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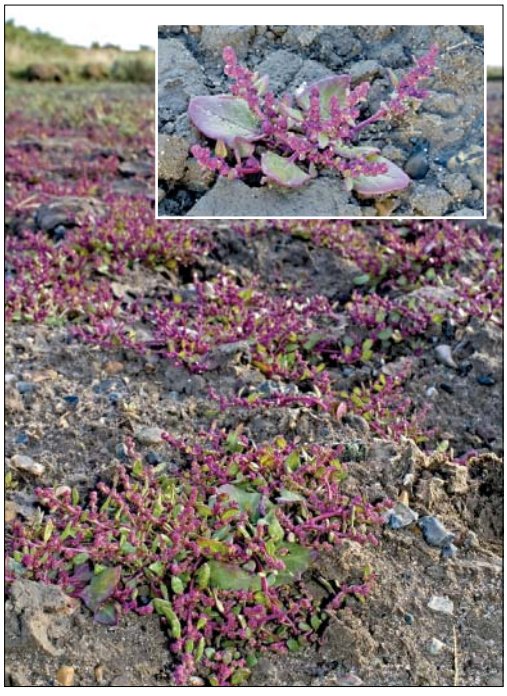
Dactylorhiza praetermissa × *Gymnadenia borealis*, a hybrid new to science found in 2016 at Crousa Downs, Cornwall.
Both photos B. Tattersall © 2016 (p. 6)



Chenopodium chenopodioides at Snettisham Coast Park (v.c.28).
Photos S. Harrap © 2013 (p. 19)

Atriplex ×*hulmeana*, Ardnahinch Beach (v.c.H5). Photo P. Green © 2016 with close-up of leaves inset. Photo F. Wallace © 2013 (p. 18)

Fig. 4. Irish Lady's-tresses at Loch Mor, Benbecula, 2009. A unique photograph for the British Isles and Ireland?
Photo Steve Duffield © 2016 (p. 7)

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Cover picture: – *Myriophyllum heterophyllum* in pond near Horsham, West Sussex (v.c.**13**).
Photo C. Smith © 2016 (see p. 51)

IMPORTANT NOTICES

From The President

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

When I retired, there were three things I looked forward to doing less of: wearing shoes, wearing a tie, and attending business meetings. All three came to pass – and many other benefits besides.

Maybe few botanists share my dislike of shoes, but most go tie-less, and I have yet to meet a single BSBI member who enjoys business meetings better than going into the outdoors to search for and study wild plants. So the Society has to be doubly grateful to all those of you who serve it by going to meetings of the Standing and Country Committees, the Council or the Board of Trustees. Some of you go to multiple committees, maybe travelling long distances to get there, so they really do take up quite a lot of your time. We owe you a big debt of gratitude. Moreover, we have a responsibility to you to see that we make the very best use of your dedication, and don't allow your efforts to be squandered.

This is one of the chief reasons for the Review of BSBI that is underway at the moment. Could we improve the way we take decisions, raise and spend money, and make use of our equally dedicated staff? We are currently assessing all the submissions that have come in from members and staff, from Committees, and from workshops at BSBI Conferences. They are being referred to the Review Group set up by Council (see Jane Houldsworth's notes p. 71), and in due course recommendations will go from Council to the Trustees. The Review Group members comprise a cross-section of the Society, but are on the Group as individuals rather than as representatives of any particularly interest group. Along with Jane (secretary) and myself (convenor), the members are Paul Ashton, Margaret Crittenden, Chris Miles, Oli Pescott, Sarah Stille and Antony Timmins.

One of the issues emerging from the Review is the scope for BSBI to cooperate with other bodies. "Going it alone" may be politically fashionable in some quarters, but BSBI is not swimming with this particular tide. As those of you who attended will know, we have just had a hugely successful Annual Exhibition Meeting held at Wallingford in partnership with the Centre for Ecology and Hydrology. BSBI has had a long history of working with CEH and its predecessors, and a very productive relationship it has been.

There are many other bodies with whom we work, both nationally in England, Ireland, Scotland and Wales, and locally, such as at the county or vice-county level. One line of thought, however, is that we are not yet making the most of all the opportunities that could be open to us if we were only to knock on the relevant doors. There are various potential advantages, for example when looking for funds, in being able to show that cooperation is our norm and we do not work in a vacuum.

Another theme is the question of interesting more people in plants generally and the activities of the Society in particular. Many societies are struggling with similar questions, but in our case there are pointers that we may be succeeding. Against the trend, our membership has risen about 1% in the past 12 months, and several leaders and organisers have reported that more young people are coming to our training workshops and field meetings. The 2017 programme of BSBI field meetings is really tempting. As usual, there are meetings throughout Britain and Ireland, listed both on the website and in the Yearbook. Whatever your inclination – beginner or expert, generalist or specialist, rough terrain or level lowland – there are meetings for you. One I particularly recommend for the variety on offer and the opportunity to meet and learn from other botanists would be the Annual Summer Meeting in Flintshire in early June. To be sure of your place, get your booking in early!

From the Company Secretary

CLIVE LOVATT, *57 Walton Road, Shirehampton, Bristol, BS11 9TA*;
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Annual General Meeting of Botanical Society of Britain and Ireland

About 150 members attended the third Company AGM of the Botanical Society of Britain and Ireland, which was held at the Biological Records Centre in Wallingford, Oxford on Saturday 26 November 2016. The meeting was chaired by Chris Metherell with contributions from John Faulkner, David Pearman and Clive Lovatt. The Chair thanked the officers, staff and especially the very many volunteers for their support of BSBI and its work during the last year. Subject to minor corrections, the minutes of the 2nd AGM were approved.

The full minutes of the meeting (draft until approval at the next AGM) are available for download on the BSBI website. Paper copies can be provided on request. A summary of the business of the meeting is given below. Note that registered information about our charity (including a list of Trustees and annual accounts) can be found by clicking "Search for a Charity" at https://www.gov.uk/government/organisations/charity-commission and entering BSBI or our Society's full name in the charity search box.

Annual Report and Accounts – 31 March 2016

The accounts distributed in the membership mailing with the September 2016 edition of *BSBI News* as part of the Annual Review were abbreviated and draft. The Company Secretary confirmed that the full Annual Report and Accounts now presented were based on the same figures and subsequently had been approved by the Board and by the Independent Examiners, without qualification, on 19 October 2016. BSBI had net assets of £966,802 as at 31 March 2016. Attention was drawn to a first estimate (page 4 of the Annual Report) of the value of voluntary effort contributed by members to the Society's work – something in the region of £10 million. The members present adopted the accounts and re-appointed the Independent Examiners, WMT of St Albans.

Board of Trustees

At the AGM, Mick Crawley, Chris Metherell and Delyth Williams retired by rotation and the term of office of Paul Bisson, co-opted to the Board in May 2016, came to an end. All four were re-elected for a term of three years. At present the Board has eight members who serve as Company Directors and Charity Trustees.

BSBI President-elect

John Faulkner is mid way through a 2-year term as BSBI President. Chris Metherell was nominated and approved as President-elect to serve a two or three year term as President commencing after the 2017 AGM. At that time he will necessarily retire as Honorary General Secretary.

Council

Richard Carter and Louise Marsh retired as members of Council at the AGM, having served their respective terms of office. Jonathan Shanklin was re-elected to Council and Ann Middleton and Oli Pescott were elected as new members of Council for terms of three years. Brief citations of the two new members of Council are printed in the 2016 AGM papers, of which copies are available on request.

Honorary Members

Professor Ian Trueman and Nick Stewart were proposed and elected as Honorary Members of the Society. The citations read out at the AGM are printed elsewhere in this edition of *BSBI News* (p. 55).

Presidents' Award

This year it was the turn of the President of the Wild Flower Society to award the prize. The Chair was delighted to announce that the latest award was made to two of our members, Professors Clive Stace and Mick Crawley, for their outstanding New Naturalist book, *Alien Plants*.

By order of the Board
Clive Lovatt, BSBI Company Secretary
6 January 2017

Botanical Society of Britain & Ireland

HONORARY TREASURER

As members will know, BSBI is undertaking a thorough review of its activities and priorities. Following the Review, we will be aiming to take forward an ambitious programme of scientific and educational work with renewed vigour.

Maintaining financial stability and securing sustainable funding will be fundamental to the success of this programme and we are looking for an Honorary Treasurer to help the Society through this stimulating period in its development. As Hon. Treasurer, you would be the member the Board of Trustees with particular responsibility for keeping an overview of the financial situation of the Society.

The Society has a qualified finance officer who carries out the day-to-day financial tasks required to keep the Society functioning. Your role would be to provide support and advice where appropriate, and report on financial matters to the Board and membership. It would also include representing the Society in occasional high level meetings, for example with major sponsors or investment managers.

If you, or someone you know of, might be interested in this position, please get in touch with either Jane Houldsworth (Head of Operations; jane.houldsworth@bsbi.org), Ian Denholm (Chair of the Board; i.denholm@herts.ac.uk), or John Faulkner (President; jsf@globalnet.co.uk).

Notes from the Editors

TREVOR JAMES (Receiving Editor), 5*6 Back Street, Ashwell, Baldock, Herts., SG7 5PE.* (Tel.: 01462 742684) (trevorjjames@btinternet.com)
GWYNN ELLIS (General Editor), *41 Marlborough Road, Roath, Cardiff, Wales, CF23 5BU* (Tel.: 02920 332338) (gwynn.ellis@bsbi.org)

Trevor James, the *BSBI News* Receiving Editor, will be out of action for a few months following major surgery and all contributions for the next issue should be sent to the General Editor, Gwynn Ellis. I am sure all members will join me in wishing Trevor a speedy recovery and return to full health.

It is gratifying to report that members have responded well to our request for more contributions to *BSBI News*, both notes and images and this issue is as much in the 'feast' as the last issue was in the 'famine' phase.

Congratulations

To **Robert Hamilton Northridge** of Enniskillen, Co. Fermanagh our Vice-County Recorder for v.cc.**H30** (Co. Cavan) & **H33** (Co. Fermanagh) on being awarded an MBE in the New Years Honours List – for services to rowing and community relations in Northern Ireland.

To **Chris Metherell** our Hon. General Secretary on his appointment as our President-elect.

Botanical Crossword

The compiler, *Cruciada*, has suggested that anyone who would like to be able to do this crossword, but finds it a bit intimidating, should take a look at the next issue of the *Scottish Newsletter*, which includes a 5 × 5 grid and an explanation of how to set about cryptic crosswords.

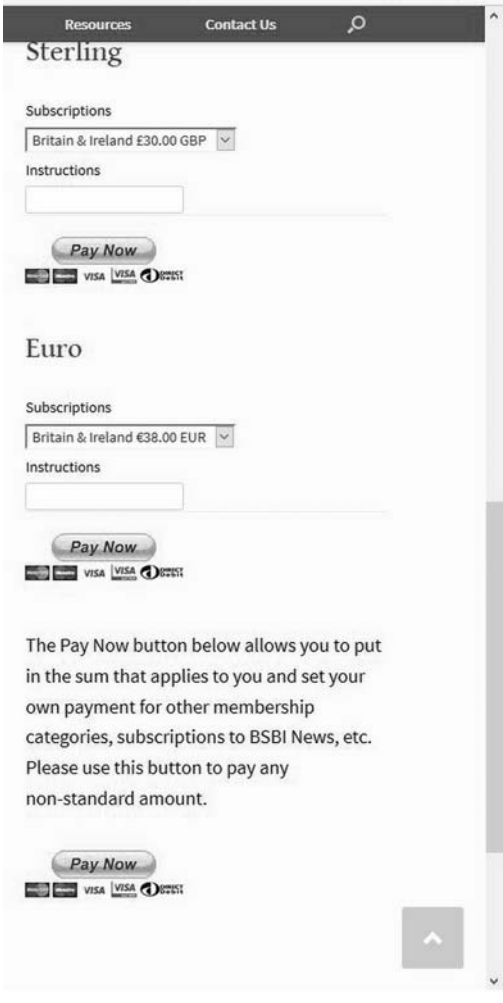
Subscriptions and other payments

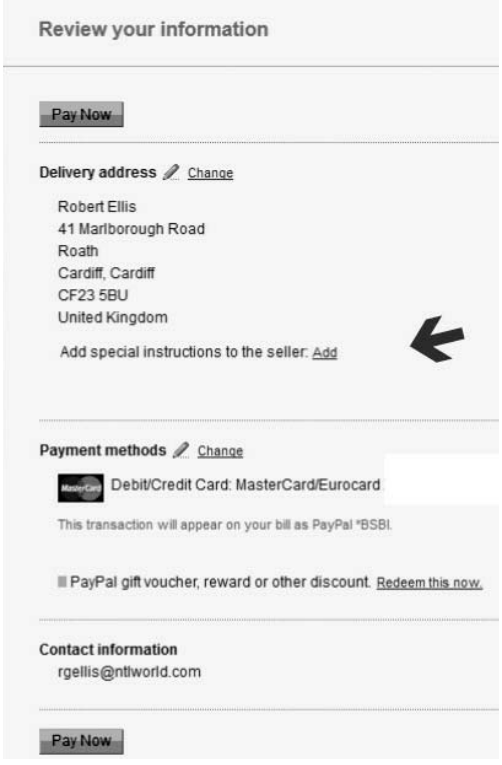
There have been a few recent changes to the Subscriptions page on the BSBI website (http://bsbi.org/subscriptions) that may have confused some of our members. There is now an 'Instructions' box above the PayPal 'Pay Now' buttons for paying subscriptions in £ Sterling or €uros. Please put 'Subs renew and your membership number' in the appropriate box when paying your subs (see below).

Below these two buttons is a third button; this used to be named 'Donate' and can be used to pay any non standard amount. Unfortunately, we cannot at present assign an 'Instructions' box to this button so if you do use it please give the reason, with your membership number if known, in an email to gwynn.ellis@bsbi.org

You can use this button, for example, to pay for your subscription and print copy of *New Journal of Botany* in one transaction.

For at least some transactions, there is still a chance to put instructions on the PayPal page itself before you click the final 'Pay Now' button (see screen-shot below). Just click on the 'Add' button (arrowed) and leave a message before paying.





It is always helpful to include your membership number (or your postcode) in any communication (post or email) as it makes it much quicker and easier to locate you in the membership database. This may not matter so much if you have an unusual surname, but trying to sort out who is who among common surnames can take quite some time and may involve contacting several members!

NOTES

A hybrid orchid new to science found on the Lizard Peninsula, Cornwall (v.c.1)

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(barry.tattersall@tiscali.co.uk)

In June 2016, while holidaying in Cornwall from a base at St. Keverne, my wife and I botanised several of the fabulous heaths on the Lizard Peninsula. We normally visit in the autumn when *Erica vagans* (Cornish Heath) is at its most colourful. The only orchid species flowering that late in the year is *Spiranthes spiralis* (Autumn Lady's-tresses), which is well-represented around the Lizard coastline.

The geology of The Lizard Peninsula is exceptionally complex, the dominant serpentinite rocks supporting a famously rich and unusual ground flora. However, the Crousa Down area, north-west of Coverack, is underlain by the core of the Devonian igneous intrusion that generated the Peninsula, the gabbroic rocks typically generating soils that are more acidic and nutrient-deficient.

Crousa Down has always been a favourite place to study the fascinating heathland orchid flora. Over many years of visiting the area I have encountered several orchid species, usually in substantial numbers: *Dactylorhiza maculata* (Heath Spotted-orchid), *D. incarnata* and *D. incarnata* ssp. *pulchella* (Early Marsh-orchid), most commonly the acid-loving form ssp. *pulchella*, *D. praetermissa* (Southern Marsh-orchid), *Gymnadenia borealis* (Heath Fragrant-orchid) and *Platanthera bifolia* (Lesser Butterfly-orchid). Hybrids between *D. maculata* and *D. incarnata* (*D.* × *carnea*) and the intergeneric hybrid between *D. maculata* and *Gymnadenia borealis* (× *Dactylodenia evansii*) also occur there regularly. Also, a nearby heath once yielded *D. incarnata* × *G. borealis* (reviewed in Stace *et al*., 2015). Perhaps due to the unusual weather of 2016, most of these orchid species were found in large numbers at Crousa. The exceptions were the apparently absent *P. bifolia* and *D. praetermissa*, which was seen in flower only along the roadside verge adjacent to the heath.

After a pleasant hour or so on the heath I was returning to the car along the road, checking what was flowering on the species-rich roadside verge, when I came across several large specimens of *D. praetermissa* beside an unusually large plant of *D. maculata*. These orchids were growing in dense vegetation within half a metre of the road surface, and therefore in peril of being run over by passing traffic! After walking a few more metres along the road my eyes were drawn to an orchid with a distinctly different and strikingly coloured inflorescence (see inside front cover). After parting the dense surrounding vegetation it soon became obvious that it was a hybrid plant, with *Gymnadenia borealis* as one of its parents, a fact testified by its long, yet fat, spur and floral scent. A process of elimination suggested that *D. praetermissa*, growing within 5m of the hybrid, was the dactylorchid parent (and probably also the pod/ovule parent (*c.f*. Bateman & Hollingsworth, 2004). Photographs were taken but, naturally, no voucher material was removed from so singular a plant.

Upon our return home, I tried to enter our various botanical finds into the MapMate database but the hybrid was not recognised! I e-mailed Colin French and Ian Bennallick, the BSBI recorders for West and East Cornwall respectively, together with the BSBI's co-referee for orchids, Prof. Richard Bateman, attaching images of the plant. Richard replied almost immediately, not only confirming that it was indeed a hybrid plant but also pointing out that this hybrid combination was new to science, following hard on the heels of the discovery of the novel hybrid between *D. praetermissa* and *G. densiflora* in South Wales (Clark & Lewis, 2011). The ensuing

round-robin flurry of e-mails between myself, Richard, Colin, Ian and Peter Wood eventually led to the collection of a few flowers as provisional vouchers that are suitable for DNA analyses. However, they would constitute a distressingly poor holotype for a new 'nothospecies'.

Whether this handsome plant will survive long enough to be the subject of an accurate formal taxonomic description may depend largely on the actions (or lack of actions) by the local authority. The road is narrow, with passing places, yet during the summer months it can be very busy with holiday traffic, farm vehicles also adding to the threat. The local authority tends to cut the verges quite regularly, in most cases justifiably for road safety reasons. However, Crousa Down is widely noted for its unique flora, so hopefully a sympathetic regime for roadside maintenance has now been agreed between the relevant wildlife organisations, local authority and nearby farmers.

Acknowledgement:
I thank Richard Bateman for commenting on an early draft of this article.

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Further observations on *Spiranthes romanzoffiana* (Irish Lady's-tresses)

FRANK HORSMAN, *34 Tindill Road, Balivanich, Isle of Benbecula, Western Isles, HS7 5LF*; (frankh2@hotmail.com)

In my last article (Horsman, 2005: 37-40), I ruled out the Greenland White-fronted Goose as the agent for the natural arrival of the seed of *Spiranthes romanzoffiana* (Irish Lady's--tresses) in the British Isles from North America, because this orchid has not been recorded from Greenland, or from Iceland, the landing stage for this goose in its journey from Western Greenland, where it breeds in the summer, to the British Isles, where it overwinters. However, I have just come across a very striking correlation between *S. romanzoffiana* and the Greenland White-fronted Goose. In July 2009, Steve Duffield (www.western-isles-wildlife.co.uk), a local ornithological expert, discovered a new site for S. *romanzoffiana* on the shores of Loch Mor on the Isle of Benbecula in the Outer Hebrides. I live on Benbecula. In August 2010, a survey of *S. romanzoffiana* on the shores of Loch Mor was carried out by three members of the local staff of Scottish Natural Heritage: Tracey Begg, Johanne Ferguson and Patrick Hughes. A total of 589 flowering spikes was counted (Fig. 1, Colour Section Plate 1). Resources prevented the counting of the vegetative plants, which was done on Coll (see below). If the vegetative plants had been counted the total number of plants would have been increased significantly. In my experience, such large populations of *S. romanzoffiana* are very rare in the British Isles. The norm is to find a solitary flowering spike at a site. I only know of two other such large populations in the British Isles. One I discovered at Loch Cuillin in County Mayo in Ireland, and the other was discovered by Richard Gulliver on the Isle of Coll in the Inner Hebrides.

Very recently, I came across the following report: 'Greenland White-fronted Geese: land use and conservation at small wintering sites in Scotland' (Francis *et al*., 2011: 84-88). One of

the sites surveyed was the same Loch Mor (Figs. 2 and 3, Colour Section Plate 1). The correlation is obvious. Between 50 and 120 geese had been recorded on Benbecula prior to the early 1960s (Atkinson-Willes,1963) and had been declining since (Ruttledge & Ogilvie, 1979). This has revived my interest in the Greenland White-fronted Goose theory.

There was an unusual feature in this population, which I have not seen before. In the 2010 survey clumps of two or more plants of the orchid were noted. The results were: 38 × 2; 4 × 3; 2 × 4 and 1 × 5. Each clump had a common origin in a single, parent plant. This population would appear to be reproducing vegetatively. I have visited most of the populations of *S. romanzoffiana* in Scotland and the Irish Republic and had the great pleasure of discovering many of these sites. Double clumps are not infrequent, triple clumps few and far between. I have never seen a clump of four plants (Fig. 4, inside front cover), never mind a clump of five! There is a photograph online of a clump in America, where it is most frequent, which is comprised of 15 plants. The Loch Mor population is apparently somewhat similar to those in America, the home country. One plant had 27 flowers.

It may be significant *vis a vis* the Greenland White-fronted Goose that *S. romanzoffiana* grows right round Loch Mor.

I support the hypothesis that the distributions of *S. romanzoffiana* and the Greenland White-fronted Goose were much more widespread in the periglacial period than they are now. The distributions have contracted. Of course, we are dealing with a plant (species) and an animal (sub-species). There are now thought to be 36 species in the genus *Spiranthes* and five subspecies/races of the White-fronted Goose.

Please note: The Loch Mor site is on private croft land which is easily seen from the road. The crofter's permission is required for entry. This site is sensitive from a number of points of view, so would you please give it a miss. Thank you.

Acknowledgements:
I am grateful to Johanne Ferguson (SNH) and Ian Francis for their help with the maps.

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Botanical trips to Europe

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On holiday in Spain and Portugal this spring I stumbled on the website http://www.botanicaljourneys.com. The site consists primarily of trips made by Rutger Barendse (Belgium) and Jeroen Willemsen (Netherlands), with itineries and lists of plants for each. Interesting enough, especially visiting new territory, and for comparing their finds with mine. But the most exciting part of the website is the section of the main menu entitled 'Online botany', with a really useful list of websites, country by country. So, in Portugal, I was able to use http://flora-on.pt; for Spain: http://www.anthos.es/, and for the Canaries: http://www.floradecanarias.com/. The whole resource made identification much more possible and more immediate, and I can strongly recommend the site.

Chlorophyll-deficient form of *Ophrys sphegodes* (Early Spider-orchid)

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(Mikechalk2011@hotmail.co.uk)

A rare and extraordinary form of an Early Spider-orchid has been discovered in Kent (v.cc.**15/16**) (inside back cover). Its description is as follows:

> Short, 10cm tall before all (4) flower emergence; the first flower going over after anthesis; the second flower, fresh, labellum pale reddish brown, with a brownish band of submarginal hairs; speculum horseshoe-shaped, marking not well-defined, greyish-blue, finely edged whitish; base of speculum broadly edged bright yellow; leaves, stem and petals a stunning mid-yellow, with very slight tinges of reddish brown to the inner sepals; two buds not opened.

Plant pigmentation has three important pigments: chlorophyll, carotenoids and anthocyanins. Chlorophyll is accountable for the green colouration; anthocyanins take care of the reds, blue and purple hues, while carotenoids are responsible for the yellows. The photosynthesizing molecule called chlorophyll will absorb its energy from the orangey/reddish and violet/blue part of the light spectrum, anthocyanins are not directly involved in photosynthesis.

Nitrogen is needed for the synthesis of chlorophyll. Low levels of nitrogen will slow down the absorption of nutrients and the production of carbohydrates for its normal growth and development. This I believe is not the case here, and this orchid exhibits a high mid-yellow colour and was perfectly normal in other respects, so this has proved to be a very attractive variant, genetic mutation, the variation due possibly to back mutation which could also be caused by cells being exchanged between layers differing in colour on a molecular level.

The pollination relationship between this orchid and its potential pollinators, including bees, remained unaffected. It has an association with *Andrena nigroaenea*, and other bee and insect pollinators. Bees are perfect agents for pollinating and can see a much broader spectrum of light than we humans can, and see within plants patterns we can not. This orchid's labellum was the constant factor and insects were observed visiting this plant, surrounding plants all being normal, as was the chalk habitat.

David Lang and Richard Laurence had never seen this form before. Jon Dunn, natural history writer and photographer had also observed this plant at this site, whilst researching for his forthcoming book on British orchids in one season.

Acknowledgements:
I would like to thank my wife Lauraine; Richard Laurence, for allowing us to re-arrange his floral days out and he ours, and for his friendship and knowledge; David Lang, for his help and advice; and Jon Dunn.

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Re-discovery of *Elytrigia atherica* (Sea Couch) in v.c.59 (South Lancashire)

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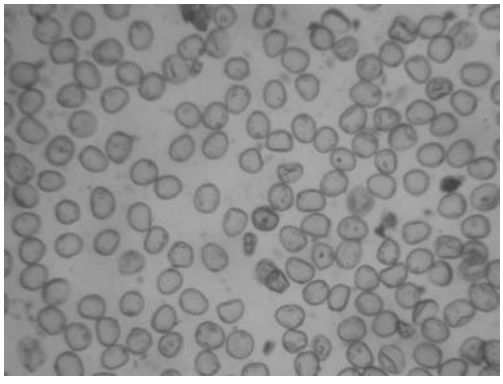
B.A. ('JESSE') TREGALE, 24 Ashbourne Drive, Bradford, West Yorkshire, BD2 4AQ

While we were botanising at Crosby dunes on the Sefton Coast, north Merseyside, on 3rd July 2016, MPW noticed a robust glaucous *Elytrigia* (couch) on a dune slope west of Crosby Baths (SJ307988) (Colour Section Plate 2). From the presence of crowded flat-topped ridges on the upper leaf surface, abundant cilia on the edges of leaf sheaths and exerted anthers, together with knowledge of related taxa (Wilcox, 2015), he provisionally determined the plant as *Elytrigia atherica* (Sea Couch). This was later confirmed by microscopic examination of pollen grains, which stained successfully and are mostly uniformly shaped (see photomicrograph below), ruling out possible hybrids with *E. repens* (Common Couch) (*E.* ×*laxa*) or *E. juncea* (Sand Couch) (*E.* ×*acuta*) (Stace *et al*., 2015).



Photomicrograph of pollen from *Elytrigia atherica,* Crosby dunes, July 2016 Photo © M.P. Wilcox

As *E. atherica* was considered extinct in v.c.**59** (South Lancashire) (Smith, 2016), PHS returned with friends on 8th July 2016 to survey the population and its habitat and collect voucher specimens for **LIV**. The target species was recorded as 'frequent' in an area of about 30 × 4m on a steep (60°) east-facing dune slope. The habitat is semi-fixed calcareous dune, about 40m from the shore, dominated by dense *Ammophila arenaria* (Marram), with *Hippophae rhamnoides* (Sea Buckthorn) colonising the crest of the ridge. Twenty-four associated vascular taxa were identified (Table 1, p. 12), most being typical duneland plants, with a selection of ruderals, reflecting the proximity of a car park. Reference to descriptions and keys in Rodwell (2000) established that the plant communities accord with the UK National Vegetation Classification's SD6: *Ammophila arenaria* mobile dune and SD18: *Hippophae rhamnoides* dune scrub.

