high quality and up-to-date botanical data needed to answer these questions and to inform environmental policy, conservation, land management and development. The data are available to BSBI members to use as they wish (they are, after all, your data!) via the DDb, and we have already made use of incoming records for several species accounts (see http://www.bsbi.org.uk/species_accounts.html).

The data will also be of enormous benefit when we come to revise the G.B. Red List, due to happen some time after the publication of the Atlas!

As in previous Atlases it will be vital to present updated distribution maps, showing, wherever possible, both native and introduced ranges in relation to date classes. In this way current distributions are recorded in perpetuity and there is a clear illustration of the efforts of surveyors. Of equal importance will be ‘interpreted’ outputs that present trends in relation to regions, habitats, species-trait groups, and drivers of change. We have yet to decide on the detail but feel that the most attractive way of presenting these results would be as a chapter in the Atlas itself, plus a summary booklet for a more general readership and, we hope, a series of collaborative papers with partners such as the Centre for Ecology and Hydrology that communicate the most important findings to the scientific world.

With regard to publication, our personal preference is for two hard backed volumes both of a size similar to *Scarce plants* (Stewart *et al.*, 1994), a separate booklet summarising the main results (as mentioned above), and the provision of online distribution maps, ‘frozen’ at the end of the project and perhaps with the interactive functionality of the excellent British Trust for Ornithology’s Bird Atlas Mapstore (see <http://app.bto.org/mapstore/specieschooser.jsp>).

We are therefore proposing a book including maps for the following:

- All extant native taxa including commonly recorded subspecies and aggregates where our understanding of taxonomy (and thus recording concepts) have changed through time.
- All aliens recorded in more than 50 hectads.
- All commonly established hybrids.

We propose that, in addition to the maps included in the published volumes, additional maps for the following are provided as part of the online resource:

- Non-native taxa recorded in less than 50 hectads.
- Microspecies of *Taraxacum*, *Hieracium* and *Rubus*, as long as it was clear that they were, in many cases, incomplete.

Although we have a clear plan of action, the Society has yet to obtain funding for any of the above, and we are therefore looking into generating resources via grants and sponsorship. We are also consulting with other organisations that use our data so that the Atlas can meet their needs too. We are under no illusions that Atlas 2020 requires a huge collective effort to bring it to fruition. We do not take these contributions for granted and are actively seeking assistance and ideas to help with coordination and publication. You, as BSBI members and recorders, are essentially the Atlas, and we therefore would particularly welcome your views and ideas on all the above, especially regarding outputs and additional areas of interest that we may be able to incorporate. Please do contact either one of us using the details listed above. Offers of help with any aspect of the project, including digitisation, verifying records, targeted recording, the writing of species account text for distribution maps, *etc.* are, as always, also very welcome.



Fred Rumsey demonstrating specimens in the NHM Herbarium at the BSBI AEM
Photo W. Arshad © 2015 (see p. 78)

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PROF. M.R.D. SEAWARD, *Dept of Environmental Science, University of Bradford, Bradford, BD7 1DP*; (m.r.d.seaward@bradford.ac.uk)

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***Botanical Society of the British Isles Abstracts* 1971-1985, 1998 & 2001

***Botanical Society of the British Isles News* 1997-2014

***Endeavour* 1966, 1968, 1970, 1973-1977
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Proceedings of the Botanical Society of the British Isles 1954-1969 (1 bound copy 1960)

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Revue Bryologique et Lichenologique 1967-1968 & 1974-1976 (5 bound volumes), 1977-1979

(unbound), plus index 1954-1969 (bound); continued as *Cryptogamie, Bryologie et Lichenologie* 1980-1991

Symbiosis 2004 onwards

Report of the Botanical Society of the British Isles 1926-1947

The Rose Annual 1954-1971 & 1973-1982 bound
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Transactions of the Botanical Society of Edinburgh 1957-1972 (+ odd earlier issues)

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***Watsonia* 1958-1985 & 1998-2010.

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Solutions to Botanical Crossword 27**Across**

1. PSEUDOCARP 8. SAPLING
 9. TEETH 10. OKRA 11. TAXODIUM
 13. LEMMA 14. SINUS 16. GENISTAS
 17. THIS 19. STAND 20. BLOOMER
 22. ENDODERMIS

Down

1. PESTO 2. EXPERIMENTAL
 3. DAI 4. COGNAC 5. RETRORSE
 6. HELIANTHEMUM 7. CHAMPS
 12. PASSED ON 13. LIGASE
 15. BAMBOO 18. SORUS 21. ORE

Crib to Botanical Crossword 27**Across**

1. charade: PSEUDO/CARP
 8. charade: SAP/LING
 9. astuTE ETHological
 10. OK/RA 11. charade 13. L/EMMA
 14. SIN/US 16. anagram GIANTESS
 17. THIS(TLE) 19. double definition
 20. dd 22. anag MINDED ROSE

Down

1. PEST/0 2. EX/PERI/MENTAL
 3. fresh as a DAI(SY) 4. reverse CAN/GO/C
 5. anag SET ERROR 6. This has two
 cryptic parts and no straight definition, only
 possible because the scientific name is equiv-
 alent to the vernacular name – you don't get
 so much fun in an ordinary cryptic crossword!
 So: ROCK(Hudson)ROSE (got up) is cryptic
 and so is HELI<ANTHEM>UM 7. dd
 12. pun 13. anag SILAGE
 15. anag A BOMB + O 18. S/OR/US
 21. ORE(OPTERIS – anag of REPOSIT)

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View across the *Rubus* patch in the Fraserburgh dunes (v.c.93)



Close-up of leaves and two inflorescences of the hybrid Dewberry. Both photos D. Welch © 2015 (see p. 6)



Figure 1. Location of *Potentilla argentea* in the Meridian Business Park, Blaby, Leicestershire (v.c.55). From top left clockwise: location of largest population in lawn; amenity grassland habitat; flattened plants at edge of kerb; reverse of flowering stem. Photos G. Hall © 2015 (see p. 30)



Winning photograph in the Winter category by Ian Francis, Teasel *Dipsacus fullonum*.
Photo © 2013 (see p. 58)



General view of the BSBI Annual Exhibition room, at the Natural History Museum, London.
Photo W. Arshad © 2015 (see p. 78)