E. atherica is a native species of wet, sandy, gravelly or muddy places by the sea, especially in southern Britain, extending north to Wigtownshire and Cheviot (Stace, 2010). However, its status near its northern limit in north-west England, including South Lancashire, is unclear because of confusion with glaucous coastal varieties of *E. repens* and hybrids (Cope & Gray, 2009). Thus, Savidge *et al*. (1963) gave only one South Lancashire record for this species, on the shore north of Southport in 1891, describing it as "Very rare, possibly extinct", while Greenwood (2012) considered it extinct in northern Lancashire (mainly v.c. 60 West Lancashire). Greenwood (2004) conducted a detailed investigation of supposed *E. atherica* populations in v.c.**60** and elsewhere in north-west England and northern Wales. None of the voucher material he examined was *E. atherica*, most being the hybrid *E.* ×*laxa*. He also visited all the major saltmarsh sites in the region in 1999, finding only hybrids and forms of *E. repens*, except for three colonies, determined by Dr T. Cope as *E. atherica*, on the east shore of the Dee Estuary in Wirral (v.c.**58** Cheshire). The latter were found to be sterile, raising questions

about their taxonomic status, although Dr Cope suggested that failure to produce seed was "environmentally induced" and stated that he could not find any character that displayed "intermediacy". Other populations in the same general area were determined by Dr Cope as *E. ×laxa* and *E. ×acuta* (E.F. Greenwood *in litt*., 2016). MPW visited the Dee Estuary on 10th July 2016, searching the saltmarsh between Riverbank Road and Gayton Cottage. Over a linear distance of about 900m, he identified 21 patches of *E. atherica*. All were male fertile and no hybrids were found. Further visits by E.F. Greenwood (*in litt.*, 2016) to the same area in July 2016 detected patches of *E. atherica* with both fertile and sterile pollen, as well as two colonies of *E. ×laxa*.

Greenwood (2004) concluded that *E. atherica* was probably always a rare plant in north-western England and that, at least in the northern part of its range, the species is much over-recorded or probably absent in areas where it is said to occur. Similar conclusions were drawn by Halliday (1997) in Cumbria. He cited three records of *E. atherica* between 1910 and 1950, but states that more recent material from 14 sites between Morecambe Bay and the Solway was best regarded as the hybrid *E. ×laxa*. He also drew attention to the fact that glaucous coastal forms of *E. repens* may be mistaken for *E. atherica*.

BSBI maps show four 1930-1969 tetrad records of *E. atherica* for v.c.**59** between Crosby and Hightown, but these pre-date Greenwood's (2004) findings. Similarly, the draft *New flora of South Lancashire* (D.P. Earl *in litt*., 2008) gives only one recent record for *E. atherica*, at Blundellsands in 1999, but states that critically determined plants were formerly gathered between Seaforth and Hightown. These may well include the voucher specimens that Greenwood (2004) considered to be hybrids. Thus, several gatherings by the late Vera Gordon made between 1997 and 2001 at Seaforth and Crosby were determined by Dr Cope as *E. ×acuta* (E.F. Greenwood *in litt.,* 2016). The *New flora of South Lancashire* recognises that *E. atherica* was possibly over-recorded in the past and that recent studies have shown that almost all populations consist of hybrid plants.

The discovery of undoubted *E. atherica* at Crosby is significant, as it may be the only extant colony in north-west England north of the Dee. The fact that the plant is growing on sand-dunes, rather than being associated with its main habitat, saltmarsh, is somewhat surprising, although it is known to occur on dunes (Cope & Gray, 2009; Stace, 2010). The field survey suggests that the colony is being impacted by invasive *Hippophae rhamnoides*, an introduced shrub that poses a major conservation threat to dune flora on the Sefton Coast (Smith, 2009). It is hoped that arrangements can be made for scrub control measures to take place.

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Table 1. Vascular plant associates of *Elytrigia atherica* at Crosby dunes, July 2016
r = rare; o = occasional; f = frequent; a = abundant; d = dominant; l = locally; v = very

Taxon	English name	Freq.	Taxon	English name	Freq.
Achillea millefolium	Yarrow	r	*Leymus arenarius*	Lyme-grass	vla
Ammophila arenaria	Marram	a	*Lotus corniculatus*	Bird's-foot-trefoil	r
Beta vulgaris ssp. *maritima*	Sea Beet	r	*Oenothera* sp.	Evening-primrose	r
Cakile maritima	Sea Rocket	r	*Plantago major*	Great Plantain	r
Carex arenaria	Sand Sedge	o	*Rosa spinosissima*	Burnet Rose	r
Cirsium arvense	Creeping Thistle	o	*Rubus caesius*	Dewberry	r
Diplotaxis muralis	Annual Wall-rocket	o	*Rubus fruticosus* agg.	Bramble	r
Elytrigia repens	Common Couch	o	*Rumex crispus*	Curled Dock	r
Equisetum arvense	Field Horsetail	o	*Rumex obtusifolius*	Broad-leaved Dock	r
Hippophae rhamnoides	Sea Buckthorn	ld	*Senecio jacobaea*	Common Ragwort	o
Hirschfeldia incana	Hoary Mustard	r	*Sonchus arvensis*	Perennial Sowthistle	r
Hypochaeris radicata	Cat's-ear	r	*Sonchus oleraceus*	Smooth Sowthistle	r

Galium parisiense (Wall Bedstraw) – a fruity story

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Galium parisiense (Wall Bedstraw) is an inconspicuous annual of dry, infertile soils and old walls, intolerant of competition. British records of this Mediterranean species are concentrated in East Anglia and southern England, where it is accepted as native, with scattered records of uncertain status as far north as Scotland. Despite loss of habitat, it is being increasingly recorded outside south-eastern England, perhaps as climate change encourages the survival of casual introductions. A similar increase is noted in Belgium, where the plant is an alien (Verloove, 2016).

John Ray's *Synopsis methodica stirpium Britannicarum* of 1690 contains the first British record of Wall Bedstraw, "*Aparine minima.* Found in Hackney on a wall" by William Sherard. The third (1724) edition of *Synopsis* mentions further records and includes a fine illustration. Sherard's record was the first and only report of Wall Bedstraw in Middlesex (v.c.**21**) until 1984, when Brian Wurzell found 15 plants on the wall of derelict filter beds by the River Lea in the London borough of Haringey, just 400m away from its boundary with Hackney (Burton, 1985). This colony seems to have persisted, as botanists have recorded it frequently since Wurzell's discovery. I saw it for the first time in 2014, when I took some photographs (Colour Section, Plate 2) and specimens. On looking at these carefully I found to my surprise that their fruits (mericarps) were covered in stiff hooked hairs (Fig. 2, p. 14) whereas my reference books insisted that all British plants had fruits that were, in the words of Stace (2010), "very finely papillose". I let the matter rest until, in September 2016, I found another colony of Wall Bedstraw in paving cracks beneath a wall beside the Thames at the Isle of Dogs. These

plants have a morphology seemingly identical with those from Haringey, which I re-visited, but their mericarps are glabrous and minutely papillose (Fig. 3, p. 14).

The existence of these two forms is well-known, at least to authors in continental Europe. In 1753 Linnaeus named and described *G. parisiense*: "Galium foliis verticillatis linearibus, pedunculus bifidis, fructibus hispidis [Galium with whorled linear leaves, forked peduncles, and bristly fruits]" and the mericarps on his specimen at **LINN**, which is the lectotype of the species, do indeed have hooked hairs. The name selected by Linnaeus derived from one due to Tournefort (1700), "Gallium Parisiense, tenuifolium, flore atro purpureo", a curious choice as the flowers could never be described as dark purple. (This is one of two additional species of Gallium (*sic.*) included by Tournefort; the other, "Gallium Narbonense, tenuifolium, flore albo" has a better geographical and floral claim to being the plant intended.) Linnaeus also cited Ray in support of his identification, specifically the illustration of *Aparine minima* in the 1724 edition of the *Synopsis*. This, as I noted, is a good figure, in which the mericarps are shown as glabrous. Even Linnaeus, it seems, had some difficulty with this plant.

In the first edition (1762) of his *Flora Anglica*, William Hudson repeated Linnaeus' entry for *G. parisiense* word-for-word (with a couple of copying errors), including it, as Linnaeus had done, with *G. aparine* and *G. boreale* in the section "Fructu hispido [with bristly fruit]". But in the second edition of *Flora Anglica* (1778) *G. parisiense* did not appear. Instead, Hudson, quoting sites near Dartford and Farnigham in Kent, provided a new name, *G. anglicum*, for Ray's *Aparine minima*, now included in a section headed "Fructu glabro [with glabrous fruits]". A note on a specimen in the Natural History Museum (**BM**) collected by Hudson designates this as the type of *G. anglicum*. Following Hudson, British authors have alternated between regarding *G. anglicum* Huds. as a distinct species, or as a variety (sometimes a sub-species) of *G. parisiense* L. In Spain (see Ortega Olivencia and Devesa, 2007), where the bristly-fruited form is the commoner, the two are treated as varieties (var. *parisiense* and var. *leiocarpum* Tausch) of *G. parisiense* ssp. *parisiense*, the other subspecies being the plant more generally known as *G. divaricatum* Pourr. ex Lam. Whatever name is used, the smooth-fruited form is, Bentham (1866) noted, "the only one we possess". Indeed, all the British material in **BM** has glabrous fruits. This includes a specimen, probably the earliest in existence, gathered by Ray's friend Samuel Dale (1659 – 1739) from near Dartford, where Hudson also found it.

The Haringey record of bristly-fruited plants is not unique in Britain. Brenan (1953) discussed plants of *G. parisiense sensu stricto*, found in 1951 on Dundee Corporation Tip (Angus, v.c.**90**) by Ursula Duncan and others. In the BSBI database (DDb) the status of this record is given as "naturalised escape or alien", consistent with a possible origin from industrial or agricultural waste (although the record of *G. anglicum* Huds. from the banks of the Tweed in Hayward and Druce (1919), presumably from wool shoddy, is of the smooth fruited plant).

Wall Bedstraw has crossed the Atlantic, becoming well naturalised in California, where plants are mostly the bristly-fruited form. A detailed study of Texan material led Lipscomb and Nesom (2007) to propose raising var. *parisiense* and var. *leiocarpum* to specific rank; in Texas, as in continental Europe, the two grow sympatrically with no intermediate forms.

Verloove (2016), describing the alien plants of Belgium (where the bristly-fruited form is very rare, as in Britain, but neither is native), notes that "the taxonomy of *Galium parisiense* and related species is controversial". According to Ortega Olivencia and Devesa (2007), chromosome counts of 2n = 22, 44, 55 and 66 have been reported, but whether these ploidy levels correlate with morphology, in particular mericarp indumentum, is not known. What is clear is that the presence or absence of hooked bristles on the fruits of Wall Bedstraw is an easy character to observe in the field;

indeed it is rather strange that neither Wurzell, nor any of the others who recorded the Haringey plants, remarked on this. It would be interesting to hear of other reports of this form in Britain.

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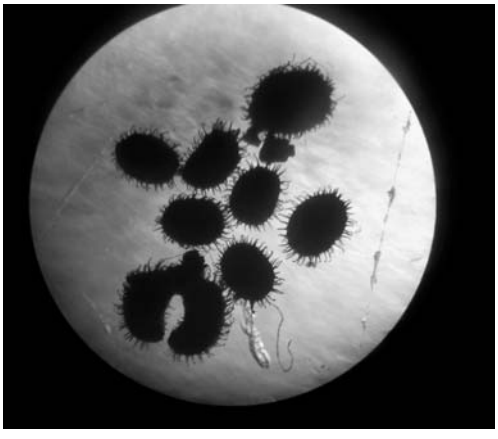

Fig. 2 Mericarps of Wall Bedstraw from Haringey (v.c.21), September 2014

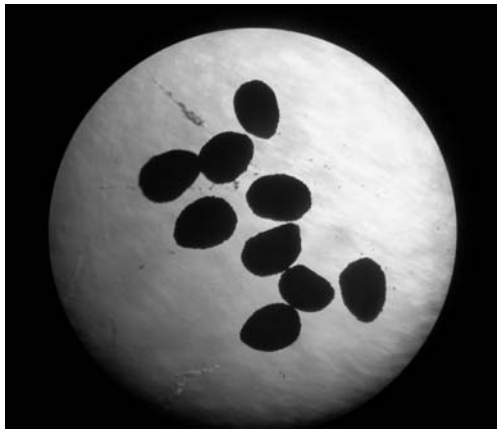

Fig. 3 Mericarps of Wall Bedstraw from Isle of Dogs, September 2016

New population of *Saxifraga hirculus* (Marsh Saxifrage) in Perthshire (v.c.89)

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On 2nd August 2016 I was botanising on Fealar Estate in highland Perthshire and was surprised and delighted to discover a plant which I had never seen before, nor had it been recorded by anyone else in my vice-county (v.c.**89** East Perthshire). At the outset my plan had been only to make some routine records for the Atlas 2020 project in an area of remote hill country. Here the tetrad NO08F includes the headwaters of the estate's eponymous Allt Feith Lair. The rather gentle, rounded hills feeding the headwaters are composed of igneous bedrock, resulting from intrusions, overlain with a glacial till, and the springs that issue from the hillsides bear witness to its calcareous composition by the presence of such common indicator species as *Saxifraga aizoides* (Yellow Saxifrage). Base-rich rills descend the hills and spread out into the flushed grassland that characterises this botanically-rich estate. I followed one such watercourse up the steeper, lower slope of the ridge on the south side of the Allt Feith Lair and, as the slope moderated at about 720m, I noticed that a mire habitat had formed where the rill ahead was dissecting a rather short, open stand of *Carex rostrata* (Bottle Sedge). Here, the changed habitat was typically peppered with yellow flowers: *Scorzoneroides autumnalis* (Autumnal Hawkbit) and, no, surely not, could it really be? *Saxifraga hirculus* (Marsh Saxifrage)! This plant has been on my botanical radar all my life, but I do not think I ever expected to be this lucky!

Once the dancing and shouting were over I realised that I needed to collect some data. All the *Saxifraga* plants were very close to the rill that ran down through the mire, so that the colony was only about 1.5m wide, although the mire itself was wider than this. I counted 142 plants either in flower or bud, extending in patches over a length of 50m. Among the distinctive basal leaves I could see that there were many non-flowering and juvenile shoots as well, although I did not attempt to count them. So, the colony looked in prime condition. The mire was composed of wet, spongy mosses, of which the handful taken for identification proved to contain *Hylocomium splendens*, *Tomentypnum nitens*, *Sphagnum warnstorfii* and *Calliergonella cuspidata*. There was certainly some *Sphagnum* around the edge of the mire, but only scattered plants within the *S. hirculus* colony. I decided later, however, that I would re-visit to do a more thorough survey. Other vascular plants present included *Persicaria vivipara* (Alpine Bistort), *Cerastium fontanum* (Common Mouse-ear), *Festuca rubra* (Red Fescue), *Caltha palustris* (Marsh Marigold), *Epilobium anagallidifolium* (Alpine Willowherb), *Cardamine pratensis* (Cuckooflower) and *Poa humilis* (Spreading Meadow-grass). Remarkably there was an extensive colony of wintergreen plants in the outer edge of the mire. There were no flowers on it but a sample of leaves I collected were kindly confirmed by Fred Rumsey as *Pyrola rotundifolia* (Round-leaved Wintergreen). This is also a rare plant in the area, but colonies in the Fealar gorge downstream (2.8km as the crow flies) have long been known.

On 21st August I returned with Leslie Tucker in order to obtain some more habitat details. This time, with the possibility in mind of finding more plants, we took a route approaching the site along the spring-line contour of the ridge. Thus Les discovered another colony of *Saxifraga hirculus* along a rill some 120m short of the one in which I had originally come upon 'my' colony. This second population was Y-shaped, extending down two rills that joined and continued downhill. The total length of the colony was 85m, mostly intermittent, but very dense in the eastern branch, with <100 seedlings or

juveniles per sq. m. There were only four flowers here and the sward was short. In fact it was hard-grazed along the rill itself, with the flowers being outside that band in a slightly longer sward of 5–10cm. Lower down, there were at least 20 flowers, some of which extended out to one side in a contouring band, and I noticed at least one flowering stem that had been nipped off. Again, there were masses of non-flowering plants, especially within the rill, which was also full of *Epilobium anagallidifolium*, *Caltha palustris* and *Selaginella selaginoides* (Lesser Clubmoss). All of this lay within a *Carex nigra* (Common Sedge) stand, whereas in the original colony the sedge was *C. rostrata*, but the other plants were similar. They included *Persicaria vivipara*, *Parnassia palustris* (Grass-of-Parnassus), a very small form of *Comarum palustre* (Marsh Cinquefoil), *Ranunculus acris* (Meadow Buttercup), *Cerastium fontanum*, *Juncus articulatus* (Jointed Rush) and *Viola palustris* (Marsh Violet). As in the original site, the ground layer was dominated by pleurocarpous mosses, with some *Sphagnum* species, principally *S. warnstorfii*, *S. angustifolium* and *S. teres*. Again, the main species were *Hylocomium splendens*, *Calliergonella cuspidata*, *Tomentypnum nitens* and *Rhytidiadelphus squarrosus*, but there were also *Straminergon stramineum, Climacium dendroides*, *Philonotis fontana*, *Aulacomnium palustre*, some *Cratoneuron filicinum*, and small amounts of *Plagiomnium* species and the liverwort *Tritomaria quinquedentata*, among others.

We then moved along the ridge to the original site, where there were still well over 100 flowers, mostly single, but in a few cases two or even three in a head. Presumably some I had seen on the first visit had now fallen and were setting seed. The colony was a bit wider than I had previously considered, being maybe <5m wide but more scattered towards the periphery. Some more moss samples were taken, which, on inspection, proved to be more or less the same as those already listed. We noted that the *Pyrola rotundifolia* colony did indeed spread into the *Saxifraga* population, and, even more surprising, we found a prostrate plant of *Salix myrsinites* (Whortle-leaved Willow), spreading over about 4m × 3m. Just downhill were two more prostrate patches, but these were outside the saxifrage colony.

On 2nd October, I returned with Dr Aline Finger from the Royal Botanic Garden Edinburgh, who is carrying out a genetic study of the Scottish colonies. Leaf samples were taken but the flowers had all gone by then and it was very difficult to locate sufficient fruits among the dying vegetation, so the secondary objective of collecting seed for the Millennium seedbank was not met.

The vegetation communities in which the saxifrage grows fit remarkably well with M8 *Carex rostrata – Sphagnum warnstorfii* mire, although most of the dominant moss blanket comprises pleurocarpous species rather than *Sphagnum.* All 13 of the published constant species are present. This type of mire, rather local in its distribution, is "strictly confined to raw peat soils in waterlogged hollows in the montane zone of Britain where there is moderate base-enrichment by drainage from calcareous rocks" (Rodwell, 1991). These particular *Carex rostrata* and *C. nigra* stands lie at the lower edge of a peat cap covering the shoulder of a broad-backed, gently-rounded ridge, which rises to 818m about 1km further east, although no further colonies were found in that direction.

Having studied the published and some unpublished accounts of all the British sites, I believe it is possible to describe a typical site, which may be useful when searching for new colonies, more particularly in Scotland: a calcareous, or slightly calcareous, spring arises in peatland generally manifested as blanket bog. The mossy spring-head community and the spongy mire directly below it stand out visually among the rather homogeneous communities all around, be they heath and bog or damp grassland. As the rill resulting from this spring trickles through the bryophyte based mire down a comparatively shallow slope the colony of the saxifrage find its ideal conditions, but as the slope steepens and the rill becomes a burn the required conditions are no longer met and the colony comes to an end.

The spring-head communities are referred to either M32 *Philonotis fontana – Saxifraga stellaris* spring, as at Cabrach (Welch, 1996), or as M38 *Cratoneuron commutatum – Carex nigra* springs, as in all of the Pentlands colonies (Sydes & Gaywood, 1994; Kelly, 1999, unpubl.), and the North Pennines (Robinson, 2012). Most of the latter have recently been found to show some affinity with M37 *Palustriella commutata – Festuca rubra* spring (J.O'Reilly pers. comm.). The mires immediately below or around these spring head communities are, almost without exception, referred to M9 *Carex rostrata – Calliergonella cuspidata* mire, although *Carex rostrata* may be replaced by *Carex nigra,* as in the Silverford flush in Aberdeenshire (Welch, 1996), one of the two Fealar flushes and several of the North Pennine flushes, where M9 is only a poor match (J.O'Reilly pers comm.).

Grazing in the area is mostly by large numbers of Red Deer and also to some extent by sheep. Clearly the level of grazing pressure is crucial: both under- and over-grazing could be very detrimental, so a moderate level is required. Linda Robinson (2002) described how an experimental stock exclosure on 'Johnny's Flush' in Moor House NNR produced a mass of vegetation that overwhelmed the saxifrage in only three years. Olde Venterink & Vittoz (2008) found that the last remaining fen in Switzerland with *Saxifraga hirculus* is nitrogen-limited and concluded that nitrogen removal through grazing or cutting is required for maintenance of the colony. At the time of my three visits, the grazing pressure appeared to be just about right. There was no bare ground for seeds to germinate on, but they appeared to be able to germinate in the moss carpet. If this became too thick, however, the developing roots might never be able to reach into the substrate. No deer or sheep were seen in the immediate area during my visits, but their attendance depends very much upon seasonality.

The discovery of the Fealar site, following Andy Amphlett and Adam Fraser's reporting of a new population on Aberarder Estate in the northern Monadhliaths in 2014, brings the number of metapopulations in Scotland to five, excluding the re-introduction site at Towie in Aberdeenshire, and is the first within the Cairngorms National Park. The largest metapopulation of the plant in the UK remains the northern Pennines. Although many of these were found adventitiously, further searching in August where the distinctive habitat I have reviewed is recognised could rationally bring new colonies to light. The basic requirement of slightly calcareous springs on shallow peat-covered slopes with a moderate amount of grazing is certainly limiting to some extent, but it still leaves plenty of scope in the northern part of my vice-county. Cool, damp, north-facing slopes will be a good starting point.

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I thank Les Tucker for his help in the field and for greatly improving this account. I should also particularly like to thank Iain Macdonald (SNH) for providing much information on other sites and Michael Thornton (SNH) for making available information on the Pentlands site. I am grateful to the following people for providing information: Sandy Payne (Caithness sites), David Welch (Grampian), Adam Fraser (Monadhliaths) and John O'Reilly (Pennines). Davie Black (Plantlife Scotland) and Linda Robinson also responded positively to my requests for information. I am grateful to both Fred Rumsey for confirming the identification of vegetative *Pyrola rotundifolia* and Mark Hill for identifying or confirming the various *Sphagnum* species. The owners of Fealar Estate and the estate staff have always been very helpful and interested over the years.

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My *Atriplex* ×*hulmeana* record new for Co. Cork turned out to have been found at the same site 35 years earlier

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As part of my recording for Atlas 2020 in Co. Cork in 2016, with a grant from The Wild Flower Society, I had a day along the south coast of East Cork (v.c.**H5**) to record *Atriplex* (orache) species and their hybrids.

Using the '*Wildflowers of Cork City and County'* (O'Mahony 2009) to give me some idea of where to explore, I headed for Ardnahinch Beach (W9866) in search of *Atriplex littoralis* (Grass-leaved Orache), which Tony O'Mahony had found. An article by Tony '*Recent records for rare Cork plants*' (O'Mahony, 1985) quotes (p. 29): "*Atriplex littoralis*: H5, W96. Common on the banks of the saltmarsh channels at Ardnahinch, Ballycotton Bay and frequent on the beach westwards to Ballycotton Village, July 1981-1984. Grass-leaved Orache has not been seen for many years in its very few other Mid Cork and East Cork stations. A rare and very local species on the Irish coast".

I found *Atriplex* plants at Ardnahinch Beach, Ballycotton Bay (W985657), with narrow parallel-sided leaves with many lobes (see inside front cover). It was clear that these were the hybrid between *A. littoralis* and *Atriplex prostrata* (Spear-leaved Orache) = *Atriplex* ×*hulmeana*. I had a new hybrid for Co. Cork, as it was not recorded in the '*Hybrid flora of the British Isles*' (Stace, Preston & Pearman, 2015) for Ireland. *Atriplex* ×*hulmeana* grew along the top of the strandline and scattered over the dunes. Strangely enough, as hard as I searched I could not find any *A. littoralis*.

While importing Finbarr Wallace's records into MapMate, I noticed that he had recorded *A. littoralis* from the same location in 2013. His data included a link to photos he had taken. Out of curiosity, I clicked on the link to see if my hunch would be correct that he had beaten me to the first record for Co. Cork. He had! All his pictures showed plants with nice lobed leaves (see inside front cover).

I visited the herbarium at the National Botanic Gardens (**DBN**), Glasnevin, Dublin in November to see if they had any specimens of *A. littoralis* from Ardnahinch Beach. There was just the one herbarium sheet, mounted by Tony O'Mahony. The specimen had been collected on 21st July 1981. It also was clearly *A.* ×*hulmeana*. Tony had beaten me to the first Co. Cork record by 35 years.

Acknowledgement:
I would like to thank John Akeroyd, BSBI *Atriplex* referee, for confirming my plants, Sylvia Reynolds for helping with the literature information and Tony O'Mahony for his help on information relating to the hybrid in literature.

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Saltmarsh Goosefoot *Chenopodium chenopodioides*: new for West Norfolk (v.c.28)?

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I think that goosefoots *Chenopodium* spp. get a bad press. True, they do not have particularly attractive flowers and Fat-hen *C. album,* one the commonest weeds of recently disturbed ground on richer soils, barely gets a nod from most botanists. But almost all the other species have a tale to tell. Some may mark out particular conditions (how does Red Goosefoot *C. rubrum* get to all those manure heaps?). Others are scarce and local, or even rare, relicts of a less sanitised countryside. I suppose it does not help that they can be difficult to identify, and are sometimes poorly illustrated. But, just *because* they are obscure and easily overlooked, they are a group that I pay attention to. There is always the chance of finding something interesting, even in supposedly well-botanised locations.

On 9th September 2013, I was exploring Snettisham Coast Park in West Norfolk (v.c.**28**). Lying on the eastern shore of The Wash, this is an area of rough grassland, scrub and reed-fringed creeks (mostly the relicts of pre-drainage saltmarsh gutters), bounded to seaward by a sand and shingle ridge and on the inland side by a high, grass-covered sea wall. Following a rather narrow ditch leading west-south-west from a wet, reed-fringed fleet, I came across a few plants of a goosefoot that I recognised as something a little different. Continuing onwards for around 50m, the ditch opened out into a shallow pan that clearly held water at least some of the time, but was now dry (TF65503502). This pan was coloured purple by the goosefoot. I later estimated that there were around 5,000 plants (see inside front cover). Their appearance was quite distinctive: they were prostrate and the leaves were very fleshy and variably tinged purple, especially towards the margins, being otherwise rather dark green, and more-or-less untoothed or with an angle near the base, on one or both sides. The stems and the florets were dark purple. I could only think that this was Saltmarsh Goosefoot but, as that species was not supposed to occur in Norfolk, I was stumped. I collected a couple of examples and took them home for a more careful examination.

Under a 20× dissecting microscope I could see that in each cluster of flowers the outer, lateral florets were heart-shaped, but slightly taller than broad (*i.e.* elongated upwards). These outer florets were more-or-less entirely covered by three tepals, which formed a complete covering that was open only at the very top and which came away cleanly when ruptured to leave the nutlet clean. The inner florets in each flower cluster had 4-5 free tepals and were often sterile, without a nutlet. If present, the nutlet had a clinging membranous cover. The nutlets were dark, plain chocolate brown and ovoid, with the radicle pointing downwards, 0.6-0.75mm wide × 0.85-0.95mm tall. These details confirmed that the plants were indeed Saltmarsh Goosefoot, and this was later confirmed by the referee, Dr John Akeroyd. There were a few plants of the prostrate form of Red Goosefoot *C. rubrum* at the same site. In comparison, they appeared reddish-purple rather than the dull purple of Saltmarsh Goosefoot, and their outer florets had three obviously free tepals. The nutlets within were pale, milk chocolate brown and had a membranous inner covering (*i.e.* as the inner florets of both species).

Saltmarsh Goosefoot was not on my radar, because the 1999 *Flora of Norfolk* merely noted (under the English name Many-spiked Goosefoot): "A former native, known in the 19th century from east Norfolk". Looking further into the records, Trimmer (1866) states (under *C. botryoides*): "Rare. Growing intermixed with *C. olidum* [Stinking Goosefoot] on waste ground under the Old Barracks, and on the banks of the river near where the whalebones stood, Yarmouth. Runham. Marsh ditches and waste places about

Yarmouth; B. G. [??] Near the Yarmouth Railway Station; Sk [= E. Skipper]". The 1885 *Supplement* to Trimmer's flora adds Bacton, 1870; Halvergate, 1872; Reedham, 1877; Haddiscoe, 1880 and Winterton, 1881. All these localities are in East Norfolk and Saltmarsh Goosefoot was clearly widespread on the east coast of Norfolk in the late 19th century. It then vanished. Nicholson's 1911 *Flora* could not add any records (although he notes that the record from 'near Yarmouth' in 1811, published in *English Botany*, was the first for Britain. The plant was apparently found by the "accurate Mr. Wigg"). The 1968 *Flora of Norfolk* merely listed it as 'extinct' in the county.

I discussed my find with members of the Norfolk Flora Group, as a result of which Bob Leaney kindly examined the *Chenopodium* files in the Norwich Castle Museum. He found five sheets for Norfolk, representing four populations. Two, collected by F. Long from 'coast sands' at Wells, were dated 1884, with another sheet from Wells in the collection of H.G. Geldart and dated 1887. On the basis of leaf shape, Bob is not convinced that any of these are Saltmarsh Goosefoot, but are rather *C. rubrum*. Another, again from Wells, dated 1892 and in the Geldart collection, is probably *chenopodioides*, based on leaf shape, and if so would be the first record for West Norfolk. Finally, a sheet from Cley (East Norfolk), also in the Geldart collection and also dated 1892, is the most convincing *chenopodioides.* The mystery is that these latter two records, documented by specimens and originating with H.G. Geldart, "one of the outstanding botanists in Norwich and Norfolk in the latter half of the 19th century" (Beckett *et. al.*, 1999*),* were overlooked by later authors. Perhaps they were not convinced? Nicholson (1914) lists *C. rubrum pseudo-botryoides* from Wells and attributes this to H.D. Geldart. This may or may not refer to the records listed above.

As a postscript, and probably explaining how Saltmarsh Goosefoot can easily be overlooked, I re-visited the site on 27th September 2015. The pan that held the bulk of the population in 2013 was full of water following recent heavy rain, and after a careful search I could find only around a dozen plants scattered around the end, with no others nearby (although I did find a few more plants around 800m to the south-west, in a narrow, trampled entrance to a dried up flush in a reedbed at TF65193417). I visited again on 9th October 2016. The main pan was again full of water, and this time I could not find any plants, but Bob Leaney and Jo Parmenter did find a few a little to the south.

I think that it is easy to understand how Saltmarsh Goosefoot can be overlooked. It flowers late in the season and, as a plant of muddy edges, I would guess that a rather precise amount and pattern of rainfall is required; too much and the shallow pans flood all summer, preventing germination; too little and the pans may be dry or have plenty of muddy edges, but newly germinated seedlings can then easily die. I was lucky.

Acknowledgements:
My thanks to Dr John Akeroyd for confirming the identification and to Bob Leaney for useful discussion and expert examination of the herbarium sheets in Norwich.

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Floras of Hawick's road and rail networks compared

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Background

A 2015 survey of a twenty-mile stretch of the line of old railway near Hawick in Roxburghshire (v.c.80) had demonstrated that a botanically species-rich habitat corridor survived down almost the whole length surveyed. It had in fact become more species-rich than when it was surveyed in 1975, with 499 taxa recorded. This raised the possibility that a comparable corridor might have developed down the A7 trunk road near Hawick, especially as so much of it had been subject to road re-alignment projects that had left a legacy of broad verges, cuttings and embankments. If the corridors were found to be comparable they would provide an opportunity to compare habitats that had evolved over very different time spans, since 1862 for the old railway and since the 1970s and 1980s in the case of the A7. The 2016 survey of the A7 from Mosspaul to Selkirk (v.cc.**79**, **80**) has indeed found habitats that are comparable with those on the old railway and just as species-rich, with 503 taxa recorded.

Summary report (see below for availability of full report)

Both the old railway and the A7 provide notable 'wildlife corridors'. The principal habitats along the old railway are grassland and scrub, which are only modestly interrupted at the town of Hawick and by a few arable fields. Some stretches are grazed. Wetland is only occasional, while moorland is so poorly represented as to be little more than a variant of grassland and scrub. Burnsides and riverside are only represented by fragments. The habitat representation along the A7 is similar, again with the emphasis on grassland and scrub, although small woodland plantings are more frequent than extensive scrub. There is some mature woodland. Wetland as such is more or less absent, although wet grassland supports some wetland species. The southern half of the A7 survey area includes frequent burnside and riverside strips sandwiched between road and water, especially along the River Teviot. The wildlife value of the narrow riverside strips is high and is enhanced by the degree of protection that the road provides from agricultural fertiliser runoff.

The value of the grassland and scrub habitat on both the old railway and the A7 is much enhanced by the frequent cuttings and embankments, although these are more pronounced on the old railway, and this is where species-diversity is at its highest. The grassland species other than coarse grasses are favoured by the shallow soils that are the norm in the cuttings and by the nutrient-poor nature of many of the embankments. These soils may be base-rich where the exposure of the underlying Silurian rocks is favourable.

Species that may be pointed out as the highlights of the grassland include first and foremost the orchids. In the context of the Scottish Borders the abundance of orchids is exceptional. *Dactylorhiza fuchsii* (Common Spotted-orchid) is the most abundant species on both the old railway and the A7, *Neottia ovata* (Common Twayblade) is also very well represented. *Gymnadenia conopsea* (Chalk Fragrant-orchid) is another feature of the old railway, but not the A7, while *Dactylorhiza purpurella* (Northern Marsh-orchid) is more a feature of the A7. Both the old railway and the A7 have fine populations of *Geranium sylvaticum* (Wood Crane's-bill) and *Cirsium heterophyllum* (Melancholy Thistle) in the wetter grassland, with *Alchemilla* spp. (lady's-mantles), *Leontodon hispidus* (Rough Hawkbit), *Leucanthemum vulgare* (Oxeye Daisy), *Rhinanthus minor* (Yellow-rattle) and *Trifolium medium* (Zigzag Clover) accompanying the orchids in the drier grassland. *Rosa* spp. (roses) are plentiful in much of the scrub on the old railway, with *Rosa rubiginosa* (Sweet briar) a feature in several places. Roses are less plentiful by the A7.

Natural dispersal, aided only to a modest extent by the sowing of wildflower seed mixtures, has enabled the grassland habitats of

the A7 to achieve a species diversity similar to those on the old railway, despite the more modest time-scale since establishment.

Patch-forming species preferentially colonising the A7 include *Petasites hybridus* (Butterbur), *Phalaris arundinacea* (Reed Canary-grass) and *Symphytum tuberosum* (Tuberous Comfrey). Their dispersal away from their more typical riverside habitats is related, at least in part, to the transport of soil during road re-alignments. Other species preferentially colonising roadside habitats include *Geranium pratense* (Meadow Crane's-bill) and *Meconopsis cambrica* (Welsh Poppy).

Both the old railway and the A7 offer some specialised habitats. Such features along the old railway are the ballast of the old track (now much quarried) as a habitat for ruderal species, and narrow rock cuttings and bridges as a habitat for ferns. In contrast the specialism of the A7 is the salt-spray zone colonised by halophytes.

Halophytes occupying the strip most subject to salt-spray include the ubiquitous *Spergularia marina* (Lesser Sea-spurrey) and *Puccinellia distans* (Reflexed Saltmarsh-grass), now being joined increasingly by *Cochlearia danica* (Danish Scurvygrass) and *Sagina maritima* (Sea Pearlwort). The survey discovered a maritime ecotype of *Elytrigia repens* (Common Couch) throughout the survey area, while in a strip a little further from the tarmac the roles of *Agrostis stolonifera* (Creeping Bent), *Potentilla anserina* (Silverweed) and *Scorzoneroides autumnalis* (Autumn Hawkbit) were highlighted. These halophyte communities have strong affinities with two NVC maritime communities: SM23 *Spergularia marina-Puccinellia distans* salt-marsh community, backed by SM28 *Elytrigia repens* salt-marsh community. The affinity with SM28 seems to have been little remarked on.

Both surveys have illustrated the frequency with which garden plants have spread to the countryside, whether by the deliberate dumping of plants that then naturalise or by seed. The seed may be bird-sown or wind-sown or unintentionally transported by man, directly on clothing or indirectly on vehicles. Ignoring the species that are mainly spread by river systems, the species that have been spreading more widely include *Alchemilla mollis* (Garden Lady's-mantle), *Claytonia sibirica* (Pink Purslane), *Doronicum pardalianches* (Leopard's-bane), *Hyacinthoides ×massartiana* (Hybrid Bluebell) and *Pilosella aurantiaca* (Fox-and-cubs).

There is little amenity tree planting along the old railway, while in contrast such planting is frequent by the A7. The species planted often include *Acer campestre* (Field Maple), not native in the Scottish Borders, *Betula pendula* (Silver Birch), much more local as a native than *B. pubescens* (Downy Birch), and *Viburnum opulus* (Guelder-rose), a rare native in this area.

A maritime ecotype of *Elytrigia repens* (Common Couch)

I first noted *Elytrigia repens* in the halophyte zone in 1997, at 360m on the A68 near Soutra in Berwickshire (v.c.**81**), at NT4757. There and on the A7 it is present as a distinctive low-growing, glaucous plant with relatively narrow, flat leaves and sparse flowering stems, which may be geniculate. It forms modest patches in the halophyte zone and especially in the 'herbicide strip', where its rhizomes progress poorly in the hard substrate and seldom extend into the wider mown strip Colour Section Plate 2). They do not prosper even where they do extend away from the kerbside. There may or may not be a series of such patches forming an extended strip at the top of the kerb, but such strips do not seem to have been formed by rhizome growth. It appears to be a distinct maritime ecotype that may well have colonised from the coast, where similar ecotypes occur. It does not correspond to the coastal subspecies *Elytrigia repens* ssp. *arenosa,* which has in-rolled leaves. It was found in all the fifteen survey sections on the A7. Its survival as a perennial in a zone that is treated with herbicide may be related to the protection offered by its rhizomes, which are unlikely to be killed off completely. The *Elytrigia* is colonised freely by the Hymenopteran insect *Tetramesa hyalipennis*, which forms cigar-shaped galls on its stems, in which the larva feeds, preventing the stems from forming inflorescences. The galls consist of

layer on layer of very short leaves. Some such galls will undoubtedly be cut off by grass-cutting machinery, which might occasionally help to disperse the insect, but it is doubtful whether they could act as pseudo-plantlets and so disperse the grass.

I have found similar *Elytrigia* plants this autumn, 2016, along a moorland road in South Northumberland (v.c.**67**), also colonised by the Hymenopteran, and on the Solway coast in Kirkcudbrightshire (v.c.**73**), at the back of a beach and in cliff-top grassland. Despite enquiry to adjacent vice-county recorders, I have not located any similar roadside records elsewhere. However Grime *et al.* (1990) state of *Elytrigia repens* that "genotypes exploiting arable land and those tolerant of salt-spray on roadsides appear particularly favoured at present".

Non-native plants included in sown seed mixes

Several of the cuttings that are a feature of the road re-alignments on the A7 have been sown with wild-flower mixes (Colour Section Plate 2). These can often be recognised not only by the presence of species not native or rare in the area, such as *Daucus carota* ssp. *carota* (Wild Carrot), but also by the presence of non-native varieties, especially *Lotus corniculatus* var. *sativus* (Common Bird's-foot-trefoil) and *Trifolium pratense* var. *sativum* (Red Clover). Both these cultivars are more robust and upright in habit than the native forms. The sowings have often, but not always, included *Rhinanthus minor* (Yellow-rattle), which has been successful in restricting the growth of grasses. It is suspected that the *Rhinanthus* sown is of an ecotype favouring drier soils than the native ecotype. Grime *et al.* (1990) states that "the two commonest ecotypes are var. *stenophyllus*, which is found mainly in moist grassland, has a northern bias and var. *minor,* which is associated with drier sites, particularly in the south". *Festuca rubra* (Red Fescue) is present along the A7 in a variety of forms, some probably representing agricultural varieties. These were not investigated.

The utility of detailed reports on surveys like these

The first of my surveys of the old railway, in 1975, was at an early stage in my development as a field botanist. It was helpfully suggested to me as a project by Dr Roderick Corner. The vegetation of each of the 15 survey sections was described in detail and there was an annotated check-list of all the species, with section frequencies. The fact that I had carried the project through in such detail proved invaluable when it came to the re-survey and this encouraged me to be at least as fastidious in the repeat survey of the old railway and in the survey of the A7. In the event I was more fastidious, as a wrist-worn GPS has enabled me to make all records at 6-figure grid reference scale, with 10m detail and other comment for the scarcer plants.

The surveys of the old railway and the A7 are essentially surveys of 'wildlife corridors'. In the much-fragmented landscape of most of lowland Britain such corridors are important refugia for wildlife, and their quality, or lack of it, determines the ability of many species to disperse in this fragmented landscape. They are also where many of the 'dots' on our species-distribution maps originate, so it behoves us to have an understanding of just how precarious the survival of many of the populations has become. Most detailed reports of vegetation relate to wildlife reserves or other areas of particular botanical interest. I suggest that there is also a need for sample surveys of the wider countryside. I hope that my surveys may be seen as a modest contribution in that direction.

The full report

The very detailed survey report, illustrated in colour, is available as a PDF on the BSBI website under Roxburghshire and as a printed booklet, free of charge, by application to the author by email.

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Crassula tillaea (Mossy Stonecrop) turns up in Co. Wexford (v.c.H12)

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The *New atlas of the British & Irish flora* (Preston *et al*., 2002), which included records up to the end of 1999, only has one hectad for Mossy Stonecrop in both Ireland & Wales and three hectads for Scotland, where it is believed to be an introduced species. It is only accepted as a native species in southern England and the Channel Islands.

Sixteen years later, Mossy Stonecrop has spread extensively in Scotland and is now known from 53 hectads. In Wales, it has been found in an additional seven hectads and in one more hectad in Ireland. Even though still confined to southern England, Mossy Stonecrop has expanded its range in many areas.

In Ireland, the first record was made by the late David McClintock in 1991, on paths between Slieve Donard Hotel, Newcastle, and the sea. In 2005 it was found by Graham Day at Murlough. Both these records are in Co. Down and in adjoining hectads.

While waiting for the ferry at Fishguard Ferry Port, Pembrokeshire in 2015, I noticed for the first time that Mossy Stonecrop was abundant between the cracks of the stones used for the car park. Since then, I have been expecting to find the stonecrop at Rosslare Harbour Ferry Port, as several other aliens have turned up at Fishguard, and then, within a couple of years, eventually arrive at Rosslare Harbour. Even though I have searched around Rosslare Harbour I have not been able to find any Mossy Stonecrop yet.

On 14th May 2016, I was recording at Rosslare, which is 5km north-west of Rosslare Harbour. There, I found the Mossy Stonecrop to be scattered along a 30m warn, bare path next to the road. Later the same day, I was checking out some of the rare clovers at Rosslare (Colour Section Plate 3) and, yet again, here was the stonecrop. This time it was abundant along the well-trodden path next to the bowling green and scattered along the margin of the running track.

Two days later, I was driving through the village of Lady's Island, 4km SW of Rosslare Harbour, and there, on the gravel of a lay-by, was a large patch of the red Mossy Stonecrop. As I drove past a pub at Ballysheen, 1km further south of Lady's Island, there it was again, this striking red carpeting the pub car park.

My theory is that the seeds of Mossy Stonecrop come in either on the tyres of vehicles or on the shoes of people, or in the fur of dogs, and then fall off at some stage shortly after their arrival on the ferry from Fishguard or even on the ferries from France.

My four sites in Co. Wexford are a considerable extension of the range for the Mossy Stonecrop and bring the total number of hectads for Ireland up to four. Mossy Stonecrop could soon be a common plant in Co. Wexford, as there are many suitable habitats for it.

Acknowledgements:
I would like to thank Sally Whyman of the National Museum Wales for providing information on Irish specimens and Graham Day for information on Mossy Stonecrop in Co. Down.

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The 'Abergele' sedge – a re-determination

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On 8th June 2011 Peter Llewellyn led a Wild Flower Society field meeting in North Wales, finishing the first day at Pensarn Beach at Abergele, Denbighshire (v.c.**50**) (Cox, 2011). Although not mentioned in the meeting report, at the end of the day one of the group spotted a densely tussock-forming sedge on the sea embankment adjacent to the car park. No one was able to offer an identification. Its flowering spikes appeared sterile, with undeveloped utricles.

Subsequently, the sedge was determined as the rare hybrid *Carex* ×*ludibunda* J.Gray = *C. paniculata* L. × *C. canescens* L., and the record was published in Stace, Preston & Pearman (2015), where it states: "The latest record is from an anomalous habitat, the rear of the dry, sloping sea-wall at Abergele, Denbighshire, in 2011". The hybrid is described in Jermy *et al*. (2007) as having a tussocky habit and differing from both parents in its often shrivelled and empty utricles.

In June 2013 the author was made aware of the plant by Peter Llewellyn. At the time the sedge plant comprised a dense tussock approximately 20cm in diameter at its base, with poorly developed flowering spikes within the dense mass of leaves. In all other respects the plant looked healthy and a putative parentage involving *Carex paniculata* appeared obvious (Fig. 1, Colour Section Plate 3). However, a hybrid involving two wetland species, usually associated with different mire communities, occurring on a dry, south-facing, artificial sea defence embankment was something of an ecological inconsistency for the author. He found it difficult to comprehend how these two species had managed to hybridise and their progeny reach such a seemingly unlikely habitat.

On 2ndJune 2015, PL and the author again visited the site and the latter collected a shoot with a small piece of rhizome for cultivation. This took readily in John Innes compost and grew well. By late summer it had produced further flower spikes, which by autumn had developed mature and full utricles. This immediately caused doubt over the accepted determination. The spike appeared to have a close affinity with the *Carex divulsa* group and material was sent to Mike Porter for his opinion.

It was agreed that the late season growth may be atypical and it was decided to wait to make a further determination the following year. By late June 2016 the correct determination was becoming obvious (Fig. 2, Colour Section Plate 3), this being confirmed by Mike Porter on 26th July as *Carex muricata* L. ssp. *pairae* (F.W. Schultz).

It is apparent that the plant's failure at Abergele (*in situ*) to develop mature fruit, giving the appearance of a hybrid with empty utricles, led to the initial determination. It is postulated that the dry, salty environment, coupled with the free-draining sand in which it grows, are the cause of the false impression of infertility.

Acknowledgements:
I would like to thank both Mike Porter and Michael Foley for their assistance and support in my investigation and to Peter Llewellyn for initially showing me the plant and his permission to use his image.

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of the site. Then it would be helpful to explain how to use the site. Finally, you may wish to list links to other websites with related information.

Images in pasted material do not insert with it automatically. They have to be inserted separately from the original file for each image – as does addition of new images. In 'Edit page', click where you want to insert one, then click the 'Insert' menu and then 'Image'. You get a box in which you choose 'Upload images', then navigate to the image on your computer, highlight it and click 'Open'. A moving blue band shows that it is uploading and when it is finished, 'OK' will change from faint to dark. Click 'OK', and the image appears on the page. You can upload a number of images at the same time, but only one can be transferred to the page at once. In the 'Upload images' box, where you clicked 'OK', you will see all the images you uploaded. Click on one to highlight it, then 'OK' and the image appears in the text.

Once the image is on the site page, a toolbar above or below it gives you the option to have it 'Small', 'Medium' or 'Large'. I chose 'Medium'. If any of these sizes is still too large for the site, you may have to re-size it before you insert it. You can do this in a photo editing programme, but hopefully it will not be necessary. You can have pictures side by side if you wish, provided there is room. It is best to insert them one under the other to start with and then move them. You just type a space or two after the first one then drag the other beside it. It goes disconcertingly blue, but is restored to a proper picture as soon as you click off it.

It is important not to be discouraged when things go wrong. On one day, I had two problems interfere with uploading images. There was a server error, which prevented it, and then there was a claim that an image could not be uploaded because it was not a JPEG, when it was. The next day, the same images uploaded without difficulty. On another occasion text would not edit. I then copied the wrong item and pasted it into a Word document, corrected it there and copied and pasted it back into the site. Tables in pasted material insert with it automatically, but you can also create a new one through the 'Insert' menu.

The menus at the top of 'Edit page' can be disregarded. However, if you venture into the 'Format' menu, do not be mis-led by the 'Header' options. They have nothing to do with the header, but refer to headings in the 'Content' box, which you can format as you type without using the 'Format' menu.

When you have completed your Home page, click 'Save' at the top right. You then get the page on the screen. It can be edited at any time through 'Edit page'. The Home page of the dry stone walls site is shown as an example of a site that is easy to build and easy to use (pp. 28-29).

How to do it – creating additional pages and linking them

With your Home page established, the subject material of the site can then be entered on a series of further pages, each named to indicate the material it contains. To create a new page, look for the icon to the left of 'Edit page', which has a cross and a triangle in it. Click this, insert a name for the page, and choose 'Web page' as your template. Then click on 'Choose another location' and select the name of the site. Then click 'Create', which returns you to the Home page, with the name of your new page entered on the left. Click on this to get back to your new page, click 'Edit page' and build the page in the same way as for the Home page. Click 'Save' when satisfied and the page appears. You can return to the Home page by clicking its name on the left.

You may wish to insert links to external sources or from one part of your site to another. In 'Edit page', highlight the text you want to make into a link, then click 'Insert' and then 'Link'. A box appears with a list of the pages on your site and you just click the one you want, then 'OK'. There is also a 'Web address' tab, which you can click to enter the web address of an external site to create a link to that.

Operating the site

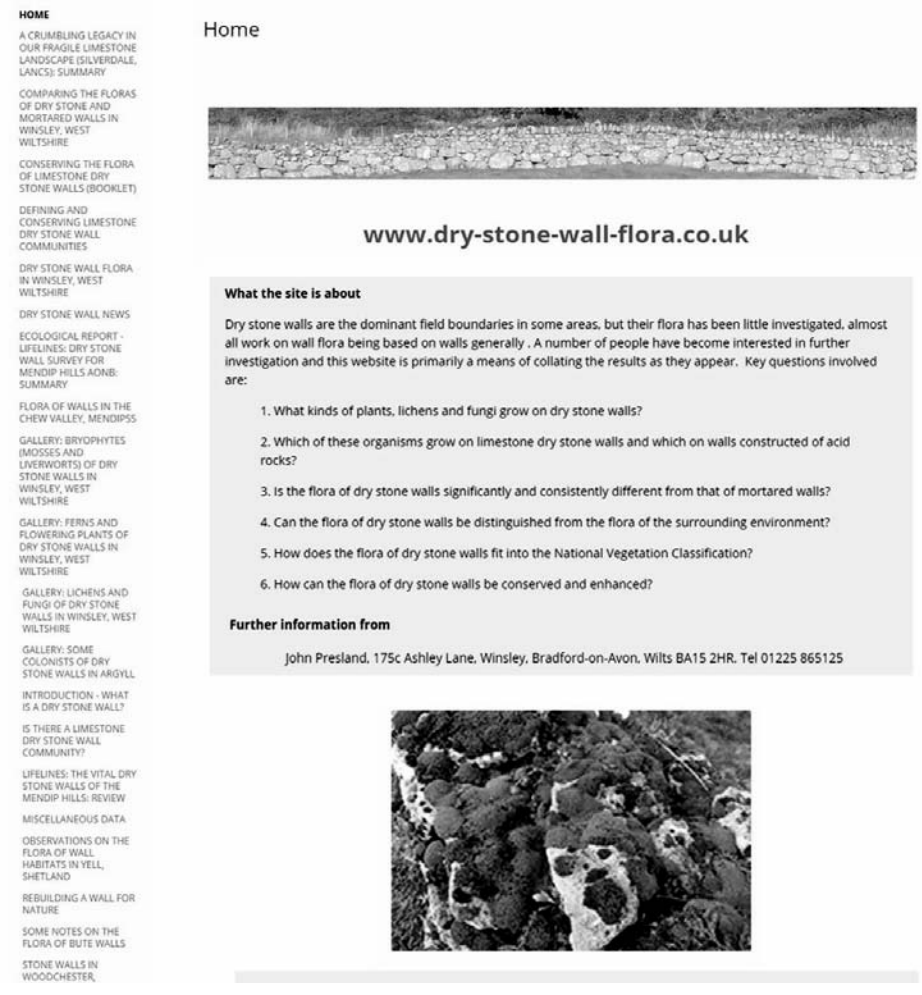
Once your site is set up, it is operated as follows:

In your Internet browser, type in the address of your site and click as normal for opening web sites. You can also add it to your Favourites bar, so that you can open it just by clicking it. You do this by clicking the star at the right end of the Browser address bar, clicking 'Edit' in the box that comes up, then 'Save' in the box that follows. Your site will open with the Home page. If necessary, consult the essential information about the site and how to use it, which should be there.

On the left side is a list of all the pages on the site in alphabetical order. Click on any one of these and it opens. The page you have reached also has a list of all pages on the left and you can click whichever one you want next. If you want to edit the page, click 'Edit page'. See above for how to do it. If you want to create a new page, click on the square figure to the right of 'Edit page'. The flower shape next right gives you options to carry out a number of actions - delete the page, print it, change its settings and so on.

The web address for the site is: – https://sites.google.com/site/wwwdrystonewallfloracouk/home

Home Page of Dry stone wall flora website



Using the site

The site is a replacement for the earlier www.dry-stone-wall-flora.co.uk, which lapsed and the web address is used as a name to help locate it online.

All the site pages are listed on the left in alphabetical order. To help find the items you want, use this classified list:

Start with:

- Introduction - What is a dry stone wall?

The project began with John Presland's studies of limestone dry stone walls in and around the parish of Winsley in Wiltshire Pages relating to this are:

- Dry Stone Wall Flora in Winsley, West Wiltshire - John Presland
- Comparing the Floras of Limestone Dry Stone and Mortared Walls in Winsley, West Wiltshire - John Presland
- Is there a limestone dry stone walls community? - John Presland
- Defining and Conserving Limestone Dry Stone Wall Communities - John Presland
- Rebuilding a Wall for Nature - John Presland

For comparison, two pages describe the flora of dry stone walls in Scotland made of acidic rocks:

- The Vascular Flora of Acidic Dry Stone Walls - John Presland
- Trying To Study Bryophytes And Lichens Of Acidic Dry Stone Walls - John Presland -

The other pages describe work on dry stone walls in other parts of the UK:

- Flora of Walls in the Chew Valley, Mendips - R. M. Payne
- Ecological Report - Lifelines Dry Stone Wall Survey for Mendip Hills AONB - Summary by John Presland
- Dry Stone Walls: A Crumbling Legacy in our Fragile Limestone Landscape (Silverdale, Lancs) - Summary by John Presland
- Two Drystone Walls in Lancashire, an Environmental Appraisal - Mick Walsh
- Some Notes on the Flora of Bute Walls - Angus Hannah
- Observations on the Flora of Wall Habitats on Yell, Shetland - Leslie Williams
- Lifelines; The Vital Dry Stone Walls of the Mendip Hills AONB - review by John Presland
- Stone Walls in Woodchester, Gloucestershire - Rachel Hemming
- Miscellaneous data - Published references to dry stone wall flora

Dry Stone Wall News provides extracts from the literature and various general policy documents.

A colourful 12-page booklet is available. This is a valuable guide to conserving the community of plants, lichens and fungi which grow on limestone dry stone walls, and will be useful to anyone involved in professional or volunteer work with these walls.

Gallery pages provide images of many of the plants, lichens and fungi mentioned:

- Lichens and Fungi of limestone dry stone walls In Winsley, West Wiltshire
- Bryophytes of limestone dry stone walls In Winsley, West Wiltshire:
- Ferns and Flowering Plants of limestone dry stone walls In Winsley, West Wiltshire.
- Some colonists of dry stone walls in Argyll

The site map is just a reproduction of the list in the left hand plane and can safely be ignored.

LINKS

Some other sites that may be of interest:

- Dry Stone Walling Association of Great Britain
- Dry Stone Walls in England
- Wikipedia - Dry Stone Walls
- Botanical Society of the British Isles
- British Bryologial Society
- British Lichen Society
- Dry Stone Works - Walling projects in Dumfries and Galloway

Cyperus fuscus (Brown Galingale) re-discovered in Dorset (v.c.9)

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Background

Cyperus fuscus (Brown Galingale) is a very rare native plant of temporary wetlands, where water levels fluctuate and generally dry out during summer and early autumn. It is confined to southern England and historically has been recorded from North Somerset (v.c.**6**) in the west to Surrey (v.c.**21**) in the east, and at present is known from just four vice-counties.

C. fuscus receives full protection under Schedule 8 of the Wildlife and Countryside Act 1981, is a Priority Species under the UK Biodiversity Action Plan and on Section 41 of the NERC Act (2006). In the two most recent Red Lists (Cheffings & Farrell, 2005; Stroh *et al.*, 2014) it is classed as Vulnerable.

History in Dorset and at Bere Regis

Soon after finding *Cyperus fuscus* near Ringwood with R.P. Murray and his brother W.R. Linton, E.F. Linton discovered it at two locations at Bere Regis in August – September 1893. These represented the first Dorset (v.c.**9**) records, and the third and fourth British records, firmly putting the status of *C. fuscus* as a true native British plant beyond any doubt (Linton, 1893). Specimens from Bere Regis are in the Natural History Museum (**BM**) and Dorchester Museum (**DOR**).

The first site at Bere Regis was at "the moor below the Church", which is taken to mean Souls Moor on the south side of the Bere Stream, still a registered common, but equally could be where the cress-beds are now. Until the mid 1990s, it was grazed by several horses and an area adjoining the Bere Stream was open and muddy, looking ideal habitat for *C. fuscus*. The area is now overgrown with tall herb vegetation, owned by Bere Regis Parish Council and being managed for conservation.

The second locality was "a mile or two downstream" and found a fortnight after the first, with three plants found, including "one plant being of unusual size, and bearing, I should say, 20 to 30 stems, each with their cluster of fruit" (Linton, 1894). While the exact locality will never be known, the "mile or two downstream" falls within what is now Bere Stream SSSI, on private land.

For such a rare plant it seems strange that there appears to be no published records from the area since the original ones in 1893. There was one further Dorset record by F.H. Haines from Cowgrove, near Wimborne, in 1929. Suitable habitat remains here by the pond, but several other ponds and ditches on the Common have become overgrown.

Bere Stream

`The Bere Stream is a typical Dorset chalk stream, arising from the chalk at Milton Abbas and converging with the River Piddle at Hyde, three miles downstream from Bere Regis. It is viewed as one of the best remaining examples of a chalk stream in Britain by the Environment Agency. The Bere Stream SSSI was notified for the flora and fauna of the stream, as well as the adjoining vegetation types, which include several unusual types, due to the chalk water running through an otherwise acid geology of the Poole Formation. The adjacent fields were once managed as water meadows or pasture, and are at present grazed by a beef suckler herd. They include examples of M23 *Juncus effusus/acutiflorus – Galium palustre* rush-pasture, M24 *Molinia caerulea – Cirsium dissectum* fen-meadow and S3 *Carex paniculata* fen, with secondary stands of W5a *Alnus glutinosa – Carex paniculata* woodland, *Chrysosplenium oppositifolium* sub-community on old meadows.

In April 2015, as part of management of the SSSI, Alders were cleared from two areas adjacent to the Bere Stream, including a small stand next to the backwater. The cut material was removed by driving a tractor up the old

track and picking it up with the grab. This process would have disturbed the seedbank to a deeper level than any disturbance by grazing animals. The spring and summer of 2015 in this part of Dorset were generally dry and the water levels in the Bere Stream were low for several months. In August 2015 the area was visited to monitor the vegetation in the cleared area. It was immediately clear that some species had responded well and there were several large patches of *Bidens cernua* (Nodding Bur-marigold), a local species in Dorset now, owing to its habitat having become overgrown. While looking at the *Bidens*, a large plant of *C. fuscus* was noted. A wider search found 48 plants, mostly very small, over an area of approximately 10 × 5m, most in recently exposed mud on slightly higher ground on the edge of the track (Colour Section Plate 4). A few days following the discovery we had heavy rainfall and many plants were submerged for several days. Water levels were even lower in late summer 2016 and 75 plants were found over an area of 12 × 5m.

In other sites, *C. fuscus* is associated with open plant communities that fall within the NVC communities OV28 to OV31 (Jermy *et al.*, 2007). The associated species here (Table 1) are less tolerant of nutrient-rich conditions, reflecting the acid soils, and the water-margin vegetation is best placed within the S23 Other water margin vegetation (Rodwell, 1994), which is a catch-all community that needs further sampling to define particular associations.

Table 1. Plants associated with *Cyperus fuscus* at Bere Stream.

Species	Quadrat 1 (1 ´ 1m)	Quadrat 2 (1 ´ 2m)
Glyceria fluitans	5	4
Ranunculus hederaceus	4	3
Juncus bufonius	4	4
Apium nodiflorum	4	2
Cyperus fuscus	3	3
Bidens cernua	2	3
Veronica anagallis-aquatica	2	2
Persicaria hydropiper	2	3
Stellaria alsine	2	2
Nasturtium officinale	2	2
Epilobium hirsutum	1	2
Callitriche agg.	3	0
Carex acutiformis	0	1
Bare mud	60%	75%

The site differs from all the other extant sites for *C. fuscus* in that it is adjacent to flowing water. Branching from the stream, adjacent to the old water meadow sluices, is a small backwater, which, since the 1940s, was used as a track by my grandfather, taking the cattle to and from the 'Bottom Meadow' for grazing before and after milking. This was undoubtedly the ideal management for *C. fuscus*, keeping the vegetation open and seedbank regularly disturbed. Over the last 25 years it has not been used so regularly and secondary

Alder woodland has developed along one edge. The area is frequently inundated when water levels in the stream rise, but disturbance of the seedbank has been very intermittent and may account for the apparent absence of *C. fuscus*, which was looked for by Rosemary FizGerald and David Pearman in 1988 during a NCC survey of rare plants in south-west England and several times since (Pearman, 1994). An interesting footnote to the NCC report (FitzGerald, 1990) reads as follows:

> "*C. fuscus* and other rare species of exposed muds need thoroughly poached ground in really open areas. At present, rank and invasive species are dominant at the water's edge and almost no clear ground was seen. Heavier grazing pressure might also discourage the rushes and add to the general suitability of the site for interesting plants. *C. fuscus* is thought to have a good seedbank, which remains viable for many years. The lack of records since the turn of the century may well be due to lack of observation rather than the early extinction of the plant. As promising habitat survives, a hot summer, after thorough disturbance and trampling of the damp places by the stream, just could produce the desired miracle. R.F., March 1990."

This rather unexpected discovery shows the tenacity of plants and the value of suitable management. Until around the 1980s the area was not managed for nature conservation but was part of a traditional small dairy farm and the simple act of driving the cattle up and down the wet track would have been ideal for *C. fuscus* and other mud-loving plants such as *Persicaria mitis* (Tasteless Water-pepper). When the site was notified as an SSSI the advice was to limit the grazing in the pastures along the track. This led to the area becoming overgrown by coarser vegetation, eventually leading to the invasion by willows and Alder, and may account the apparent absence of the plant during the surveys of the late 1980s and early 1990s. In these more enlightened times, grazing is seen as crucial to many wetland habitats, but it will take a lot of management (and money) to get them back into condition.

This discovery is important not just in a local context, as, apart from Breamore Marsh, *C. fuscus* is not doing particularly well in its other British sites.

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Keeping the wild in wild flowers? – further comment

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I was pleased to read the note by Kevin Walker in *BSBI News*, **133**, in which he discusses the BSBI perspective on the use of seed of native species to create and restore plant communities in the wild. He presents a very balanced and well-reasoned account, building on the sound guidance provided by Flora Locale (2016) and Plantlife (2016). To this I would like to add further comment, from the perspective of a farmer, and as a grower of native seeds (Wildseed, 2016).

To seed or not to seed?

Our native flora has changed over time due to factors acting on species loss, gain and adaptation. Over the last 100 years there has been net loss of native species diversity as the landscape has changed from one dominated by species-rich agricultural grasslands and arable to a landscape now dominated by species-poor grasslands and arable. Species richness is now largely confined to non-intensive managed grasslands on poor land and around infrastructure, such as motorways. The principal cause of change has been agricultural intensification and built development. The policy response has been to strengthen the network of protected areas, and elsewhere, to create and restore species rich grasslands. Delivery has been mainly via a succession of agri-environment schemes and planning obligations. The Environmentally Sensitive Areas (ESA) Scheme (from 1987) sought to improve species diversity of grasslands by management alone, and had mixed results. The Countryside Stewardship Scheme (from 1991) supported the use of native seed to create species-rich grassland on former arable land. More recently, Higher Level Stewardship (from 2003) has also supported arable reversion, as well as the sowing of seeds to diversify existing species-poor grassland. These schemes, and the work of individuals and organisations across the British Isles, have contributed to biodiversity (Pywell *et al.,* 2012).

Genetic effects

Genetic robustness is central to the survival and well being of our native plants (Gregory *et al.,* 2006). Populations of species will survive better if they are composed of well-adapted ecotypes that are also sufficiently genetically diverse to be able to evolve in response to environmental change. The main threats to genetic robustness are small population size and restricted gene flow. Three other factors, 'genetic swamping', 'outbreeding depression' and 'invasive aliens', may, or may not, be a threat to wild populations. These factors should not be dismissed, nor seized upon to justifying an extreme precautionary approach to sowing seed.

- 'Genetic swamping' proposes that genes from an introduced population replace genes in an established wild native population by shear force of numbers through introgression. This seems unlikely, as all genes are subject to natural selection in the wild. Unfit genes are at a disadvantage. So-called 'neutral genes' may introgress at random and fit genes are at an advantage, all regardless of the quantity of 'genetic swamping'. For example, unfit genes, such as for red flower colour in *Primula vulgaris* (Primrose) or white flower colour in *Centaurea nigra* (Common Knapweed) do not survive the force of natural selection in the wild, despite repeated opportunities for introgression. 'Genetic swamping' is an interesting concept, but there is little evidence that it occurs in the wild.
- 'Outbreeding depression' proposes that wide crosses between introduced and established populations within species break up adaptive gene clusters, and result in loss of vigour in the established population. However, outbreeding in most species is normal and desirable, generating heterosis. It is the reason wild flowers have flowers. Unfit recombinants (out-breeding depression) arise repeatedly, but these recom-

binants are subject to the force of natural selection and will not survive in the wild. There is little evidence that 'outbreeding depression' operates in the wild.

- 'Invasive aliens'. The threat from invasive aliens is often exaggerated. Our native flora (*c.*1,400 species) is of necessity 'invasive' in the wild in the British Isles, all species having successfully moved north, following the end of the last ice age. Our alien flora (*c.*100,000 species) is almost completely confined to cultivation in domestic and botanic gardens. These alien species, with a few exceptions, are ill-adapted to the British Isles, are not self-sustaining in the wild and are not invasive. They rarely survive outside the confines of botanic or domestic gardens and are largely absent from the wild countryside.

Small population size and restricted gene flow, as a consequence of habitat destruction, remain the major threats to the native flora of the British Isles. It is reasonable to conclude that grassland restoration and creation, using seeds, has not aggravated the loss of native species diversity, but has contributed to reducing it.

Is local always best?

Common garden experiments and reciprocal transplant experiments over many decades have demonstrated home site advantage among ecotypes of many species studied (Bucharova *et al.,* 2016). So local is often better. However, local may be measured as physical distance or ecological distance. Mortimer (2016) found that ecological distance, rather than geographic distance, was the preferred criterion for selecting ecotypes of *Lotus corniculatus* (Bird's-foot-trefoil) for use in grassland restoration. The shorter the ecological distance between the place of wild origin of the seed and the receptor site, the greater will be the match between the traits of the ecotype and the demands of the site. Distinct ecotypes often co-exist side by side. The Park Grass Experiment at Rothamsted, established in 1856, consists of adjacent plots receiving different management treatments. The plant communities in these plots have evolved over time and now adjacent plots support genetically distinct ecotypes of *Anthoxanthum odoratum* (Sweet Vernal-grass) (Silvertown *et al.,* 2006). Similarly, hedgerow and in-field ecotypes of *Centaurea nigra* (Common Knapweed) can exist side by side and exhibit differences in flowering time, leaf shape *etc*. So, it is more important to match the ecology of the donor site and the recipient site, than it is to source material from a geographically local site. In addition, it is important and desirable to use plant material that has the plasticity and genetic variability required to respond to wider conditions and to a changing environment.

Diverse methods and diverse meadows

Wells *et al.* (1981), in setting the standard for grassland creation, stated that the species used should be native, common, widespread and attractive. This has been adhered to since, and those involved in grassland creation and restoration are aware of and respectful of sensitive species and sensitive locations. This has guided the work of restoration. Every project and every site is different, and every meadow created is unique. Below are a few examples of the range of methods used and the diversity of projects undertaken:

'Brush-harvested seed' from a high quality donor site that is well matched with a recipient site can produce species-rich grasslands that, after 10-15 years, cannot be distinguished from the donor site. This method has been widely used on farmland across England funded under Higher Level Stewardship.

'Local seed'. High quality donor sites for brush-harvesting are often not available. An alternative is to collect stock seed of the required native species from nearby wild populations. The stock seed is then bulked up under cultivation and the seed produced sown onto the receptor site. This method was used on the Channel Tunnel approaches, on Baldock bypass, and in other projects.

'Site-specific seed'. Most projects are site-specific and are sown with a tailored seed mixture to suit the conditions and requirements of the site. For example, a floodplain-type seed mixture was sown on arable land in Northamptonshire and, after six years, produced species-rich grassland

with a reasonable fit to MG4. This site is now designated as a Local Wildlife Site (Rothero *et al*., 2016).

'General purpose seed mixtures'. Some sites, due to location, have no or few restrictions on what may be sown other than soil type, and often in these cases a general purpose mixture, based on common and widespread native species, may be appropriate.

Creating or restoring species-rich grasslands usually requires the sowing of seed. Subsequently, natural processes guide the evolution of the grassland towards a stable structure, with no two grasslands being the same at maturity. Smith (2010) suggests that this process may take 6-14 years from the first introduction of seed. The structure of these created grasslands, and the continuity of favourable management, allow other species to establish within them, particularly those with seed capable of long distance dispersal (such as species with dust-like seed). Further, species with restricted seed dispersal, such as *Primula veris* (Cowslip), are able to use restored grasslands as 'stepping stones' for gene flow, linking populations as pollinators forage across the landscape.

How wild is wild?

The degree of wildness is the extent to which natural processes, over time, shape populations, species, communities and landscapes. Of course, meadows are not completely wild, they are the result of the interaction between farming processes, wild plants and natural processes. In this respect, there is no difference when comparing the wildness of a restored meadow with that of an existing species-rich un-improved meadow. Both are created and maintained in good condition by seeding, harrowing, rolling, mowing, grazing *etc*., and both are shaped by the interaction with natural processes. However, wildness, generally, accumulates over time, and an old meadow may be expected to be more 'wild' than a young meadow, all other factors being equal. So, established meadows and restored meadows are both wild, the difference is one of degree.

Conclusion

Destruction of native grasslands in the British Isles is long past the tipping point at which recovery by natural regeneration alone can heal wounds. In today's countryside, natural regeneration has a role confined to restoring small fragments adjacent to species-rich communities from which seed can spread naturally. Elsewhere, on all but the very poorest soils, favourable management alone will not turn semi-improved grassland, or bare soil, into species-rich grassland. This is the lesson learnt from the ESA scheme. On the other hand, the sowing of native seeds, combined with favourable management, will reliably create species-rich grasslands. This is not a surprise to farmers. It has long been common practice to collect hay feeder sweepings to patch up gateways and poaching, and, in times past and for centuries, travelling seed merchants thrashed barn-stored hay for meadow seeds, these seeds being sold on to farmers wishing to restore or put down meadows. Times and priorities have changed, of course. Native meadow seeds are still valued, however, but no longer for the fodder they can grow, rather for the biodiversity and habitat they can create.

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Rosa villosa L. in Kent, new to Britain

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In 2011, I was sent a rose specimen by Sue Buckingham, which she had collected from the margin of Kingsdown and Walmer golf course, south of Kingsdown, Kent (TR3747)(v.c.**15**). Initially, I thought it was a rather robust form of *Rosa mollis* Sm. (Soft Downy-rose) and in turn this reminded me of a conversation I had once had with Tony Primavesi, during which we discussed the old records of *R. mollis* from this locality, and, assuming they were correct, how such a strictly northern species could have arrived there.

Rosa mollis is a variable species, particularly in the size, shape and colour of the hips, and the globose, deep maroon hips of the Kent specimen were similar to the ones I had seen on plants in coastal areas of northern Scotland. However, in this case the hips were much larger and strongly glandular-aciculate. The leaflets were also much larger than in typical *R. mollis*. At this point, it crossed my mind that the plant concerned could be *R. villosa* L. (Apple Rose), although I had only seen this species on one previous occasion.

The matter remained unresolved until August 2015, when I spent several days in Kent with Geoffrey Kitchener and others and visited a number of rose sites, particularly those from where there had been interesting old and controversial records. Top of my list was a visit to the golf-course at Kingsdown. Here we were led by Sue Buckingham to where she had collected the rose. The first bushes we encountered were in a roadside shrub belt, where they clearly appeared to have been originally planted, with various other species of shrubs including *Rosa rubiginosa* L. (Sweet-briar). Others were seen close by in rough grassland, near a tall hedge and beside a footpath bordering arable (Colour Section Plate 4). Much more precise detail, including a map, was supplied by Sue Buckingham after she had made a further visit to the site in November 2016. In all, she found 11 bushes and, although the status of some seemed somewhat uncertain, at least one or two appeared to be naturalised, confirming our initial impression the previous year.

After examining in detail specimens collected from the site in 2015, I was able to confirm *R. villosa*. The previous August I had been shown *R. villosa* by Dutch rhodologists in dunes on the west coast of Holland. These differed from the Kent plants mainly in being less robust and having pyriform hips. Although *R. villosa* has many characters in common with *R. mollis*, it differs mainly in having stems often up to 2m high, larger globose or pyriform hips 1.5–2.5cm wide; larger, obtuse, oblong-ovate, usually

parallel-sided leaflets, with terminal leaflets 5.0–7.0cm in length; and flowers with stipitate glands on the margins of the petals (Nilsson, 1967; Kellner *et al*, 2014).

Rosa villosa occurs naturally in the mountainous regions of Europe, but has also been widely cultivated in Europe and the British Isles. These cultivars are known to be more robust and occasionally occur as escapes or relics of former cultivation. The most striking aspect of the Kent plants are the large, globose maroon hips, whence at times the name *R. pomifera* J. Herrm. 'Apple Rose' has been preferred, despite its illegitimacy. Thomas (in Bean *et al*., 1980) mentions the rose was once specially planted to produce hips for the purpose of making preserves.

There is a specimen in **BM** named as *R. pomifera* Herrm., which was collected by G.C. Druce in June 1919 from St. Margaret's, just south of the Kingsdown golf course. The sheet is annotated as follows: "from the same bush as I noticed 18 years ago." – G.C. Druce.; "This is correct but the specimens are very unsatisfactory." – Barclay; "Naturalised. It is certainly not native in S.E. England, even if it is anywhere in Britain." – Wolley-Dod; "Sent also (unnamed) from below the cliffs at Kingsdown, Kent, by the Rev. Preb. H.E. Fox, probably from the same locality." Wolley-Dod also adds: "There can be little doubt that this is *pomifera*. The oblong parallel-sided leaflets and very aciculate fruit seem to be its best distinction from *mollis* [*R. mollis*], at least in the herbarium. In this specimen the branchlets are quite pubescent. Is not this unusual ?" A.H.W.-D. 1924. Then, more recently, the sheet was again examined and annotated "Rosa *c.f. mollis* Sm., specimen inadequate." – A.L. Primavesi, 1/3/1990. "Possibly *R. villosa* L. of garden origin." – G.G. Graham, 9/3/1990.

From Druce's comments, we can deduce that he first saw the rose in 1901, although the earliest specimen in **BM** was collected by him in 1903. It appears that *R. villosa* has been present in the area for over a century, certainly before the golf course was opened in 1909. The most likely explanation for its occurrence in this district is that at some time in the past it was cultivated somewhere locally, at some point escaped, became naturalised and has persisted at least in the vicinity of the golf course. As far as I can ascertain there is no evidence that in more recent times any rose experts, including Ronald Melville, have been to see the rose *in situ*, as there appears to have been no further reference to it in any literature. Perhaps even more surprising is that, considering he had examined the sheet and been made aware of its history, Gordon Graham made no mention of it in the *Handbook* (Graham & Primavesi, 1993).

I have a copy of a letter dated October 1994 to Tony Primavesi from Eric Philp, the former county vice-county recorder for Kent, in which he thanks him for confirming the presence of *R. mollis* in the county. Philp also mentions that the only previous record (1971-1980) he is aware of is for a single plant at Culverstone Green (TQ/6362), which had been determined by Melville. However, Philp makes no mention of this later (Philp, 2010) and therefore this must cast some doubt as to the authenticity of the record. Nevertheless, it raises the question that *R. villosa* may have occurred at another site in Kent and the possibility that it is still present around Culverstone Green cannot be ruled out, but as yet this has not been investigated.

Acknowledgements:
I am very grateful to Sue Buckingham for providing me with precise details of the *R. villosa* population at Kingsdown and an excellent sketch map of the site.

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Extinct elm found at royal palace

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My title is an example of the media headlines that saw a story about the rediscovery of an obscure, but very distinctive, elm cultivar at the Palace of Holyroodhouse in Edinburgh become a national media phenomenon. As the Wentworth Elm, *Ulmus* 'Wentworthii Pendula', is a cultivar this puts it beyond the pale for a certain sort of 'serious' botanist. However, I don't think such a superior approach is justified or even helpful to the appreciation of plants among a wider audience.

To most people the distinction between species and cultivars will not be apparent. I suspect many keen gardeners would only have a sketchy understanding of the difference. Rather ironically, serious botanists have also been confounded by this distinction in the taxonomically difficult elms. It was only with the advent of molecular taxonomy, specifically various methods of DNA fingerprinting, that it was realised that a number of elms long thought to be species were in fact single distinctive clones. Essentially the species in question turned out to be ancient cultivars. So, for example, the supposed English endemic *Ulmus plotii* (Plot's Elm) has become *Ulmus minor* 'Plotii', and the English Elm, formerly *Ulmus procera*, is now *Ulmus minor* 'Atinia'.

Getting back to the story of the Wentworth elm how is it possible that a pair of trees in plain sight that are over 100 feet tall with distinctive large glossy leaves and a marked pendulous habit of growth could go unrecognized as something interesting and unusual for so long? To be clear, the trees are planted in the most prominent position of the garden at the Palace of Holyroodhouse which has access for paying visitors for much of the year. The answers lie in the fact that this cultivar was always obscure and that relatively few people are now familiar with elms due to the massive losses to Dutch elm disease estimated to be between 25 and 75 million since the 1970s and growing. Not many people realise that there are still areas in northern Britain that Dutch elm disease has never reached and climatic limits on the beetle vector may actually now be holding the disease at bay in the far north.

The exciting 'rediscovery' happened in August 2016 as a result of existing connections between the Royal Botanic Garden Edinburgh (RBGE) and the Palace established by the RBGE Nursery. I was asked if I would identify the elms as I have been studying elms for over 20 years and act as the BSBI referee for elms.

Among the many familiar elms were two tall majestic trees that have a distinctive weeping habit (Colour Section Plate 3). As soon as I saw them I knew they would turn out to be interesting as they were completely unfamiliar to me. I was able to be certain that the two trees were identical to each other and represented a distinct clone that almost certainly had a cultivar name. I could see that they were of hybrid origin produced from a cross between the native Wych Elm (*Ulmus glabra*) and the southern European field elm (*Ulmus minor*). The next step was to establish the full identity of the tree by linking them to descriptions and images of a named cultivar.

In order to get suggestions for the identity of these trees I passed on images to a network of contacts familiar with elms. Peter Bourne was first to come back with Wentworth Elm as a likely identification. The published record of Wentworth elms is very scant indeed. We don't know the exact derivation of the name or where the elm originated. A famous Berlin nursery called Späth is known to have supplied this elm in the late 1800s when it first appears in the literature. As Wentworth Elm is not in the standard tree books of the time we can only assume it was never widely planted or known about. Further research convinced me that Peter was right and thoughts turned to a press release as it seemed very likely that these would be rare survivors and certainly the only known survivors at the time of the release.

Thanks to Rob Cubey exploring the RBGE plant record archives we have unearthed a tantalising possibility. We have a record of three Wentworth elms arriving from Späth Nursery in Berlin in 1902. We also now know, thanks to all the media coverage of the story on October 4th 2016, that the Palace actually had three Wentworth elms. It has turned out that in 2008 one of the three was felled due to disease. Joe Muir, Park Manager at the time, had the rings counted and this indicated the tree went back to around 1905. Given that exact ring counting is tricky this result is in near perfect agreement with the RBGE records. Although we are yet to find the written proof, we can say with some confidence that the three RBGE Wentworth elms probably made their way to the Palace and were planted sometime after 1902. This would be consistent with accounts of other plants going from RBGE to the Palace at that time. In fact the Head Gardener at the time, William Smith, had trained at RBGE so it is very likely that regular contact between the two gardens was quite normal. Leonie Paterson at RBGE and Sally Goodsir at the Royal Collection Trust have scoured the archives to locate a record of the elms planting. So far, however, this final piece of the story has eluded us.

The RBGE did have a specimen of Wentworth elm until 1996 when it died from Dutch elm disease. This tree was considerably smaller than the Palace trio and must have been planted many years later. Even the site of the former Späth Nursery in Berlin, which is now an arboretum, does not have a specimen of Wentworth elm. Given the wide geographical spread of Dutch elm disease in Europe it seems unlikely that Wentworth elms have survived elsewhere. The reason for the unexpected survival at the Palace is that the City of Edinburgh Council has controlled Dutch elm disease very effectively. Without this action by the Local Authority the Palace and the rest of the City would have lost almost all the many thousands of elms present today.

Looking to the future and thinking about how we can ensure future generations are able to enjoy this majestic elm the RBGE will embark on a programme of elm propagation. Elms often root readily from cuttings, but if that fails a standard horticultural practice called grafting can be employed. Given the disease control measures now in place in Edinburgh it would be safe to plant Wentworth elms and it is hoped that a new generation of trees might be established at the Palace and RBGE.

Elsewhere in the UK there are other areas where the disease is strictly controlled or absent. Brighton hosts the National Collection and, as mentioned above, northern Scotland is still free of disease. Here populations of the hardy native Wych Elm still thrive, representing an extremely rare survival in a European context. In a few places on the higher mountains of Europe similar survivors have been noticed.

Despite the losses the future for elms is brighter than is often portrayed. A small percentage of trees seem to have some sort of natural advantage and various projects are working to propagate this natural variation. The RBGE has worked on this in the past in relation to Scottish wych elm. In addition, since the 1970's breeding programmes in various countries have been crossing and selecting elms for resistance with some considerable success. This has mostly involved crossing Asian elms with European elms as the Asian species display high levels of resistance. Research is showing that Asian species can get infected and yet display no symptoms of disease. We should be following the lead of the Dutch who regard their national tree as something worth fighting for. Today if you visit Amsterdam most of the street trees are disease resistant elms. Hopefully the Wentworth elm story has gone some way towards reviving interest in elms. And all that from a mere cultivar!

Adventives & Aliens News, 10

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At the top of my species-to-look-out-for list this month would probably come *Trifolium resupinatum* (Reversed Clover) (see v.c.**13**), which has been turning up on disturbed/re-seeded ground in a number of vice-counties of late. This species, along with other legumes (*e.g. Medicago sativa* ssp. *varia* (Sand Lucerne)?) might be a deliberate 'impurity' of certain grass seed mixtures, suppliers availing themselves of its nitrogen-fixing properties in order to help the grass species establish and prosper (pers. comm. E.J. Clement). It has undergone something of a population explosion in Eastbourne (pers. obs. M. Berry), and having followed its progress along interrupted stretches of road verge, it seems highly likely that council mowing has played a significant role in the dispersal of its seeds.

Galium parisiense (Wall Bedstraw) (see v.c.**14**) has had another good year in 2016, with new sites for S. Hants (v.c.**11**), the Isle of Wight (v.c.**10**) and Surrey (v.c.**17**), as well as E. Sussex. Dry, south-facing banks, dry, scruffy field boundaries of low fertility, and verge/kerb interfaces would all provide ideal habitat, as well as walls of course!

Brassica juncea var. *multisecta* (Chinese Mustard) (see v.c.**14**) is one of a number of cut-leaved Brassicas currently being grown as a salad vegetable, and which could cause confusion due to its atypical leaf morphology. It is sometimes marketed as Mizuna, although it seems that this is a generic term applied to other crucifers with dissected foliage being grown and sold for the same purpose.

On a more worrying note Phil Pullen has informed me by e-mail (19/5/2016) that he has been unable to find one of our long-established non-natives, *Carduus pycnocephalus* (Ply-mouth Thistle), anywhere within its *locus classicus* at Plymouth Hoe. He has searched fruitlessly for the last several years and finds its disappearance difficult to explain, given that the habitat seems unaltered. Let us hope that it reappears as mysteriously (although he could not detect it when he looked again in September 2016). On the brighter side, *Aster squamatus* (Saltmarsh Aster) is flourishing, in spite of development, where he first found it ten years ago at Millbay Docks (see v.c.**3**).

Lastly, those with sharp eyes and good memories (every single BSBI member!?) will have noticed that my postal address has changed. From now on please send all specimens and paper records to the new address given above. Electronic records should be sent to the same e-mail address as usual (also above). Many thanks.

V.c.1a (W. Cornwall)

Persicaria microcephala (D. Don) H. Gross (Fleece Flower). Trenoweth (SW756334), 18/8/2015, C.F. Wild: a garden plant, in this case referable to the cultivar 'Red Dragon'. See Adventives & Aliens News 1.

Ballota pseudodictamnus (L.) Benth. (False Dittany). St.Mawes (SW84328133), 5/10/2014, I. Bennallick & D. Pearman: one plant on rocks at foot of low cliff. A garden plant used for ground cover, native to south-east Europe, with persistently white-woolly, rugose, orbicular stem leaves and enlarged saucer-like calyces that are more conspicuous than the rather insignificant pink flowers.

Perovskia atriplicifolia Benth. (Russian Sage). Falmouth (SW7933), 3/10/2013, D. Pearman, C. French & I. Bennallick: well established on wall of waste ground, the cultivar 'Blue Spire'. Still present in 2016. It seems that this plant can produce flowering shoots that are distant from but still connected to the parent rootstock, and which could easily be taken for seedlings. This record, and no doubt others too, prove that genuinely self-sown plants do occur!

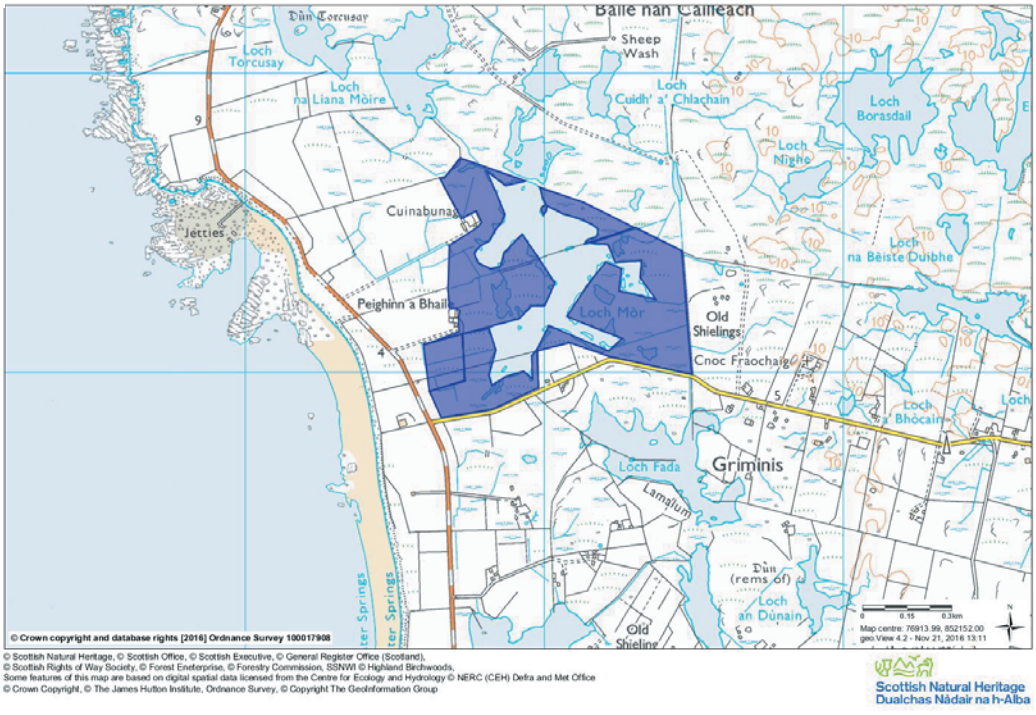


Fig. 1. *Spiranthes romanzoffiana* at Loch Mor, Isle of Benbecula, Western Isles, Scotland. [Copyright as in the frame.]

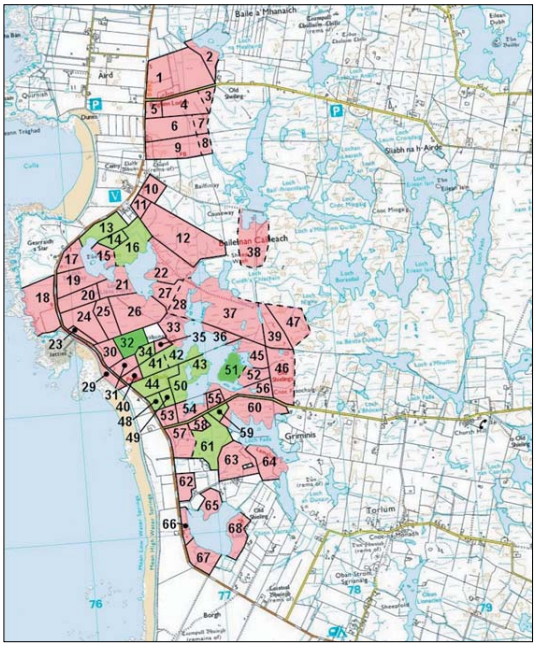


Fig. 2. Loch Mor, Benbecula: areas most frequently used by Greenland White-fronted Geese (green) and fields surveyed (pink). [Copyright as in Figure 1.]

Fig. 3. Aerial view of Loch Mor, Benbecula. The brown areas on the edge of the Loch are the extent of winter inundation. Copyright: Bing Aerial image.

See p. 10 for details

Galium parisiense in Haringey (v.c.21).
Photo J. Edgington © Sept. 2014 (p. 12).

Elytrigia atherica, Crosby dunes, July.
Photo P. Smith © 2016 (p. 10)

Fig 1. Glaucous *Elytrigia repens* (Common Couch) in tufts adjoining the tarmac by the A7, Roxburghshire (v.c.80), with only slight rhizome penetration away from the tarmac. Photo M. Braithwaite © 2016 (p. 22)

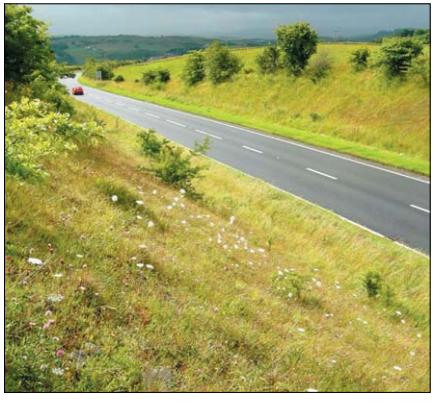
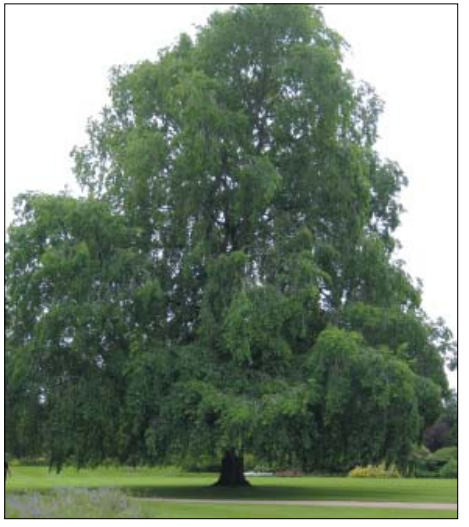


Fig. 2. Road cutting on the A7, Roxburghshire (v.c.80) sown with a seed mix that included *Daucus carota* ssp. *carota* (Wild Carrot).
Photo M. Braithwaite © 2016 (p. 23)

Baccharis halimifolia (Tree Groundsel) at Little Haven, South Hampshire (v.c.11) showing female pappus. Photo L. Jones © 2010 (p. 49)

Baccharis halimifolia (Tree Groundsel) at Little Haven, South Hampshire (v.c.11) showing male flowers. Photo L. Jones © 2010 (p. 49)

Crassula tillaea by running track at Rosslare (v.c.H12).
Photo P. Green © 2016 (p. 24)



Wentworth Elm (*Ulmus* 'Wentworthii Pendula') at Holyroodhouse, Edinburgh, with close-up of leaves.
Photos Max Coleman © 2016 (p. 38)

Fig. 1. 'Abergele sedge' *in situ*, Pensarn Beach, Abergele, (v.c.50).
Photo P. Llewellyn © 2012

Fig. 2. 'Abergele sedge' in cultivation – detail of flowering spikes.
Photo P. Jepson © 2016
(p. 25)

Fig. 1 Site and habitat for *Cyperus fuscus* along a wet 'track' adjacent to the Bere Stream, Dorset (v.c.9). Photo B. Edwards © 2016 (p. 30)

Fig. 1. Paper mound no. 4, near King's Lynn (v.c.28), showing plant colonisation. Photo C.R. Stevenson © 2016 (p. 43)

Fig. 2 Large multi-stemmed plant of *Cyperus fuscus* in open vegetation with *Apium nodiflorum*, *Persicaria hydropiper* and *Ranunculus hederaceus*, Bere Stream, Dorset (v.c.9). Photo B. Edwards © 2016 (p. 30).

Fig. 2. *Physalis peruviana* (Cape Gooseberry) in flower on paper waste pile, near King's Lynn (v.c.28). Photo C.R. Stevenson © 2016 (p. 43)

Rosa villosa, Kingsdown, v.c.15 (habit (upper) and fruits (lower). Photos R. Maskew © 2015 (see p. 36)

V.c.2 (E. Cornwall)
Lathyrus sativus (Indian Pea). St Just-in Roseland (SW845355), 31/7/2015, P. Hunt: at Church Town Farm. An annual that occurs in white-, pink- and blue-flowered forms.

V.c.3 (S. Devon)
Aster squamatus (Saltmarsh Aster). Plymouth (SX469541), 2006, P. Pullen (det. D. Fenwick): on waste ground in Millbay Docks area. On 9th September 2016, Phil found hundreds of seedlings and a few flowering plants on reclaimed land on the west side of a recently constructed marina at *c.* SX467540, with associates including *Melilotus albus* (White Melilot) and *Conyza floribunda* (Bilbao's Fleabane). A very variable species native to south and central America, Phil believes that it might have arrived in Plymouth via the Brittany Ferries link with Santander in Spain, where *A. squamatus* is an increasing alien.

V.c.9 (Dorset)
Choisya ternata (Mexican Orange). Norden (SY9511683692), 19/7/2016, D. Leadbetter: one seedling on verge.

Felicia filifolia Burtt Davy (Fine-leaved Felicia). Acton (SY9985978417), 11/11/2015, D. Leadbetter: one plant on rough ground. A garden shrub (Asteraceae) from South Africa.

Achillea ageratum L. (Sweet Yarrow). Swanage (SZ03027942), 23/7/2016, D. Leadbetter (conf. E.J. Clement): one plant in gutter and two in pavement, De Moulham Road. It can be distinguished vegetatively from other yellow-flowered garden yarrows by the sessile, relatively hairless, serrate (not lobed) upper stem leaves. The lower stem leaves are petiolate and can have a few basal lobes. Possibly only the third British/Irish record.

V.c.10 (Isle of Wight)
Cyperus rotundus L. (Purple Nutsedge). Ryde (SZ570924), 8/2016, P.Stanley: weed in flower beds of private property where known to the owner for several years. A frequent plant of the tropics and former wool adventive, this is probably the first British/Irish record for many years. The English name refers to the nut-like 'tubers' that form on the rhizomes.

V.c.13 (W. Sussex)
Argemone mexicana (Mexican Poppy). Littlehampton (TQ0218902345), 23/5/2016, D. Donovan: one plant in Terminus Road (possibly since succumbed to spraying). Clement *et al* (2005): 19.

Rumex cristatus (Greek Dock). Poling (TQ 03730576), 18/5/2016, P. Stanley (conf. M. Shaw): one large clump, central reservation of A27, near Poling Corner. The first v.c.**13** record. Clement *et al* (2005): 90.

Trifolium resupinatum (Reversed Clover). Littlehampton (TQ0303002125), 23/5/2016, D. Donovan: in thin grassland on site of former Arun District Council building. An increasing species?

V.c.14 (E. Sussex)
Cyrtomium fortunei var. *clivicola* (Makino)Tagawa (Japanese Holly-fern). Burgess Hill (TQ3189820411), 21/11/2016, A. Symon (det. F. Rumsey & A. Paul): on steep stream bank in woodland, Bedelands Nature Reserve, known for several years . First UK record of this variety.

Silene coeli-rosa (Rose-of-heaven). Eastbourne (TQ6482502479), 16/7/2016, M. Berry (conf. E.J. Clement): one plant in dry grassy area at back of beach, Sovereign Harbour. As far as I can ascertain, the first v.c.**14** record.

Brassica juncea var. *multisecta* L.H. Bailey (Chinese Mustard). Eastbourne (TQ 6406202537), 5/6/2016, M. Berry (conf. E.J. Clement): scattered plants on bare weedy ground at edge of new car park, Sovereign Harbour. It has bi-pinnate lower and single-pinnate upper stem leaves, the latter stalked. These plants had leaves with upper surfaces that were dark purple, with some veins picked out in purple below (which would look good in the salad bowl!). As its lowest stem leaves can have greater than three pairs of lateral lobes, it might key out erroneously as *B. tournefortii* (Pale Cabbage) on p. 412 of Stace (2010). *B. tournefortii* has a stronger,

more persistent basal rosette. The basal rosette of *B. juncea* has almost invariably disappeared by flowering.

Potentilla alba L. (White Cinquefoil). Fairlight (TQ87301237), 1/6/2003, F. Winch (det. E.J. Clement): established on grassy bank in front of post office. Still present in 2016. The *Alchemilla alpina*-like basal leaves of five ciliate leaflets, glabrous adaxially, silkily appressed hairy abaxially, are very distinctive. It would seem to be the only extant British/Irish site for this plant of rocky pastures, native to central/eastern Europe.

Galium parisiense (Wall Bedstraw). Eastbourne (TQ64370264), 10/6/2016, M. Berry: on sandy/stony south-facing bank, north side of Pacific Drive; (TQ6435402681), 10/7/2016, M. Berry: dense patch of plants on stony ground where disturbed by ant activity. At the first grid reference it grows with naturalised *Verbena rigida* (Slender Vervain), with the native *Poa compressa* (Flattened Meadow-grass) growing in abundance nearby. This entire area, a vestige of The Crumbles, will probably soon be built on. It occurs in almost identical habitat further to the east on the Kent/East Sussex border (Lydd Ranges).

V.c.24 (Bucks)

Berberis buxifolia (Box-leaved Barberry). Great Missenden (SP879003), 27/4/2010, T. Marshall: at Widmere Field, Prestwood. Not seen after 2011.

Vicia villosa (Fodder Vetch). Little Marlow (SU87288918), 2015, T. Harrison: in arable field margin, still present in 2016. See inside back cover. This has become a quite frequent if casual alien in some south-eastern counties of England, *e.g.* Kent and Essex (v.cc.**15**, **16, 18** & **19**) , whilst remaining very rare in or absent from others, such as West and East Sussex(v.cc. **13** & **14**). For Graham Easy's drawings of two of its subspecific forms (which seem to grade into each other), see *BSBI News*, **50**: 31.

Eryngium bourgatii Gouan (Bourgat's Seaholly). Great Missenden (SU870990), 20/5/2007, T. Marshall: on lawn, Perks Lane, Prestwood. Still present as of 2015, despite attempts to eradicate it. This species has blue capitula with long, narrow involucral bracts, and deeply dissected lower leaves with prominent, broad white veins, giving a striking marbled effect. The pre-1994 records were excluded by Clement & Foster (1994) as errors. This does now seem to be genuinely grown as a garden plant.

V.c.103 (Mid Ebudes)

Trachyspermum ammi (Ajowan). Coll (NM 173560), 19/8/2016, L. Farrell: one plant in fruit by barn door at Lonban Farm; probably originated from bird-seed put out by the RSPB at their Totronald reserve. The most northerly record and the first for the Scottish islands. See Stace (2010), p. 821. For an illustration of this annual umbellifer from the Mediterranean, see Tutin (1980), p. 135.

V.c.H27 (W. Mayo)

Blechnum penna-marina (Antarctic Hard-fern). Achill Sound (L7399), 8/2016, P. Stanley (comm. P. Stanley): many plants in mown lawn of churchyard. The first Irish record. A hardy evergreen fern native to non-tropical regions of the southern hemisphere.

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Paper waste in agriculture: a new habitat for aliens?

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Early in 2016, whilst recording the reclaimed silty marshlands north of King's Lynn for the Fenland Flora project, several large mounds of a grey material were encountered (Fig. 1, Colour Section Plate 4). They were initially assumed to consist of clay, although closer examination showed this was not the case. However, as they seemed to be of no interest botanically the identity of the material was left to one side.

During a later phase of recording (in August 2016), it was obvious that considerable plant colonisation of these mounds had taken place, and that they now harboured plants of interest. As can be seen (Table 1), *Solanum lycopersicum* (Tomato) is present on all of them, at least four different cultivars being present. On three of the largest mounds, however, plants of *Physalis peruviana* (Cape Gooseberry) were found, the first records of this plant from v.c.**28** for nearly 20 years (Beckett, Bull & Stevenson, 1999) (Fig. 2, Colour Section Plate 4).

Table 1. The location and flora associated with paper waste used as soil conditioner, in West Norfolk. Four of the sites listed lie north of King's Lynn but the fifth lies several km to the south, near Tilney High End.

No.	Grid ref.	Species present
1	TF622233	*Buddleja davidii* (Buddleia) *Chenopodium album* (Fat Hen) *Chenopodium ficifolium* (Fig-leaved Goosefoot) *Chenopodium rubrum* (Red Goosefoot) *Ficus carica* (Fig) *Physalis peruviana* (Cape Gooseberry) (3 plants) *Senecio vulgaris* (Groundsel) *Solanum lycopersicum* (Tomato) *Solanum nigrum* (Black Nightshade)
2	TF613239	*Atriplex prostrata* (Spear-leaved Orache) *Buddleja davidii* *Chenopodium album* *Chenopodium rubrum* *Solanum lycopersicum* *Sonchus asper* (Prickly Sow-thistle)
3	TF623242	*Solanum lycopersicum*
4	TF632272	*Atriplex prostrata* *Lepidium didymium* (Lesser Swine-cress) *Persicaria lapathifolia* (Pale Persicaria) *Physalis peruviana* (5 plants) *Solanum lycopersicum*
5	TF567163	*Atriplex prostrata* *Physalis peruviana* (2 plants) *Solanum lycopersicum* *Sorghum bicolor* (Great Millet)

The combination of Tomatoes and Figs suggested that these heaps of grey 'stuff' might have an origin not entirely unconnected to sewage, so I made a point of calling at the farm office on my way home. The material was paper waste, obtained from a local paper mill, which specialises in recycling, and is spread on the fields as a low nutrient soil conditioner. The landowner had also noticed the presence of Tomatoes on the heaps and had wondered whether they had originated in packets of seeds, attached as 'free gifts' to magazines that subsequently simply got pulped. This sounds plausible, but I remain slightly doubtful that *Physalis peruviana* would have been given away in this way. An article in *Farmers Weekly* (Tasker, 2010) gives more detail about how, where and when this paper waste is used, whilst, as ever, an internet search reveals even more.

Paper waste, as yet, does not seem to be widely used. However, it clearly has potential as a habitat for aliens and adventives, so it is worth keeping an eye open for and investigating. These mounds are transient. Some have now disappeared, spread on the land. They are also all on private property.

Acknowledgements
I am grateful for the help of Steve Kilham (of S.A. Kilham Ltd.) who answered my initial enquiries as to the identity and origin of the paper waste, and to Martin Little for directing me towards the site near Tilney High End.

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An overlooked parsnip in Britain

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In late August 2015 I was phoned by a friend (Joe Sharman) to say that he had found a different kind of parsnip on the bank of the A14 north-east of Newmarket, in Cambridgeshire (v.c.**29**). When he appeared with a small specimen I was not at first convinced it was anything significant, but on further investigation it did appear that it might be a different taxon from our native *Pastinaca sativa* ssp. *sylvestris* (Wild Parsnip). When I visited the site a few days later it was immediately apparent that Joe was right and that this was a distinct plant, which I found was a good match for continental descriptions and specimens of *P. sativa* ssp. *urens* (Req. ex Godron) Čelak. (*P. urens* Req. ex Godr.; *P. teretiuscula* Boiss.; *P. umbrosa* Steven ex DC.). There was a good population scattered along a stretch of south-east facing bank of the road, which sits in a cutting at this point. Subsequent searches the same year along the A15 between Newmarket and Cambridge produced two more populations, one scattered along the A14 at Stow cum Quy and another very small one on the verge of the B1309 near its junction with the A14 on the north-east side of Cambridge city. Material from these sites was exhibited at the BSBI Exhibition meeting in 2015 and is now in **CGE**.

Whilst these were the first Cambridgeshire records, this taxon had previously been reported in the British Isles, from the East Suffolk coast (v.c.**25**). In 1984 Peter Sell had collected material, which he later named as this subspecies, from beside the road which runs behind the shingle ridge that extends along the seafront between Thorpeness and Aldeburgh. He collected it there again in 1992 and 1994 (specimens all in **CGE**), and in 2016 I found that it was still present in several spots along this road, with a few plants now also present on the shingle ridge at Thorpeness. It has thus been present in this area for at least 32 years. On the way to visit this site with another friend (Rosie Steele) we found an additional site further inland at Beccles, on the Norfolk/Suffolk border, but still in v.c.**25**. Here it occurred on the verges of what looked like a relatively new roundabout and on nearby

earth banks along the road. Peter's site was mentioned by Martin Sanford in *A flora of Suffolk* (2010), as well as two other records, one at Lowestoft, further up the coast to the north (first recorded by Arthur Copping and the Lowestoft Field Club in 2006) and the other on Orfordness to the south (first recorded by Margaret Cooper in 1995). I have not yet managed to visit the latter, but can confirm that in October 2016 it was still in Lowestoft, where it was locally frequent along the railway line from the town station westwards for about half a mile, with a solitary additional plant on the side of the A12 to the north of the town.

Its presence along the A14 in Cambridgeshire led to the suggestion that it might have spread along this road from the Suffolk coast, as have a number of native maritime plants. It thus seemed a good ploy to go and look at where the A14 begins, near the big container port at Felixstowe. This I did in August 2016 and found the parsnip locally abundant along parts of at least the first mile or more of the road, notably in the road cutting by Clickett Hill, as well as on the banks and earth piles around a large field above the road and along the nearby Clickett Hill Road. There was also a small population on the bank above the seawall at Felixstowe Ferry, a mile or two to the north of the town, where it was growing with much *Foeniculum vulgare* (Fennel), which is a common associate in these coastal locations. On the rail journey down to the port from Cambridge, good populations had also been noted (from a slow-moving or stationary train) at or near three stations in the Ipswich conurbation: outside Ipswich station itself and at the stations at Westerfield and Derby Road. Further investigations along the A14 corridor produced good populations in several sites on roadsides at Stowmarket, but I have yet to pick it up at Bury St Edmunds, where all the roadside plants seen so far have been ssp. *sylvestris.*

In October 2016 I had a further site on the A14 to the north-west of Cambridge, associated with a layby and spreading onto the unploughed margin of an adjacent arable field, but so far I have not been able to extend its distribution further north-west over the border into Huntingdonshire. However, a further site came to light at the end October, well away from the A14 on the relatively new guided busway bridge over the railway just to the south of Cambridge city, and just west of Addenbrooke's Hospital.

Following my success at Felixstowe, I decided to investigate the port of Harwich (in North Essex, v.c.**19**), which lies just across Harwich Harbour from Felixstowe. I soon found a large population on rough, gravelly waste ground by the road leading out to the International Ferry Port and with outlying plants on roadsides and railways to the south and west of the port, as well as in the old station yard at Wrabness station a few miles along the line to the west. There were probably populations at Manningtree too, but in one case it was not possible to get close enough and in the other the train was moving too fast! That it might be more widespread in at least this part of Essex is suggested by a comment in Tarpey & Heath's *Wild flowers of north east Essex* (1990) in which they describe the plant they map as ssp. *sylvestris* as a taller, thinner plant with a greyish look (compared to their ssp. *sativa*), a description which strongly suggests ssp. *urens.*

There are currently two records from Norfolk. One is at Attleborough (v.c.**28**), which was reported to me by Joe Sharman in 2016. Here the plants are associated with a new roundabout at the southern end of the bypass, both on the verges and on earth piles nearby. This is the only population encountered so far where the plants showed some mixed or intermediate characters with ssp. *sylvestris*. The other Norfolk site extends the distribution up the East Anglian coast to Great Yarmouth (v.c.**27**), where on 5th November 2016 I found a population of a few hundred plants on a triangle of waste ground bounded by the A47, the railway and the embankment wall of the saltmarsh bordering Breydon Water on the western edge of the town.

Pastinaca sativa ssp. *urens* was reported as a native of southern, central and eastern Europe by Tutin in *Flora Europaea* (1968). Pignatti, for instance, in his *Flora d'Italia* (1982) describes it as the most widespread

subspecies in the country, whilst Tison & Foucault in *Flora Gallica* (2014) listed it as distributed "en Fr[ance] continentale, surtout Midi et vallées fluviales". It is intriguing that in both France and Italy it is associated as a native plant with riverine woodland, although *Flora Gallica* also says that its secondary habitat is in "friches thermophiles eutrophiles" and that it is "en partie naturalisé, en expansion", notably along "des axes de circulation", so very much fitting with the experience here along roads and railways. Certainly a joint meeting of BSBI and French botanists in July 1998 witnessed that it had reached the Channel coast at Cap Blanc-Nez (Pas-de-Calais), as described by Frank Perring in *BSBI News*, **80**: 62 (1999). Elsewhere in central Europe it may be associated with fields and meadows, on waste ground, gravelly and rocky ground and in light woodland. *Flora Gallica* also suggests that ssp. *urens* readily hybridises with ssp. *sylvestris*, but apart from the Attleborough population this has not been much in evidence here as yet. At all the coastal sites I have investigated there has only been ssp. *urens*, but along or near the A14 in Cambridgeshire the two may occur together or in close proximity.

As a general rule, though, there is no difficulty in distinguishing well-grown plants of both variants, and indeed, once the characteristic appearance of ssp. *urens* is known, it is possible to spot plants from a moving car or train. They may be separated as follows:

Ssp. *urens*: terminal umbel on the main stem often not or only a little larger than the umbels terminating the main branches, usually with 5-8 rays, which are only slightly unequal in length; stems often tall and noticeably slender, up to 2.0m, often with more numerous, more branched, more flexuous, slender primary branches, which spread more widely, with those lower down the stem sometimes slightly arching downwards; the middle and lower sections of the stem lacking the deep ridging found in ssp. *sylvestris* and occasionally almost terete, but more often roundly angled or shallowly grooved, although the upper parts of the stem may have some more evident ridging; the whole plant usually covered in dense, very short, eglandular hairs, often giving the plants a distinctly grey-green appearance; flowering and fruiting later in the summer and autumn, often still green in September and October when ssp. *sylvestris* is all dried and brown.

Ssp. *sylvestris*: terminal umbel on the main stem usually noticeably larger than the umbels terminating the main stem branches, often with 10 or more rays (and up to at least 22); stems often shorter (up to 1.5m), usually thicker and stouter throughout, with fewer, stiffer, less branched branches, which are usually held at a narrower angle to the stem; the whole stem with deep ridging, except sometimes right at the base; the stems often with at least some long flexuous hairs, but also many short hairs, but not usually as grey in effect as in ssp. *urens*; flowering and fruiting in summer, generally brown and in ripe fruit by the end of August. Poorly grown plants of ssp. *sylvestris* can sometimes have smaller terminal umbels with few rays, but they retain the deeply ridged stems, and better-grown plants in the same populations will show more typical features. The plant grown as a vegetable, ssp. *sativa*, not only differs from the other two in its strongly swollen root, but also in being glabrous or only sparsely hairy. It has deeply ridged stems.

The epithet *urens* translates as 'stinging' or 'burning' and presumably refers to the sap of the plant which can produce a burning sensation on the skin followed by blistering. So, if you think you may be sensitive, then handle with care!

It is likely that ssp. *urens* will be found to be more widespread, especially in East Anglia, but should also be looked for in other coastal areas, especially near ports and inland along major roads and railways. I would be pleased to hear of other records or to look at any specimens, which must include main stem terminal umbels and sections of the middle/lower main stem.

Cynoglossum amabile (Chinese Hound's-tongue) in Britain and Ireland

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Cynoglossum amabile Stapf & J.R.Drumm. (Chinese Hound's-tongue), native to China and Tibet, has been a garden plant in this country for many years. It is certainly garden-worthy with its bright blue forget-me-not-like flowers, and its specific epithet translates as "lovable", but has it been loved much by gardeners? The paltry number of records chalked up in its name would suggest not. But has it been overlooked and therefore under-recorded? Eric Clement recently informed me of a record that he had turned up in the herbarium of the South London Botanical Institute some years ago, the details being as follows:

Cynoglossum amabile, collected as *Echinospermum* (now *Lappula*) sp. by C. Avery (re-det. E.J. Clement, 3/1984), waste ground Wimbledon, Surrey (v.c.**17**), 11/8/1957. "Flowers bright blue."

This intrigued me, as when it turned up unexpectedly in a Seaford (v.c.**14**) garden last September, several plants appearing in a flower bed but not planted, at Crown Hill (TQ4801), 19/9/2016, C. Brewer (det. M. Berry/conf. E.J. Clement/ **herb. MCB**), it was at first thought to be a species of *Myosotis* or *Lappula* (formerly *Echinospermum*). The bright blue (clear blue/sky blue?) colour and relatively flat corolla limb mean it does resemble a *Myosotis*/*Omphalodes* far more than is the case for the two native *Cynoglossum* species. It is even sometimes sold under the English name of Chinese Forget-me-not; while the nutlets covered with barbed bristles (glochids) do indeed suggest *Lappula* as a possible identity.

Besides the Seaford occurrence and the recent record for the Isle of Wight (v.c.**10**) (see Adventives & Aliens News 9), there are only two additional records contained in the BSBI Distribution Database, one for Co. Wexford (v.c.**H12**): rough ground on roadside, Ballyconlore (T15666791), 29/9/2013, P.R. Green. It was not growing with any other aliens (pers.comm. Paul Green). Also, there is one record for Cardiganshire (v.c.**46**): several plants on ground disturbed for road widening, Penrhyn-coch (SN641840), 21/7/1993, A.O. Chater (**NMW**). Arthur informs me that the site was fairly close to gardens and he thinks that the plants must have come up from buried seed, but adds that he has never seen it in gardens in this area. The only other record I can trace is another for Surrey (v.c.**17**): casual alien, refuse tip in chalk pit, Merstham, 1970, E.J. Clement (Leslie, 1987).

Given the confusion mentioned above, I hope the following quick generic key will be of value:

(1a) Nutlets not glochidiate – *Myosotis*/*Omphalodes*/*Anchusa*/*Cynoglottis*
(1b) Nutlets glochidiate
(2a) Inflorescence with bracts – *Lappula*
(2b) Inflorescence ebracteate – *Cynoglossum*

There also seems to be some disagreement over flower width in the literature, with *c.*5mm, 5-10mm and 8-10mm (the latter from the on-line *Flora of China*) being given as estimates. Could the lower estimate have resulted from measurement of dried material in which the corolla had contracted somewhat? The description of *Cynoglossum amabile* which follows is based mainly on one of the Seaford plants:

Biennial, to *c.*40cm (but probably sometimes annual or even perennial); leaves net-veined, canescent, barely hispid; lower stem/basal leaves long petiolate, elliptic, to *c.*16cm; middle to upper cauline leaves narrowly elliptic to oblong lanceolate, sessile, not or barely clasping stem at base, *c.*8cm; stem densely spreading-hairy, more or less round in section; flowering pedicels 2.5-3.5mm, densely spreading-hairy; calyx *c.*3mm, hairy but more sparsely so than pedicels; corolla bright blue (occasionally white or pink), (5)8–10(12)mm across; nutlets ovoid to obovoid, *c.*3.5mm (longest axis), adaxial surface

flattened to somewhat concave, uniformly covered with glochids (var. *amabile*), marginal glochids fused at bases to form a 'wing'.

Could there be 'new' records awaiting discovery in other herbaria, filed incorrectly under *Myosotis*/*Omphalodes*/*Lappula*/*Echinospermum* sp.? It might now also be an occasional constituent of wild flower seed mixtures, and this fact coupled with its adhesive fruits, could see it become a more frequent casual of rough ground etc.

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Baccharis halimifolia (Tree Groundsel) persists at Little Haven, South Hampshire (v.c.11)

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On 8th October 2016, I travelled to Little Haven, Mudeford, with the aim of re-discovering a seemingly overlooked shrubby composite, *Baccharis halimifolia* (Tree Groundsel, also known as Sea Myrtle). Having first been noted over 90 years ago, in 1924, by Mrs Rothwell (Druce, 1926) and with the most recent record being from 1997 by R.P. Bowman (Clement, 1998), it was unclear what would be found of this non-native species 19 years later.

Clement (1998) points out that Stace's *New flora*, (2nd ed., p.729), gives its first date incorrectly (as 1942) and queries its continued existence there, while Sell & Murrell (2006) also give 1942, both presumably in relation to a recording during that year by N.D. Simpson and N.Y. Sandwith, who described the bushes as "well established on the shore at Mudeford" at this time (Wilmott, 1945). The plant was also collected by A.H.G. Alston in Mudeford in 1947, where he describes it as "abandoned shrubbery" (**BM**), with the mildly peculiar observation of "cat seen licking the leaves". It was "seen in plenty by the Donys [J.G. and C.M. Dony] at Mudeford Quay … presumably in the old BEC site" (reported in the 'Exotics 1980' section of *Wild Flower Magazine*, 1981). There is a herbarium specimen of Tree Groundsel "From the New Forest" collected by F. Passingham in October 1926 (**BM**) and another by O.M. Stewart from "Hampshire, near Christchurch" (assumed to be the same site in Mudeford) in September 1991 (**E**). *B. halimifolia* is not included in *The flora of Hampshire* (Brewis *et al*., 1996). It was once recorded at one other site in Britain, at Hamworthy, Dorset, in 1958 by D. McClintock on the "shore near Poole Pottery Factory" (Wallace, 1961) but has since been reported to be extinct from this location (Bowen, 2000).

It soon transpired that an extensive search was unnecessary, as the shrubs were immediately obvious. Plants were growing conspicuously in a single area on the eastern side of Chichester Way at the edge of the public car park, nestled amongst a strip of *Ulmus minor* (Small-leaved Elm), *Rubus fruticosus* agg. (Bramble) and *Sambucus nigra* (Elder) at SZ184918. This location is definitely coastal. The soil was sandy and compacted and the plants are approximately 50m from the shore.

There were eight live plants in total, the stems of most of which were at least partially decumbent, with heavily-fissured bark, although not sticky. A further three dying plants were noted, with only epicormic shoots present on stems. The tallest stands reached 4m in height, impressive by most composite standards. Leaves were deciduous, glabrous, alternate and highly variable in shape and size: 2 – 8cm long and 3 – 5cm wide, either coarsely toothed (particularly at the apices) or entire on the uppermost leaves.

The striking, silky-white pappus of the female inflorescences (Colour Section Plate 2) was recorded on five stands, with the less showy (yet incredibly fragrant) creamy yellow, staminate male flowers on others (Colour Section Plate 2). Male plants were inundated with hoverflies and bees, no doubt drawn in by the heady honey scent.

As R.P. Bowman noted (Clement, 1998), this species showed no signs of spreading in the immediate or wider area of Mudeford, and, as before, there was clearly no evidence of genuine naturalisation. Aside from how it came to be there in the first place, this raises the question, why had it not spread? The presence of both male and female plants at Little Haven, coupled with prolific seed production, up to 15,000,000 per year (Westman *et al*., 1975), the potential to propagate from both seeds and softwood cuttings (Brickell, 1996), wide adaptability to soil nutrients and salinity, and long range seed dispersal (in a steady wind of about 17kmh^{-1}, seeds drift as far as 140m from a shrub 2m in height (Diatloff, 1964)), should have ensured at least a small number of new stands. It is these biological traits that have earned this species its status as a formidable invasive in Australia, Asia and parts of Europe.

Possible explanations for its non-establishment could be the lack of suitable, disturbed habitat for this primary coloniser to spread into, being largely boxed in by dense shrub and scrub, an impenetrable belt of very heavily shading *Quercus ilex* (Evergreen Oak) and *Pinus nigra* (Corsican Pine) to the west, and hard standing to the east, with heavily managed amenity grassland beyond that. *B. halimifolia* can also reproduce vegetatively from the base following disturbance (Westman *et al*., 1975). There was no obvious historic or current evidence of this. It does not sucker (Poland & Clement, 2009).

Another factor to consider is that seed production itself is stimulated by disturbance, decreases with plant age and density, and increases with available light (CABI, 2016). Plants around nine years old produce 31% less seed than four-year-old plants (Panetta, 1977, 1979). As the plants at Mudeford are not subject to disturbance and are densely planted in an area with little opportunity for increased levels of light, and assuming that these are the original specimens of at least 92 years age, this should almost certainly affect seed production. It is possible that, at such a significant age, these plants have layered themselves, with old branches rooting themselves in the ground. Also worthy of note is that *B. halimifolia* was introduced into cultivation in Britain as far back as 1683 (Preston *et al.*, 2002) and is available horticulturally in the UK today. Merrick (2015) lists four nurseries supplying this species) and it is marketed as ideal for planting in coastal locations, despite being listed as an alien invasive species of European Union concern (under EU IAS Regulation 2014).

The origin of the plants in question remains unclear. Even with no gardens or ornamental beds within the immediate vicinity, deliberate planting seems the most valid explanation. Two nurseries that offer Tree Groundsel (Merrick, 2015) state that the species is produced commercially from soft wood cuttings, which readily root and grow to approximately 2m. This means that any batch a nursery has are either male or female, dependent on what plant is used. Neither nursery had ever grown Tree Groundsel from seed or experienced it self-seeding, nor were they aware of any nurseries that sell the plants

separately sexed, as this would require plants to be raised from seed. Therefore these observations indicate that the Mudeford population, which is made up of both male and female plants, must have originated from seeds sown at the site.

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Myriophyllum heterophyllum (Variable-leaved Water-milfoil) in ponds near Horsham, West Sussex (v.c.13)

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On 29 July 2015, whilst undertaking a survey within a great crested newt receptor site at a site near Horsham, West Sussex, Clare Smith observed the emergent flowering stems of a submerged water plant in one of four ponds within the site. She took a photograph (see front cover) for identification. The initial identification was of Variable-leaved Water-milfoil *Myriophyllum heterophyllum* Michx. (also known as Broad-leaved Water-Milfoil) which was confirmed by dr. ir. J.L.C.H. van Valkenburg, Institute for Water and Wetland Research, Radboud University Nijmegen, the Netherlands.

The four ponds are located on private land within a dedicated ecological mitigation area adjacent to a new development. The area was previously used as grazing pasture. Two of the ponds (1 and 2) are adjoined to one another with a central bund. The remaining ponds (3 and 4) are not directly hydrologically connected. All four ponds have a well-developed submerged and marginal flora.

A full survey for invasive aquatic species was conducted in January 2016. This survey identified Variable-leaved Water Milfoil within three of the four receptor ponds (1, 2, and 3 (Table 1. p. 52)), as well as Australian Swamp Stonecrop (New Zealand Pigmyweed) *Crassula helmsii* and Canadian Waterweed *Elodea canadensis*. No Variable-leaved Water Milfoil was identified in Pond 4.

Management works to remove Variable leaved Water-milfoil were undertaken in Ponds 1 and 2 in February 2016. Monitoring was conducted in October 2016. Known waterbodies in the surrounding area and within the adjacent development were also surveyed in October 2016, where access was permitted.

The four ponds were created in 2011 and were all designed to receive translocated great crested newts. Three of the four ponds (1, 2 and 3) were lined. In early 2012, the ponds were planted with selected aquatic and marginal species to facilitate the development of high quality amphibian habitat. The ponds have been surveyed every other year since the translocation (in 2013 and 2015) to monitor the great crested newt population, but no signs of Variable-leaved Water-milfoil, Australian Swamp Stonecrop or Canadian Waterweed were recorded until 2015.

No evidence of any of the submerged invasive plant species described above found within the receptor ponds has been recorded in any nearby water bodies (three SUDS balancing ponds, one pre-existing pond and a nearby wet woodland), all of which were surveyed in October 2016.

This record of Variable-leaved Water-milfoil is the second for the United Kingdom. The first, in 1941, was in a lowland canal, the Calder and Hebble Navigation, in Calderdale between Halifax and Salterhebble, West Yorkshire (v.c.**63**). The plant disappeared when the canal was drained (Murgatroyd, 1991) in 1947 or 1948 (Sell and Morrell, 2009). *M. heterophyllum* is not listed in an earlier flora of West Yorkshire (Lees, 1888) and had not been seen in the canal or county up until at least the early 1990s (Lavin and Wilmore, 1994).

M. heterophyllum is found in the Netherlands, where it is invasive in nature (Figure 1, p. 53).

M. heterophyllum is relatively easy to recognise when it produces emergent flowering spikes (5-35 cm long) consisting of flowers in whorls of four (4 or 6 in Sell and Morrell (2009)). In monoecious plants, the lowermost flowers are female, the uppermost ones male and the intermediate bisexual. The bracts are lanceolate to oblong or obovate, 4-18 × 1-3 mm, persistent, becoming reflexed with margins sharply minutely serrate; bracteoles ovate, approximately 1.2 × 0.6 mm with serrate margins. Sepals 4, 0.5-0.7mm triangular, acuminate at apex, minutely serrate.

Stamens 4, filaments pale; anthers yellow. Stigmas 4, diverging; petals 4, boat-shaped, 1.5-3 mm long.

When only submerged leaves are present, it is difficult to identify this plant. A useful table with photographic illustration can be found at: http://www.q-bank.eu/Plants/lookalikes/Myriophyllum/Myriophyllum.HTML

Acknowledgements:
Thanks to dr. ir. J.L.C.H. van Valkenburg, Institute for Water and Wetland Research, Radboud University Nijmegen, for confirming the identification of the plant and David Broughton, AECOM, for confirmation of the *Eleocharis acicularis*.

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MURGATROYD, F. (1991). Botanical Report (pp. 1-12). Natural History in Calderdale, Halifax Scientific Society.

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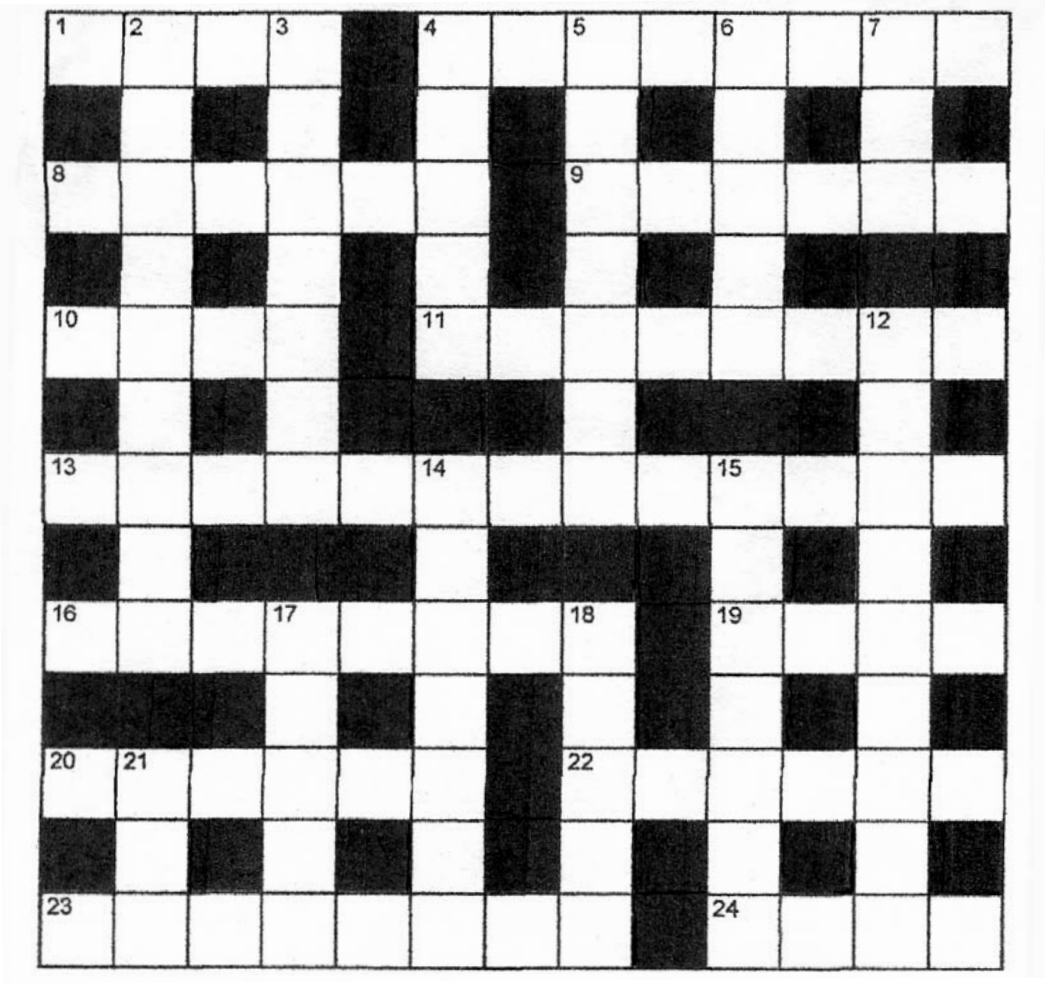
Table 1. Summary of key features of the ponds and their aquatic flora (DAFOR scale)

	Pond 1	**Pond 2**	**Pond 3**	**Pond 4**
Area when at maximum depth (m^2 approx.)	70	70	120	100
Perimeter (m approx.)	28	28	39	35
Maximum depth (m approx.)	1	1	1.5	0.3
Shape	Semicircle	Semicircle	Circle	Oblong
Submerged flora				
Variable-leaved Water-milfoil *Myriophyllum heterophyllum*	A	A	D	-
Needle Spike-rush *Eleocharis acicularis*	-	-	R	-
Water Mint *Mentha aquatica*	F	F	F	F
Water Forget-me-not *Myosotis scorpioides*	O	O	F	-
Bogbean *Menyanthes trifoliata*	F	F	F	O
Water plantain *Alisma plantago-aquatica*	F	F	O	-
Water Violet *Hottonia palustris*	R	R	-	-
Marsh Marigold *Caltha palustris*	O	O	-	O
Australian Swamp Stonecrop *Crassula helmsii*	-	R	-	-
Canadian Waterweed *Elodea canadensis*	O		O	-
Least Duckweed *Lemna minuta*	-	-	-	A
Emergent and marginal flora				
Bulrush *Typha latifolia*	A	A	A	-
Soft Rush *Juncus effusus*	A	A	A	A
Pendulous Sedge *Carex pendula*	-	-	-	A
Marsh St John's-wort *Hypericum elodes*	F	F	-	-
Brooklime *Veronica beccabunga*	O	O	O	F
Surrounding vegetation	Alder scrub, tall ruderals, grass	Alder scrub, tall ruderals, grass	Alder scrub, tall ruderals, grass	Bramble and woody scrub, tall ruderals

Figure 1. Distribution of *Myriophyllum heterophyllum* in Britain and the Netherlands

BOTANICAL CROSSWORD 30

by CRUCIADA



ACROSS

1. Bank payment rejected due to fungal disease (4)
4. Use to relieve sting, perhaps, of cut to page (4,4)
8. Get a buzz if you primarily decompose plant remains (6)
9. Sounds like sign of hybridisation (by some) in aromatic herbs (6)
10. One of the Caryophyllaceae in fine health (4)
11. Unfold promise surrounding first Rite of Spring flower (8)
13. Goosefoot fit for fourth monarch? (4,4,5)
16. Blur male inclination to like Apiaceae (8)
19. Quote authority on location, we hear (4)
20. Bar Bonner, for example, from meeting at fig tree (6)
22. Had pen camouflaged in fragrant shrub (6)
23. Scotsman, idiot – a right one – using concoction of plant oils (8)
24. Picked illicit bunch of culinary herb (4)

DOWN

2. Like a stem getting formulaic treatment (9)
3. What you did to miss *Montia fontana*? (7)
4. Peter out with the opposite of 8 (3,2)
5. Hurtful piece for propagation (7)
6. Hen found in certain stratum of vegetation (5)
7. One cut down sycamore, say (3)
12. Late-flowering deterioration in relations (9)
14. Sandal is useless without a habitat where plant populations are isolated (7)
15. Alien got out of jail (7)
17. Give Mr Clement a heath (5)
18. Less considerate when disturbed ground coloniser is mown short (5)
21. Briefly bitter epithet of American doctors' association (3)

NEWS OF MEMBERS

Proposals for honorary membership

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

The following members were proposed for Honorary Membership of the BSBI at the AGM on November 26th 2016 and both were elected by acclamation.

Ian Trueman (proposed by Alex Lockton)

Ian Trueman has been a member of the BSBI since 1970 and was county recorder for Shropshire from 1976-1998. However, he is not primarily a BSBI man and has not served on committees or had much involvement in the inner workings of the society. Instead, he has made an exceptional contribution to botany in Britain, which is all the more reason for the society to invite him to be an honorary member, to both recognise his achievements and for us to benefit from his association.

Ian has researched and taught at Wolverhampton Polytechnic (later the University of Wolverhampton) since the 1970s and is now retired. The polytechnic was a leader in ecology in the early days, and the degree there was taken by many who have gone on to become leading conservationists and ecologists in Britain and abroad. Ian has, exceptionally, also been an author of three county floras, each of which was no mere dot mapping atlas, but a major work, pioneering concepts such as vegetation analysis (Shropshire), coincidence mapping (Montgomeryshire) and axiophytes and urban ecology (Birmingham and the Black Country). Never content to leave the data as a simple, pointless record of where botanists have been, he also contributed a chapter on change in the recent *Flora of Shropshire*.

Ian has always been a popular leader of field meetings, able to inspire astonishing numbers of people to go out recording. His combination of affability, academic analysis and forward thinking have been an inspiration to generations of botanists of all ages, and serve as an example to us all of the best that the BSBI can be.

Nick Stewart (proposed by Claudia Ferguson-Smyth)

I would like to propose Nick Stewart for Honorary Membership, both on account of his work on aquatic plants in general and on Charophytes in particular, and also because of his inspired teaching over so many years, where he has enthused generations of botanists.

Nick joined the BSBI in 1981 and whilst working for the Nature Conservancy Council was vice-county recorder for v.c.**87**, West Perth, from 1982 to 1992. During this period he wrote a *Provisional list of vascular plants growing in the Falkirk district* in 1988. At the beginning of 1987 he moved to London to work as Conservation Officer for the Conservation Association of Botanical Societies. This was a fore-runner of Plantlife, set up by the BSBI and other botanical societies (bryological, lichen, phycological *etc*.) to raise conservation issues. Then, in 1989, he switched from conservation officer to working on red data books for stoneworts, bryophytes and lichens, still for CABS, and then, in 1991, worked for the Irish government National Parks and Wildlife Service on similar Irish red data books.

Before this, he became deeply interested in aquatic plants, doing much fieldwork with Chris Preston, and indeed was generously acknowledged by Chris in his pondweed monograph for his help and inspiration. Chris has written that he is happy to support this proposal.

He started working on Charophytes with Jenny Bryant around 1988, and became BSBI referee certainly in 1995 and possibly earlier. Since then he has published draft keys and various reports for Plantlife, including the Important Stonewort Areas report in 1994, together with published or draft lists of charophytes for about 15 counties.

He continues to teach at Kindrogan (as he has done every year since 1997), Slapton Ley and at other venues too, including Wildlife Trusts, the Broads Authority, the Scottish Environmental Protection Agency, the Environment Agency, Countryside Council for Wales, the Freshwater Habitats Trust and Internal Fisheries Ireland.

NOTICES

BSBI Photography Competition 2016 & 2017

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

The two categories in the BSBI Photographic Competition in 2016 were: 1) Rare species and 2) Common species. The standard was very high and all 112 entries were printed and mounted on six A1 sheets. They formed a very colourful and beautiful display that was first mounted at the Scottish Annual Meeting in Perth in November 2016. The two winning images were chosen by a popular vote of those attending the meeting. The winner of the Rare category was Norwegian Mugwort (*Artemisia norvegica*) on Cul Mor by Simon Harrap and the winner of the Common category was Tall Bog-sedge (*Carex magellanica*) in Mid-Perthshire by Bill Boyd. The choice of this 'common' species might surprise but we didn't define common and rare, and left it entirely up to entrants. So, in this case, rarity is a bit like beauty – in the eye of the beholder! The winners each received a book token kindly donated by BSBI Summerfield Books. Congratulations are due to Simon and Bill for their splendid photographs!

The winning images for both categories appear in the Colour Section Plate 1.

The display was also mounted at the BSBI Annual Exhibition Meeting at CEH Wallingford, Oxford at the end of November, where it was also much admired. For a bit of fun we asked those attending to vote for their favourites. The most popular at the AEM in the Common category was Goat's-beard (*Tragopogon pratensis*), Oxfordshire by Tess Wright; and that in the Rare category was Butcher's-broom (*Ruscus aculeatus*) by Roy Sexton. Congratulations to Tess & Roy!

We are very grateful to all those who entered or voted in the competition, BSBI Summerfield Books who provided the prizes, and to Natalie Harmsworth for organising the competition and preparing the fantastic display of photographs.

Incidentally we have asked all entrants to give County Recorders detailed records of the populations they photographed (in both categories).

BSBI Photography Competition 2017

The BSBI Photography Competition's categories in 2017 will be 1) Plants in the Landscape and 2) Archeophytes – naturalised plant species that were introduced before 1500. A list of archaeophytes found in the UK can be found the BSBI website. The Plants in the landscape may be of flowering plants, conifers, ferns, horsetails, club-mosses or stoneworts. The competition is open to all amateur photographers. Photographs must be taken in Britain or Ireland but do not have to be taken in 2017. You may enter up to two images per category however you don't have to enter both categories. The winners will be selected by a popular vote by those attending the Scottish Annual Meeting.

1. Send your entries to Natalie Harmsworth (natann29@freeuk.com) **by 20st Oct 2017.**
2. Please submit the largest possible files sizes – though files over 10MB should be sent via Dropbox and not by email.
3. Please entitled photographs carefully using the following format: Common name (scientific name) location, photographers name and competition category (PL or A), e.g. "Cornflower (Centaurea cyanus), Strathmore, Angus by John Smith_A.jpg"
4. Copyright of images will remain with the photographer.
5. 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. This includes publishing them on the BSBI website or social media (photographs will be credited).
6. The BSBI also claims the right to edit or use images in combination with others.

Remember you have to be in it to win it!!

Essex Botanical Society

DR K.J. ADAMS, *63 Wroths Path, Baldwin's Hill, Loughton, Essex, IG10 1SH*; (ken.adams@virgin.net)

New website address for 'Ken's Keys'

The Essex Botanical Society website accidentally got deleted in June by the host company, owing to a misunderstanding. As a result, we have a new contract and a new website address: www.kenadams.org.uk/esb

Essex Botany Newsletter

The fourth *Essex Botany Newsletter* (Autumn 2016) has appeared, and among other items features picture keys to *Callitriche*, native and exotic *Lemnaceae* and the ecology of *Crassula helmsii* and *Hydrocotyle ranunculoides*.

Those wishing to receive a FREE copy of the next five *Newsletter* issues should contact our secretary: David Dives, Adrigole, Nine Ashes Road, Stondon Massey, Brentwood, Essex, CM15 OER, with their postal and e-mail addresses, and a £5 cheque payable to the Essex Botanical Society to cover post and packing.

South London Botanical Institute awarded City Bridge Trust grant of £76,500 for 'Botany on Your Plate'

CAROLINE PANKHURST, *Education & Project Manager, South London Botanical Institute (SLBI), 323 Norwood Road, London, SE24 9AQ*; (Tel: 020 8674 5787; caroline@slbi.org.uk)

The following is taken from a press release issued by the South London Botanical Institute.

The SLBI, based in Tulse Hill, has just been awarded £76,500 for an exciting new project, 'Botany on Your Plate'. The project will provide a range of activities introducing both children and adults to the science behind our food plants, helping people to understand where the food on their plate comes from. The project will take place over the next three years.

'Botany on Your Plate' will help people to engage with the plants and natural world around them, through discovering the environmental wonders of food plants. The project will encourage children and adults to grow food and to understand the local and global environments affecting what they eat. The Institute already offers a well-established, popular programme of educational activities around plant science, from curriculum-based school visits to adult workshops, talks and walks. 'Botany on Your Plate' will build on these activities to offer new topics around food plants, with the help of numerous plants growing outside in the SLBI garden. Whilst some people might already grow food at home or in their school garden, the Institute offers the opportunity to examine these plants under a microscope and to see the environments in which less familiar species such as Hops, Marsh-mallow and Loquat grow.

The SLBI was founded in 1910 by Allan Octavian Hume, a dedicated social reformer, with the aim of bringing botany to the working people of south London. This aim continues today, with people from local communities and further afield able to explore the plant world, enjoy the botanic garden, library and herbarium, and participate in a wide range of activities for all ages and abilities.

Commenting on the award, Marlowe Russell, SLBI Trustee, said: "We are delighted to have received this support from the City Bridge Trust and are looking forward to adding exciting food plant programmes to our activities with both adults and children. It is so important in today's world that those in the city as well as the country understand where their food comes from".

David Farnsworth, Director of the City Bridge Trust said: "City Bridge Trust makes grants of around £20m a year towards charitable activity in Greater London. We hope that this grant to the SLBI will help them continue to deliver vital services to disadvantaged people. We are committed to supporting Londoners to help make our city a fairer place in which to live and work."

The SLBI is open for frequent and varied events and activities, as well as general public openings on Thursdays from 10 a.m. - 4 p.m. For more details see: www.slbi.org.uk; call: 020 8674 5787; or email: info@slbi.org.uk.

Winners of the 2016 UK Awards for Biological Recording and Information Sharing announced

The winners of the second *UK Awards for Biological Recording and Information Sharing* were announced at the National Museums Scotland in Edinburgh during an evening ceremony on Thursday 17 November 2016.

These awards have been developed by the National Biodiversity Network, the National Forum for Biological Recording and the Biological Records Centre and are sponsored by Swarovski Optik UK. Their intention is to recognise and celebrate the outstanding contributions made to biological recording by adults and young people, which is helping to improve our understanding of the UK's wildlife.

Chris Wood is the winner of the David Robertson adult award for recording marine and coastal wildlife and 14-year old **Jordan Havell** is the winner of the David Robertson youth award for recording marine and coastal wildlife.

Richard Comont is the winner of the Gilbert White adult award for recording terrestrial and freshwater wildlife and 17-year old **George Garnett** is the winner of the Gilbert White youth award for recording terrestrial and freshwater wildlife.

Essex Wildlife Trust River Wardens are the winners of the inaugural Lynne Farrell group award for biological recording. **Caledonian Conservation Ltd** is the winner of the 2016 John Sawyer NBN Open Data award.

For more information about the award winners themselves, visit the NBN website: *https://nbn.org.uk/news-events-publications/uk-awards-biological-recording-informationsharing/uk-award-winners-2016/*

And remember to nominate an inspirational biological recorder for the 2017 awards – more information will be available from the NBN website in April.

Award winners and Officers in Biological Recording, from left to right: NBN Patron, The Earl of Selborne, Richard Comont, Chris Wood, Jordan Havell, Chris Cathrine, Director (Ecology) of Caledonian Conservation Ltd, Laura Millar and Mary Taylor, both Essex Wildlife Trust River Wardens, George Garnett, NBN Chairman, Professor Michael Hassell and Lynne Farrell.
Photo © NBN 2016.

REQUESTS

Platanthera chlorantha (Greater Butterfly-orchid) in Britain and Ireland – request for information on large populations

LYNNE FARRELL, *41 High Street, Hemingford Grey, Cambs. PE28 9BJ*; (lynneonmull@btinternet.com)

One of my friends from Mull, part of my recording area v.c.**103** Mid Ebudes, has moved to the mainland. On her land near Pennyghael, is a superb meadow, which includes several orchid species. In June 2010 we counted 842 flowering plants of *Platanthera chlorantha* and in June 2012 the number had risen to 1161 flowering plants. The new owners are also interested in this meadow and I was asked if this was an important site in a local and national context and promised to investigate.

Platanthera chlorantha does feature in the Rare Plant Register for v.c.**103** (available on-line through the BSBI website) and it is known from two tetrads on Tiree, one on Coll and 20 tetrads on Mull. Most of the populations consist of a few individuals, but there are two sites, one at Pennyghael in the south of the island and several, more or less contiguous, in the area around Treshnish farm in the north-west, that both have over 1000 flowering plants.

A little further investigation through the DDb came up with the following post-2003 records:-

Newtonmore (v.c.**96**): 10000 +
Cae Blaen Dyffryn (v.c.**44**): 6000
Dundon Hill (v.c.**6**): 2000
Pennyghael (v.c.**103**): 1161
Treshnish (v.c.**103**): 1000+
Strathleven (v.c.**99**): 1000
Porton Down (v.c.**12**): 1000

So, clearly, the largest population known is at Newtonmore and there are seven populations with at least 1000 plants, these being scattered from Somerset and North Hampshire in the south of England, through Carmarthenshire in Wales, northwards to Dumbartonshire, Mid Ebudes and Easterness in Scotland. I have no population counts from Ireland but recent surveys may provide some.

I would like to be able to set the Mull populations in a national context, and would be pleased to hear from botanists who know of any large populations for this species with records post 2000. Thank you.

OFFERS

Botanical Research Fund

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

The next deadline for applications is 28th February 2017.

For further details, potential applicants are encouraged to contact: 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).

BOOK NOTES

JOHN EDMONDSON, *Long Chase Farm, Holywell, Flintshire, CH8 7BH*; (a.books@mac.com)

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

*BAILEY, T. & MACPHERSON, S. *Carnivorous plants of Britain and Ireland.* Redfern Natural History Productions, Poole, 2016. 200 pp. ISBN 978 19 08787 23 1. £12.99 p/b. "The first fully illustrated guide to the carnivorous plants of Britain and Ireland features over 200 images and documents all recognised native species and their hybrids, as well as the non-native species that have become naturalised to form self-sustaining populations on these shores." - publisher's blurb.

CLARKE, I. *Name those grasses: identifying grasses, sedges and rushes.* Royal Botanic Gardens, Melbourne. 2015. 536 pp. ISBN 978 0 980 40764 8. £26.99 p/b.

*LACK, A. *Poppy.* Reaktion Books, London. 2016. 199 pp. ISBN 978 1 78023 653 7. £16 h/b. Ranging from botany to symbolism, remembrance and opium dens, this book aims to cover "all aspects" of the poppy (i.e. of the genus *Papaver*; species names are rarely mentioned). The book is well designed, with exquisite end papers.

MAHOOD, M.M. *A John Clare flora.* Trent Editions, Nottingham, 2016. xvi, 224 pp. ISBN 978 1 84233 159 0. £15 p/b.

SCOTT, M. *Mountain flowers*. Bloomsbury, London, 2016. 416 pp. ISBN 978 1 4729 2982 2. £35 h/b.

*STREETER, D., HART-DAVIES, C., HARDCASTLE, A., COLE, F. & HARPER, L. *Collins Wild Flower Guide.* William Collins, London, 2016. 704 pp. ISBN 978 0 00 815674 9. £24 h/b, 978 0 00 815675 6, £16 p/b. The second, revised and updated edition of the book originally published under the title *Collins Flower Guide* in 2009. For a copiously illustrated flora to credit the artists as co-authors is a compliment to their input, which along with David Streeter's concise yet effective keys and descriptions make this a worthwhile purchase for any aspiring field botanist. A critical approach is taken to semi-cryptic species such as *Urtica galeopsifolia* and *Hedera hibernica,* and some other traditionally 'difficult' groups such as *Alchemilla* are given a full treatment. Only the finer details in the illustrations are scaled, and the family sequence does not embrace APGIV, but this is a worthy successor to McClintock & Fitter.

RECORDERS AND RECORDING

Panel of Referees and Specialists

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

The following changes since the 2016 Yearbook have not been notified in previous issues of BSBI News. These are all included in the Yearbook for 2017.

David Pearman has taken over *Medicago* and *Trigonella*.

Bengt Jonsell has resigned from *Rorippa* and *Nasturtium*. Specimens for these genera should now be referred to **Tim Rich**, who is the referee for Brassicaceae (general).

Salicornia, which has not appeared on the list for a number of years, ought to have a referee,

and so should be considered as another vacancy. Suggestions or volunteers would be welcome!

Michael Wilcox will no longer be dealing with *Montia fontana* subspecies, so this post is also vacant.

Bruno Ryves has relinquished alien grasses and this post has been taken over by **Oli Pescott**.

John Poland's role as referee for vegetative plants includes winter twigs.

Martin Rand has taken over the role of advising on European Floras, but only for Western Europe, to include France, the Benelux Countries, and the Iberian Peninsula.

Please note the revised instructions from **Roger Maskew** for *Rosa* specimens.

Paul Green, referee for *Allium* has a new email address – paulbsbivcr4h12@gmail.com,

Contact details are still required for **Fiona Cooper** (*Populus*) and **Andrew Norton** (*Geranium*), and the email address for **Ray Harley** no longer works. If any can supply any of the missing details, please let me know. Also, I would urge referees to check their own entries and let me know of any corrections.

Panel of Vice-county Recorders

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

There are three retirements (or imminent retirements) to report. It's all change in **Sussex**, where **Paul Harmes** (v.c.**14**) and **Mike Shaw** (v.c.**13**) are in the process of handing over responsibilities to **Tim Rayner**, with **Matt Berry** remaining as co-Recorder for both counties. Officially, Paul is retiring at the end of January 2017, and Mike at the end of March 2017. However, to all intents, Tim is now the main contact for Sussex. Paul has been a VCR for East Sussex since 1993, and during that time has contributed an enormous amount to recording in the county. He made a major contribution both to Tim Rich's *Flora of Ashdown Forest* and to the *Sussex Rare Plant Register*, one of the first to be published, and instigated, along with Alan Knapp, the Sussex Flora project which is now well on its way to completion (and good timing for the atlas!). Paul has made a substantial contribution to the development of the Sussex Botanical Recording Society (SBRS) over the past 20 or more years, and I know that his botanical expertise continues to be greatly valued. Mike stepped into some very big boots when he took over VCR duties from Mary Briggs and Alan Knapp in 2011, and has since that time worked tirelessly in the cause of botanical recording in Sussex. He has been a member of the Flora Working Group for the past six years where, I am reliably informed, his capacity for sheer hard work has been invaluable, as it has been for the continued success of the SBRS. In addition to his contribution to the Flora project, Mike has somehow also found time to work on a volume about *Hieracium* in south-east England. Thank you to Paul, Mike, Tim and Matt for your wonderful work in the county. The third retirement to report is in **Oxfordshire** (v.c.**23**), where **Sue Helm** is stepping down after three years of very active service. Sue continues to play a major role in botanical recording in the county, but is superseded as VCR by **David Morris**, who has already become immersed in the role, with a county first (*Asplenium trichomanes* subsp. *pachyrachis*) within the first week! David has also set up an informative blog (*http://oxbot.blogspot.co.uk/*) that is well worth reading.

Paul Green, VCR for **H6** & **H12** has a new email address – paulbsbivcr4h12@gmail.com, which should be used from now on.

Calls for a VCR in a previously 'vacant' county have been answered by **Michael Philip** in **Lanarkshire** (v.c.**77**), **Francis & Margaret Higgins** in **Caithness** (v.c.**109**), **Paul Harvey** and **Alex Prendergast** in **Shetland** (v.c.**112**), **John Wallace** in **Mid Cork** (v.c.**H04**), **Edwina Cole** and **Finbar Wallace** in **East Cork** (v.c.**H05**), and **Oisin**

Duffy and **Mairead Crawford** in **East Donegal** (v.c.**H34**). Several counties have new co-Recorders. In **Hertfordshire** (v.c.**20**), **Trevor James** is now assisted by **Ian Denholm**, and in **Leicestershire** (v.c.**55**) **Russell Parry** teams up with **Geoffrey Hall**. In **Ayrshire** (v.c.**75**), **Carol Crawford** joins **David Lang** and **Gill Smart**, and in **County Leitrim** (v.c.**H29**) **Michelle Molloy** has become joint Recorder with **Michael Archer**.

A massive thank you to all of the above for stepping into the breach and beginning what I am sure will be a fun and rewarding experience. There remain vacancies for a VCR in **East Gloucestershire** (v.c.**33**), **Berwickshire** (v.c.**81**) and **County Longford** (v.c.**H24**), and vacancies for a joint Recorder in **Dorset** (v.c.**9**) and **Bedfordshire** (v.c.**30**). Please do get in touch with me if you are interested in learning more about what is involved.

There have been quite a few changes this year, but remember that if you are struggling to keep up-to-date (I know I have been!), the complete list of VCRs, along with contact details, updated where necessary, are available in the Yearbook.

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

The Red List group and their work

DAVID PEARMAN, *'Algiers', Feock, Truro, Cornwall, TR3 6RA*; (dpearman4@aol.com)
SIMON LEACH, *15 Trinity Street, Taunton, Somerset, TA1 3JG*; (simonleach@phonecoop.coop)

After the publication of the *New Atlas* (Preston *et al*., 2002), the Country Agencies and the BSBI realised that we had a powerful tool to produce a new 'Red List', based on IUCN Threat guidelines. A group was formed and met over a period of two years and the upshot was *The vascular plant red data list for Great Britain* (the 'Red List'), edited by Chris Cheffings and Lynne Farrell and published by JNCC in 2005.

This gave a core list, the Main List, of all GB native species and archaeophytes (but not neophytes) which were assessed and given a threat status, Critically Endangered (**CR**), Endangered (**EN**), Vulnerable (**VU**), Near Threatened (**NT**), or Least Concern (**LC**) (*i.e*. not threatened). Some taxa thought likely to be threatened, but for which there were insufficient distribution or population data to assign a threat status, were listed as Data Deficient (**DD**). Those that had been lost were assessed as either Extinct (**EX**) or Extinct in the Wild (**EW**).

The published report also gave two further lists, a 'Waiting List' and a 'Parking List'.

- The Waiting List (**WL**) included those taxa for which there was inadequate distribution data and/or taxonomic uncertainty and/or uncertainty about their native/alien status. Essentially the Waiting List was conceived as a 'pending tray' for taxa in need of further work.
- The Parking List (**PL**), in contrast, was really a list of species that, for one reason or another, had been considered but then rejected from the Main List (or Waiting List). Many of those on the Parking List were taxa that had featured in previous Red Data Books but which were now rendered ineligible, either because they had since been accorded a lower rank than subspecies, or because they were subsequently regarded as recent introductions (neophytes) rather than being either native or ancient introductions (archaeophytes).

This 2005 GB Red List led, indirectly, to the publication of country Red Lists in Wales (Dines, 2008) and England (Stroh *et al*., 2014), but the other lasting legacy was the formation of a group to continue the investigatory work initiated by the original report. This group is responsible for the maintenance and upkeep of the GB Red List, publishing annual amendments to the Main List, Waiting List and Parking List and revising threat statuses as appropriate. The group is especially concerned with work on the following categories of taxa:

- Taxa deemed to be threatened on the basis of small populations or few sites, but for which recent reliable data are often lacking. For such species we have organised field-work or mobilised contacts in order to collate and update our population/site data, which are then used to re-assess and if necessary amend threat statuses.
- **DD** taxa, where more work to establish distributions and population sizes can help to determine their true threat status.
- Subspecies or critical taxa, for which distribution data are often inadequate, and which are often as a consequence presumed to have the same status as the species as a whole, or else listed as **DD** (where there are grounds to believe they may be threatened) or removed to the Waiting List pending further study.
- **WL** taxa for which there continues to be doubt and debate over their native/alien status in GB. This has led to a few species described as 'neophytes' in the *New atlas* (Preston, Pearman & Dines, 2002) being subsequently re-assessed as 'native' or 'native or alien', and so added to the Main List, and vice versa. The results of our deliberations over such taxa have frequently been published as notes or short papers in *BSBI News* or *Watsonia* (now *New Journal of Botany*) and are fully referenced against any changes. We make our assessments as objective as possible, and they draw on a wide range of published and unpublished data. Even so, we recognise that for many taxa there can never be 100% certainty on matters of status, and we accept that others may sometimes disagree with the decisions we have taken.
- **PL** taxa, previously rejected, but for which there is more recent evidence that supports their inclusion on either the Waiting List or the Main List.

We hope, of course, that all this work will feed into the planned Atlas 2020, and that the results of that publication will, in turn, enable the production of revised threat statuses based on distribution and decline. It is likely that, after publication of the next Atlas, there will be a wholesale revision of the GB Red List, along with revised country Red Lists.

To give some idea of the work involved, our deliberations over the last 10 years have resulted in approximately 240 alterations to the Main List (and 450 to the list of *Hieracium* and *Taraxacum* which are now shown and evaluated in full). Of course, many of those 240 on the Main List are nomenclatural changes, especially after Stace (ed. 3) (2010), but at least half are genuine re-assessments.

We are in the process of ensuring that all these changes are reflected in the list accessible through the JNCC website. In addition, our intention is that, from next April, it will also be available (and downloadable) from the BSBI website. In the meantime, please contact one of us if you would like to see a copy. We recommend that anyone working on a county rare plant register or local Flora should refer to the latest version of the list when giving GB threat statuses for taxa within their area.

The current group comprises: Mike Fay (RBG Kew), Andy Jones (NRW), Iain McDonald (SNH), Ant Maddock (JNCC), John Martin (NE), Tim Pankhurst (Plantlife), Fred Rumsey (NHM), Ian Taylor (NE); and from the BSBI: Lynne Farrell, Simon Leach (ex-NE), David Pearman, Pete Stroh, Kevin Walker.

We feel that this group provides a great link between the BSBI and the plant specialists in the agencies, and with botanists and taxonomists at the Natural History Museum and Kew. We actually talk about plants the whole time!

How many species do we overlook when recording?

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

Background

Any botanical recording at a spatial scale greater than small plots involves a sampling approach. When we record in a particular survey unit, be it a site of botanical interest, a monad or a tetrad, we try to take a route that leads us through all the different habitats present. If we come to a species-rich area we may cross and re-cross it several times, perhaps making detailed notes of a few selected species. There is never any pretence that we cover all the ground, so we are bound to overlook some of the species present. The more fragmented the habitats are, the greater is the problem, as tiny fragments of distinctive habitat may be present in seemingly unlikely places.

We are conscious of overlooking certain species because they are only visible or identifiable at certain seasons. If we make further visits over a season the coverage will improve markedly, but it is never complete. There are also taxa that we seldom or never record because they are difficult to identify, like the microspecies of *Hieracium* (hawkweeds), or, in the case of hybrids, because we do not have the patience to look at a large number of individual plants in a mixed population, perhaps of *Rumex* spp. (docks) or *Salix* spp. (willows), looking for variation. Then there are the species which are easily passed by, like *Ophioglossum vulgatum* (Adder's-tongue Fern), and thus often go unrecorded, even though we can readily identify them if they are observed.

What we are not so conscious of is that a major reason for our apparent inefficiency in finding all the species present is that so many of them are rare in the unit we are trying to survey, even though many of these may be quite widespread not far away and readily recorded where that is so. If the plants are well-scattered we have several chances of happening upon one and recording it. If there are just a few plants in one place only they may well be missed, unless the species is very conspicuous, like the extreme case of *Sequoiadendron giganteum* (Wellingtonia), or unless we follow up a previous well-localised record.

If we repeat-record our site, monad or tetrad after a period of years with the same methodology we will obtain a different list of species. Some previously overlooked species will be found and some previously recorded species will not be re-found. In addition to these apparent gains and losses there will be real gains and losses due to colonisation and extinction. If we compare the earlier species list with the later one, we may be able to use informed guesswork to separate real change from apparent change. We will be much better-informed in this respect if we carried out both surveys ourselves or if the recording unit is a relatively small site, where we have knowledge of the habitats present, rather than a tetrad.

Estimating species overlooked

So how many species do we overlook? To investigate this issue we need an estimate of the probability of a species being recorded in a recording unit in which it is present (its 'probability', P). In *Change in the British flora 1987-2004* (Braithwaite *et al*., 2006) we derived such a statistic at tetrad scale for 860 consistently recorded species from the mix of re-finds, apparent gains and apparent losses between two sample surveys of British tetrads. Almost all widespread species were well-recorded, with P values around 0.9 (a 90% chance of re-finding the species), while scarcer species were very variably recorded, with P values between about 0.25 and 0.9, but with an average of about 0.75 (a 75% chance of re-finding the species).

The task of analysing the data for *Change in the British flora* drummed into those of us working on the project the simple maxim that most of the change occurs at the fringes of the distribution of a species, in areas where it is already a scarce or declining species, or where

it is near recently-colonised areas for increasing species. This maxim applies as much to apparent gains and losses as to real gains and losses. As noted above we are much more likely to overlook a species in a tetrad where it is present as just a few plants in one or two places.

The P values in *Change in the British flora* are derived from data across the whole range of an individual species, averaging the near-certainty of re-finding the species in areas where it is common with the uncertainty of re-finding it in areas where it is scarce. For this reason the calculated P values of the more widespread species do not provide reliable estimates of the chance of finding a species in areas where it is scarce. This suggests that, taking an average across a group of species, the probability of finding any species in a tetrad where it is scarce is not better than 0.75 (a 75% chance of finding the species). This is a result that enables us to proceed to a calculation of the number of species overlooked in a survey unit, noting that the P value of 0.75 is not a constant, but depends on the intensity of the survey and the ability of the recorder.

Two examples of repeat-surveys

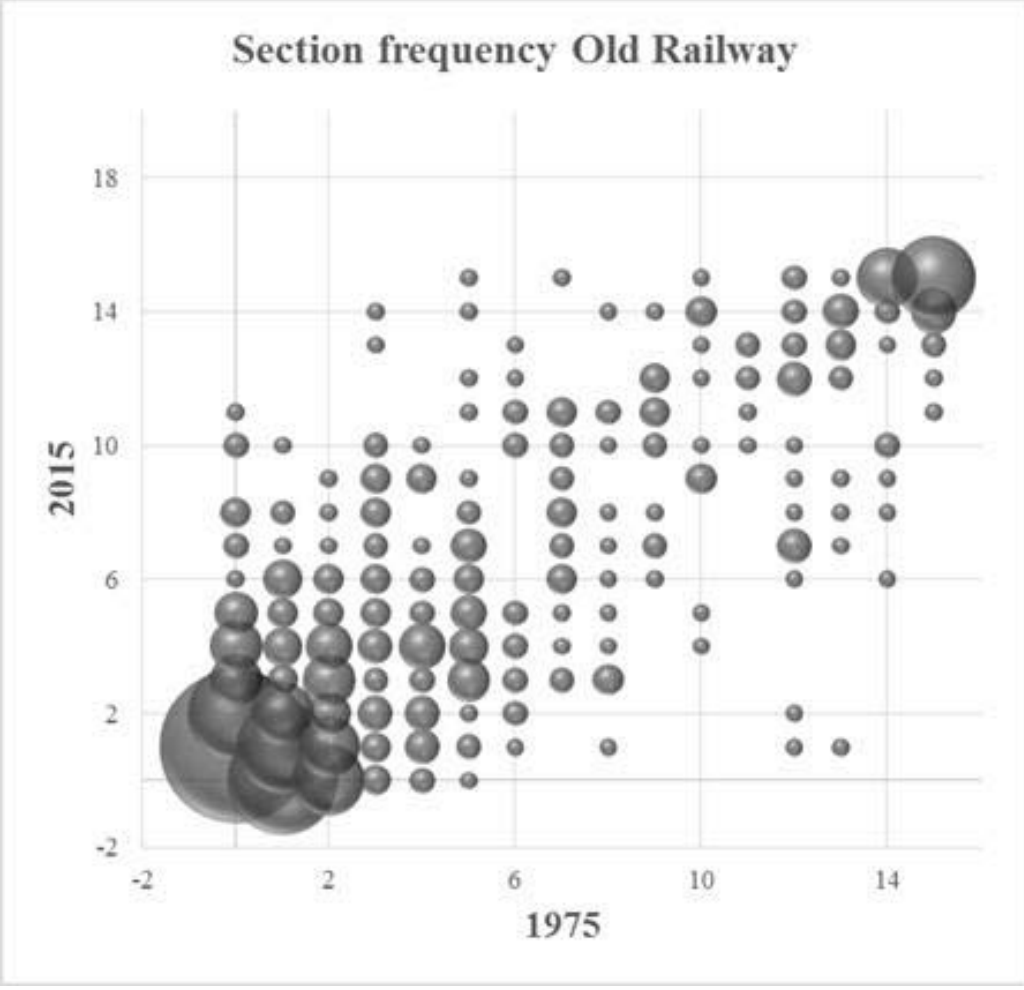
I have now tested this approach against the results of two repeat-surveys where most of the records in both surveys were made by myself. The first is a survey of a twenty-mile stretch of a disused railway in Roxburghshire (v.c.80) in 1975, repeated in 2015 after an interval of 40 years. The second is a survey of the hectad NT64 in Berwickshire (v.c.81), initially surveyed in 1987, repeated in respect of three tetrads in 2003 (for the BSBI Local Change project) and for samples from the rest of the hectad in 2007.

For the survey of the old railway the survey area was divided into 15 sections bounded by 2km grid lines south to north. The total area surveyed was around 200ha (half a tetrad). This presented an opportunity for very full coverage of the survey area, with most sections being visited three times in each survey. In contrast the BSBI Atlas survey of a hectad of 10,000ha was recorded on a sample basis, targeted at sites of botanical diversity (including man-made habitats), with all recording at monad scale or finer. Fifty days were spent recording in the repeat survey, rather less in the initial survey. The coverage was equivalent to recording about 11 tetrads out of the 25 in the hectad in the initial survey and 15 in the repeat survey. Despite the huge difference in the area surveyed, the ground covered in detail in the hectad survey is not at all dissimilar to the railway survey as both involved a walk of around 5km in a similar number of recording units (the railway survey covered the cuttings and embankments on both sides of the former line), repeated two or three times.

The initial survey of the old railway in 1975 was carried out when I was a novice botanist. However, as all the survey area was covered intensively, most of the species present were recorded somewhere. In 2015 I had the advantage of having the previous survey results to measure my efforts against. I was a reasonably experienced botanist by the time the initial Atlas hectad survey was carried out in 1987 but had very little previous knowledge of the ground, although I had access to detailed historical records for some of the scarcer species. For the repeat survey I had the benefit not only of detailed knowledge of the ground but also of localised records from the initial survey. As a result of this background, the repeat surveys of both the old railway and the Atlas hectad were markedly more effective than the initial surveys.

Statistics for the old railway survey

The results of the resurvey of the old railway may be visualised by a bubble chart (Fig. 1, p. 66), showing the section frequencies of each individual species where the bubble size is in proportion to the number of species with the same values. It is immediately apparent that many species were found in just one or two survey sections and that a high proportion of these were only found in one of the two surveys. It is amongst these species that change in the species list for the survey area as a whole occur.



The results of the two surveys of the old railway are summarised below, after eliminating as critical taxa those that were not considered to have been recorded consistently between the two surveys: these are some subspecies, most hybrids and all microspecies. The apparent gains and losses are divided between those thought to have been overlooked and those thought to represent real change. This division was made subjectively but is thought to be reasonably robust in view of the very intensive nature of the repeat survey.

Old Railway surveys		
Species	**1975**	**2015**
Recorded	432	479
Gain/Loss	*40*	*43*
Overlooked	*53*	*17*
Planted/sown	*14*	*0*
Total change	107	60
Both surveys	**539**	**539**

The calculations performed on this data are not presented here but are set out in a longer version of this article that is available from the author by email.

The number of species overlooked in the initial survey is estimated at 12% of the species present and the P value is estimated at 0.6. The number of species overlooked in the repeat survey is estimated at 8% of the species present and the P value is estimated at 0.75, so the repeat survey was considerably more effective than the initial survey. The number of species present in both surveys but overlooked in each is estimated at 2%. While it is gratifying to find that after two surveys only 2% of the species remain undetected, it must be emphasised that this result relates only to the consistently-recorded species.

Statistics for the hectad NT64 Atlas survey

The bubble chart for the NT64 Atlas survey, not reproduced here, is similar to that for the old railway, except that the trend is tilted away from the diagonal as more tetrads were surveyed in the repeat survey. There is a very similar dense concentration of scarce species.

The results of the two Atlas surveys are summarised below on the same basis as those for the old railway. The gains and losses are considerably smaller. This is related to the much larger survey area. It has been a great deal more difficult to separate apparent gains and losses from real gains and losses. Some of the gains follow national trends, such as the colonisation of roadsides by halophytes, while some of the losses relate to rare or scarce species that have been closely monitored. Such changes are robust. The remainder are based on informed guesswork that is thought to be on the conservative side.

NT64 Atlas surveys		
Species	**1987**	**2007**
Recorded	502	605
Gain/Loss	*20*	*8*
Overlooked	*67*	*28*
Planted/sown	*53*	*1*
Total change	140	37
Both surveys	**642**	**642**

The number of species overlooked in the initial survey is estimated at 15% of the species present and the P value is estimated at 0.6. The number of species overlooked in the repeat survey is estimated at 6% of the species present and the P value is estimated at 0.75. The number of species present in both surveys but overlooked in each is estimated at 3%. This result relates only to the consistently-recorded species.

Other studies

Rich & Smith (1996) used 29 volunteers to record four tetrads in West Sussex in 1992. They found wide differences between the lists recorded by different observers. They showed that after 40 visits to a tetrad the overall species list for the four tetrads as a whole was still rising steadily. They highlighted as a real obstacle to comprehensive coverage the fact that 24% of the species were only recorded once.

Morrison (2016) made a general review of observer error in vegetation surveys by studying 59 relevant articles. He found that the percentage of species found by one observer but overlooked by another (the 'pseudoturnover') was 10-30%, despite most of the surveys being of vegetation plots rather than large areas such as tetrads.

Discussion

The results obtained may be summarised as follows. In the closely controlled and very intensive surveys of the old railway 12% of the consistently-recorded species present are thought to have been overlooked in the initial survey, falling to 8% in the repeat survey and to 2% if the two surveys are taken together. In the less-intensive Atlas surveys of the hectad NT64 15% of the consistently-recorded species present are thought to have been overlooked in the initial survey, falling to 6% in the repeat

survey and to 3% if the two surveys are taken together.

This exercise has thus quantified, albeit only roughly, the proportion of the species present that are overlooked in typical BSBI surveys. It is suggested that it is particularly useful to have quantified the degree to which a repeat survey can improve on the initial survey if the recorders in the repeat survey make full use of the data obtained in the initial survey. The fact that I personally made most of the records in all the surveys reported on is relatively unusual in a wider BSBI context and undoubtedly reduces the relevance of the precise outcomes. The outcomes are likely to vary quite widely for recorders of differing abilities and knowledge of the ground being surveyed.

The probability-based approach to the analysis demonstrates that consistently- recorded species are vastly more likely to be overlooked in areas where they are rare or scarce. In the surveys studied around 20% of these consistently-recorded species were rare in the sense that they were only found in one survey unit. This factor outweighs by a considerable margin the differences that undoubtedly exist in the detectability of individual species. This relative detectability is not investigated here.

As our BSBI datasets become more comprehensive at finer spatial scales the prospect of ever more efficient repeat surveys emerges. I suggest that this is partly a dream, as a major limitation lies in the relatively modest number of localised records that recorders can be expected to try to re-find in a day spent in the field on general repeat-recording. During repeat-recording recorders have a well-founded desire to discover evidence of recent colonisation and to find species previously overlooked, as well as to find evidence of decline.

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Catch me if you can: a moving conundrum

DAVE GREEN, *36 Budbury Close, Bradford-on-Avon, Wiltshire, BA151QG*; (d.green7@btinternet.com)

We are familiar with ephemerals, pioneers and neophytes but I wonder if we need a separate category for inveterate itinerants?

In September 2016, I was recording for the 2020 Atlas in Wiltshire (v.cc.**7**/**8**). The square I was covering was in Semington, which is bisected by the boundaries of those vice-counties, and at this point the boundary is formed by the Kennet and Avon Canal. I noticed, on the canal, a moored barge, on whose rear bumper was growing *Polypogon viridis* (Water Bent), a species that is increasing in numbers in both vice-counties.

I duly recorded the location of this specimen, which was anchored, along with the barge, to the north bank, so in v.c.**7**. But you will no doubt have anticipated my problem. What if the barge drifts southwards across the canal for all of 3m? The plant would then be firmly in the territory of v.c.**8** (South Wiltshire), with a new grid reference. If the barge were to head eastwards, it and the *Polypogon* would soon be in v.c.**22** (Berkshire). Or westwards? Then we would have a new *P. viridis* record for v.c.**6** (Somerset), or even v.c.**34** (West Gloucestershire).

And how to describe my find: invasive, neophyte, transient, opportunist with wandering tendencies? How many times will this traveller be recorded? Will its incessant movement skew the statistics for the species? A Records Committee puzzle here I think.

Coordinator's Corner

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

The way that 2016 flew by, the end of 2019, the official end of atlas recording, will be here before we know it, and there are still plenty of areas where you can make your mark and ensure we have as complete a coverage of Britain and Ireland as possible. The meetings programme in your freshly printed Yearbook shows just how much time and effort is going into recording for the project, but bear in mind that there are many events run by VCRs and others that do not appear as formal BSBI meetings in the Yearbook, but are instead publicised via local county pages that, as I'm sure you all know, can be found by clicking on the map on the front page of the BSBI website.

With regard to coverage, I thought it might be useful to highlight just a few counties where Recorders would particularly appreciate more involvement by you, the great British and Irish botanical community. Whilst there is already much sterling work undertaken in these areas, there are also plenty of gaps where records are needed.

So, in no particular order, if you live in or plan to spend some time in Wales sampling the delights of **Cardiganshire**, **Breconshire** or **East Glamorgan**, then there will be a warm welcome afforded to you by Steve Chambers, John Crellin, and Julian Woodman respectively, especially if you are minded to gather records from tetrads that have very few post-1999 records. You will also, of course, have direct access to excellent local knowledge and so get to explore areas you might not have otherwise.

In Ireland, support would be appreciated by long-standing VCR Con Breen in **Westmeath**. Con knows the county really well, but would be delighted with help. In **East Donegal**, Oisín Duffy and Mairéad Crawford have made remarkable progress since coming on board a few years ago, but this is a huge county, and geographically challenging. And this is compounded by the fact that they both live in Waterford, all the way at the south of Ireland! They would love contributions from visiting botanists. And in **Longford,** a county that currently has no VCR, you are spoilt for choice for areas to visit, and are sure to add greatly to our current knowledge. All records from this county should be sent to Maria Long, Ireland's Country Officer.

The remote and spectacular scenery of **Wester Ross** in the north-west Highlands of Scotland has been well covered by Duncan Donald, the resident VCR, but it is a large and rugged place and plenty of areas are yet to be recorded for the atlas date class in one of our most beautiful counties. **Lanarkshire** has something for everyone. If it's rural landscapes you're after there are numerous 'blank' squares in the south of the county that require post-1999 records, but if you relish the challenge of urban recording, then there is much to be done in Glasgow, one of our biggest cities and somewhere that is sure to turn up lots of interesting aliens. Please get in touch with Michael Philip, the new VCR, for more information. And no tour of Scotland is complete without exploring **Wigtownshire** in the south-west, a lovely place for a holiday where there is ample opportunity to record both inland and coastal squares. Alan Silverside can direct you to suitable areas here.

Moving to England, **Oxfordshire** has a new VCR, David Morris, who would be happy to both broaden the botanical network and direct you to places where there are gaps in coverage (see also his excellent blog *OxBot.blogspot.co.uk*), and the same sentiment is shared by veteran VCR Trevor James in **Hertfordshire**, now ably assisted by our former President Ian Denholm. Finally, why not discover the glorious scenery that **East Gloucestershire** has to offer? This county currently has no VCR in place, all the more reason to get out there and help with atlas recording. Please contact me at the details given above if you are interested in helping here.

I'd like to emphasise, although it hopefully goes without saying, that *records from any and all VCs are needed and very welcome*. If you do want to get involved then please do contact the relevant VCR– they will be delighted to hear from you, and it's never been easier to get in touch, with email addresses now available for the vast majority via the Yearbook and website.

Under-recorded/overlooked species

In previous notes I have focused on one particular species, but as spring is just around the corner (more-or-less), this is just a reminder that the time is fast approaching to 'gap-fill' species that are very obvious early in the year, such as *Erophila verna*, *Ficaria verna*, *Poa infirma*, *Stella pallida*, *Veronica hederifolia*, etc.. Now is also a good time to search for wintergreen ferns such as *Asplenium adiantum-nigrum* on steep roadside banks (thanks to Bob Ellis for this tip), *Dryopteris borreri*, *Polystichum setiferum* and *P. aculeatum*.

OBITUARY NOTES

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

Since the publication of *BSBI News* **133**, we regret to report that the news of the deaths of the following members has reached us. We send regrets and sympathies to all the families.

Mr J.A. Cowlin of Colchester, Essex, a member since 2000

Miss M.G. Fraser of Culloden. Inverness, a member since 2001

***Dr M. George** of Norwich, a member since 1990

Mr G.J. Morgan of Brecon, Powys, a member since 2011

Mr P.H. Rollinson of Basingstoke, Hampshire, a member since 1982

* An obituary of Dr George is included in the *BSBI Yearbook 2017*

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)

Over several months I've received a large number of contributions to the BSBI Review. Reading through them all has been both fascinating and humbling. All contributors have shown huge dedication to BSBI and have put forward some really exciting suggestions and heart-felt views. They have come from all corners of Britain and Ireland, from more recent members who bring a fresh perspective and new insights, and from long standing members who have given BSBI a great deal of their time and energies over the years.

I'd like to thank you for taking the time to share your views. In your thoughtful observations and suggestions, you have shown how much you care about BSBI. It's now up to us – by which I mean Staff, Council, Trustees and President – to do justice to all your hard work by developing plans for the future of BSBI.

The next step is for the Council-appointed Review Group to meet in mid-January and, using the contributions to the Review, work up a series of recommendations to go forward to a joint meeting of Council and Trustees in early spring. Once recommendations have been agreed by all we can start the business of implementing them. More information will follow in April's BSBI News!

From the Scottish Officer – *JIM MCINTOSH*

c/o Royal Botanic Garden, 20 A Inverleith Row, Edinburgh, EH3 5LR;
(Tel.: 0131 2482894; jim.mcintosh@bsbi.org)

Scottish Vice-county Recorder vacancies

The BSBI Committee for Scotland is looking for keen field botanists to fill two Vice-county Recorder vacancies in Scotland, in Berwickshire and West Lothian.

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. Fortunately, both these vice-counties are rather well-recorded for Atlas 2020, but that is not to say that more could not be done: gaps filled, old records re-found, *etc*.

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 a great advantage, but is not absolutely 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, the Scottish Officer and fellow BSBI staff; and neighbouring and retiring Recorders are always happy to help with general advice and support.

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*

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

Welsh vice-county recorder vacancy

The BSBI Committee for Wales is looking for a keen field botanist to join Sarah Stille as joint vice-county recorder in Merionethshire. 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 of 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 weeks survey time in the vice-county each year. A basic knowledge of computers, including email and the internet (and perhaps Excel) is highly desirable, along with a willingness to learn MapMate (training can be provided).

To join Sarah as a joint Recorder would be an excellent start to vice-county recordership for anyone wishing to take on this role. Sarah has been joint and then sole recorder for some years and has an active group of local botanists ('Merioneth Nats') who have been helping with recording. She has also established the Caerdeon residential recording meeting, which has been contributing many records since 2012.

You would also have the full support of the BSBI Committee for Wales, the Welsh Officer and other BSBI staff. This position could be available as a time-limited Atlas 2020 vice-county recordership, if that would be more attractive to applicants.

If you would be interested in this role, please contact me for an initial chat by phone, or email by 31st March.

From the Irish Officer – *MARIA LONG*

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Review of progress and activities in Ireland

To quote a famous politician slogan used in a 2002 campaign, it's a case of "A lot done, more to do"!

Over recent years we have seen a big increase in the number of activities we provide here in Ireland, and all have been well-attended – something which tells us that there is an appetite out there for botanical training and recording, and furthermore, that there is scope to grow further. We have seen the number of records going to the DDb increase steadily, and very importantly, we have seen the number of vice-county recorders grow, with four new arrivals in the past few months alone.

We have had a series of recording events over the past few years, and this past year in particular. These are generally longer than a typical day or two-day BSBI outing, and

have a focus on small-group recording. For example, in the only vice-county which is currently vacant in Ireland, Longford, we had a three-day recording event earlier this year. We had nine attendees each day, and split into three groups of three. On the first day we tackled sites in the south of the county, on the second we focused on the middle, and on the final day we were based in the north. Each day three car loads went in different directions and covered different ground. In this way recording coverage was maximised, but not only this, less-experienced attendees were immersed and truly part of the recording. This way of operating appears to be win-win, with records generated (>2,700 on the Longford weekend) and new-comers/improvers guaranteed to learn lots.

Another element which is going very well is training events. Of particular note were this year's one-day sedge ID course (taught by Robert and Hannah Northridge), the two day-long *Euphrasia* ID workshops (by Chris Metherell), and the two-day residential charophyte workshop (by Cilian Roden). All were over-subscribed, with waiting lists, and all were enjoyable, challenging, rewarding and hugely educational. Not only were botanists trained on these days, they were given valuable positive experiences, something proven to be necessary for people to engage in a voluntary capacity in activities such as botanical recording. Also worth a mention is the fact that an 'Irish Charophyte Working Group' has emerged from the charophyte weekend, and may prove to be a very important source of charophyte records for many parts of the country for this often over-looked group.

BSBI's presence on social media platforms in Ireland has continued to strengthen, with almost 1,000 followers now on Twitter, and >1,250 on Facebook. This means that BSBI activities reach a wide audience, and particularly among younger people… something that is absolutely essential for the future of botanical recording in Ireland.

In terms of member engagement, and creating and nurturing clusters of botanical activity, projects such as the 'rough crew' (a loose group managed by email list, who tackle mountains, bogs, islands and other hard-to-reach places, lead expertly, in every sense of the word, by Rory Hodd) and the numerous 'local botany groups' which are springing up are very important. The rough crew allows some botanists who may not be enthused by 'square-bashing' to have something to get their teeth into, while allowing hill-walking nature enthusiasts to brush up on their botany (see back cover). This group has had over 40 different people attend outings, and has generated records that would more than likely have been impossible otherwise for the local recorder. There are local botany groups now in at least five places across Ireland, all of which are both generating records in support of the local VCR, and are fostering budding botanists.

This has just provided a taste of the many good things happening in the BSBI in Ireland currently, but I hope you will agree that while there are significant challenges, there has been significant progress, and a momentum has been building which we will hopefully continue to benefit from over the years to come. Indeed … … a lot done, more to do!

From the Hon. Field Meetings Secretary – *JONATHAN SHANKLIN*

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

With this issue of *BSBI News* comes the *BSBI Yearbook 2017*, containing the details of the meetings planned for 2017 and accounts of those that took place in 2016. Whilst I managed to mention a few of the 2016 meetings at the AEM in November I didn't have details or images of most, so had to improvise. Reading some of the accounts, is very clear that participants enjoyed their experiences and learnt much from the leaders and other members who took part. If you have never been to a meeting, do sign up for one, as most cater for all levels of expertise. The poster I put up at the Exhibition certainly had members busy taking notes in order to plan their 2017 holidays! The full details of the main meetings are also listed on the Field Meetings web page, and there are notes on any updates and additions that didn't make the Yearbook. I also keep a diary of meetings on the web page, which includes any local meetings that I've been told about.

Arrangements for the 2017 BSBI Summer Meeting in Flintshire in June are progressing well. Unfortunately we couldn't find anywhere at that time of year that could accommodate all the participants, but the Stamford Gate Hotel is big enough for everyone to dine together in the evening, and we will also have post-dinner id sessions. A flier with further information and a booking form are enclosed. Some of my earliest botanical records are from Flintshire, and in a primary school note-book I have pressed specimens of Cowslip and Colts-foot from Hope Mountain. After primary school there was quite a long gap before I started recording again, but I have done quite a bit in the county over the last decade. The family house is in an unusual parish which is partly in Cheshire and partly in Flintshire so it is a short walk to the Welsh border. The county flora is quite diverse, ranging through flood-plain meadows, coastal mud-flats, sand dunes, brownfield sites, heather moorland and limestone upland. Altogether I have made records for 934 species, of which the most rare (for me) is probably *Minuartia verna* (Spring Sandwort), noted as Vulnerable on the Welsh list. I'm sure that anyone coming will get a chance to see some of the many other rarities to be found in the county.

We haven't been able to arrange any overseas field meetings for a while, however several groups do offer holidays with a botanical bias. Companies that arrange such tours include ACE Cultural Tours, Iberian Wildlife Tours, Naturetrek and Wildlife Travel (Wildlife Trusts) amongst others that you can find on the Internet. I also sometimes get emails from other groups, most recently from someone in southern Spain who has a house to let with plenty of endemic species nearby.

I hope that many readers will have been out for the New Year Plant Hunt – it makes a great start to the year and can turn up some surprising records. In Cambridge we've even turned up first county records on past walks. Having started recording, do go on and make records for Atlas 2020. Most counties will have tetrads or hectads that are under explored – why not ask your Vice-County Recorder if you can adopt one and pay regular visits to it over the course of a year to see what you can find there. Alternatively join a local group outing and add another pair of eyes to help in searching for an elusive plant. You will be made very welcome.

PUBLICITY & OUTREACH

From the Communications Officer – *LOUISE MARSH*

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

New Year Plant Hunt 2017

By the time you read this, the New Year Plant Hunt for 2017 will be over and we hope that it will have proved an even bigger success than last year (see *BSBI News*, April 2016), when 865 botanists from 108 vice-counties recorded 653 taxa in bloom between 1st - 4th January.

Preliminary results from this year's New Year Plant Hunt will be published on our webpage at: http://bsbi.org/new-year-plant-hunt . 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 web 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:

- BSBI News & Views blog: http://bsbi.org/news-views
- Facebook page: https://www.facebook.com/BSBI2011
- BSBI Twitter account: https://twitter.com/BSBIbotany #NewYearPlantHunt

If you do not use Twitter but would like to see images of the plants recorded during the New Year Plant Hunt, just paste this link into your internet browser: https://twitter.com/search?f=tweets&vertical=default&q=%23newyearplanthunt&src=savs

You can also email the New Year Plant Hunt Team at: nyplanthunt@bsbi.org

BSBI Annual Exhibition Meeting 2016: report

On Saturday 26th November 2016, 195 botanists came together for the BSBI's Annual Exhibition Meeting (AEM), held this year at CEH Wallingford. The 2016 AEM offered members (and around 40 non-members) the chance to catch up with old friends, meet new ones and find out what fellow botanists are up to.

The Exhibits

There were 38 exhibits to enjoy, covering many aspects of botany on these islands and featuring herbarium sheets, photographs and items from the BRC archive, alongside research posters, news about BSBI projects and publications, and demonstrations of mobile apps for recorders. Entries to the BSBI Photographic Competition were displayed and visitors also enjoyed taking part in John Poland's Vegetative Plant ID Quiz.

More young people attended and exhibited this year than at previous AEMs, with a herbarium display by Glenda Orledge and her students from the University of Bath; a poster on using ancient woodland indicators by Joshua Styles (a student at Edge Hill University), whose survey work was supported by a BSBI Plant Study Grant; research posters by Lucy Ridding and Charlie Outhwaite at BRC/CEH, which used plant data collected by BSBI members; George Garnett exhibited a poster about the Young Darwin Scholarship, a Field Studies Council initiative supported by the BSBI; and New Year Plant Hunt Co-ordinator Ryan Clark offered an exhibit about 'A Focus on Nature', the network for young naturalists (see back cover & photos in Black & White on p.76).

Many of these exhibits are now available via the Exhibition Meeting webpage: http://bsbi.org/annual-exhibition-meeting . You can read more about them on the News & Views blog: http://bsbi.org/news-views

From Field to Map

Visitors enjoyed talks from nine speakers throughout the day. During the morning session 'From Field to Map: the story behind the dot', we heard from Field Meetings Secretary Jon Shanklin about the plants recorded by BSBI botanists on our field meetings, from

General view of the BSBI exhibition room at CEH Wallingford. Photo Richard Mabbutt © 2016

Jodey Peyton, one of the local organisers manning the BSBI stall at the Annual Exhibition Meeting, Wallingford. Photo Louise Marsh © 2016

Welsh Officer Polly Spencer-Vellacott on Rare Plant Registers and from President-elect Chris Metherell on BSBI Handbooks, which help us record more reliably. All three talks were augmented by posters in the Exhibition Hall. We also enjoyed a talk by Jo Judge, CEO of the National Biodiversity Network Trust, about exciting changes in the pipeline for the NBN.

The AGM

The AGM was held at 12.30 and is dealt with on page 3. One item which bears repeating here is that BSBI membership subscriptions are up by 1%, bucking the national trend among natural history and scientific societies. Visitors then had the option of lunch in the CEH restaurant and another chance to catch up with friends and look at the exhibits, after which the afternoon session of talks began with the presentation of a rather special award.

Presentation of the Engler Silver Medal

BSBI publications were highlighted with the award of the Engler Silver Medal to the co-authors of the *Hybrid flora of the British Isles*. Dr Sandy Knapp (Head of Vascular Plants at the Natural History Museum and a BSBI member) presented the award on behalf of the International Association of Plant Taxonomy to David Pearman and Chris Preston, two of the three co-authors.

Putting Plants on the Map

Chris Preston launched the afternoon session 'Putting Plants on the Map: working together for botanical recording' with a talk about the early days of the BSBI and the BRC/CEH working together. This was augmented by an exhibit that Chris had put together in the Exhibition Hall entitled 'Dear Mr Perring…the *Atlas of the British flora* archive'. Then Lucy Ridding (CEH) told us about using BSBI data to monitor vegetation changes; Paul Smith (Chair of Records & Research Committee and County Recorder for the Outer Hebrides) talked about surprising plant records and the BSBI botanists who recorded them; and Markus Wagner showed us CEH's Rare Arable Flowers App., which uses data collected over time by thousands of BSBI recorders.

BSBI and BRC/CEH working together

After a final chance to look at the exhibits, visit Summerfield Books' pop-up bookshop or catch up with people over coffee and cake, botanists returned to the lecture theatre. Our keynote speaker, David Roy (Head of the Biological Records Centre) pulled together the many threads of BSBI and BRC/CEH working together through the decades and into the future. You can see David's presentation, and those of our other speakers, on the Annual Exhibition Meeting page.

BSBI President John Faulkner closed the day by thanking everybody who contributed to the day's success: organisers Jodey Peyton and Kylie Jones from the BSBI's Meetings & Communications Committee were thanked for the many volunteer hours they put in to give us such an interesting programme and to make sure the meeting ran so smoothly; Jodey and Sue Townsend (who sits on both the Meetings & Communications and Training & Education Committees) were thanked for chairing the sessions so well; heartfelt gratitude was extended to David Roy, our keynote speaker and also our host: BRC/CEH very kindly made the venue available to us free of charge on this occasion and David's staff did a superb job looking after us all day; and our exhibitors, speakers and visitors were all thanked warmly for coming along and contributing to the day's resounding success.

Feedback

Around one quarter of our 195 visitors accepted an invitation to submit an electronic feedback form. Scores were extremely high, especially for enjoyability, organisation and advance communication. Difficulties in accessing the venue via public transport were mentioned, but this proved less of a problem than had been expected.

The (free) on-line booking service, being trialled for the first time at an AEM, proved easy to use for most people and reduced administration time for the organisers. About 7% of bookings came by post. Find out what some of the visitors to the Annual Exhibition Meeting had to say about the event at:

https://twitter.com/search?f=tweets&vertical=default&q=%23BSBIExhibitionMeeting&src=tyah

Diary for 2017

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

Date	**Committee etc**.	**Location**
2017		
Saturday 14 January 2017	Committee for Ireland	Dublin
Tuesday 31 January 2017	Records and Research	London
Wednesday 1 February 2017	Meetings and Communications	London
Wednesday 8 February 2017	Training & Education	Shrewsbury
Thursday 9 February 2017	Publications	London
Wednesday 22 February 2017	Joint Board/Council Meeting	London
Saturday 25 March 2017	Irish Spring Conference	Dublin
Saturday 6 May 2017	Committee for Ireland	Dublin
Saturday 2 September 2017	Committee for Ireland	Dublin
25 September 2017	Irish AGM	Belfast
Wednesday 27 September 2017	Meetings and Communications	London
Tuesday 3 October 2017	Records and Research	London
Thursday 12 October 2017	Publications	London
Saturday 4 November 2017	RBGE / Scottish Annual Meeting	Edinburgh
Saturday 26 November 2017	Annual Exhibition Meeting & AGM (Date & venue TBC)	London

STOP PRESS

List of Members January 2017

By the time you read this a new *List of Members*, in pdf format, will be available on the Members only section of the BSBI website, correct up to January 31st 2017. Members who do not have email or internet access but would like to see a copy are asked to contact the Membership Secretary, who may be able to help.

Solutions to Botanical Crossword 30

ACROSS
1. SCAB 4. DOCK LEAF 8. HUMIFY
9. THYMES 10. PINK 11. PRIMROSE
13. GOOD KING HENRY 16. UMBELLAR
19. CITE 20. BANIAN 22. DAPHNE
23. MACASSAR 24. DILL

DOWN
2. CAULIFORM 3. BLINKED 4. DRY UP
5. CUTTING 6. LAYER 7. ACE
12. SEROTINAL 14. ISLANDS
15. ESCAPED 17. ERICA
18. RUDER 21. AMA

Crib to Botanical Crossword 30

ACROSS
1. reverse BACS 4. charade 8. HUM/IF/Y
9. times (well, some people will insist on pronouncing x thus!) 10. double definition
11. anagram PROMISE + R
13. Henry IV was the king referred to
16. anag BLUR MALE 19. Site
20. charade 22. anag HAD PEN
23. MAC/ASS/A/R 24. pickeD ILLicit

DOWN
2. anag FORMULAIC 3. the old joke
4. dd/opposite to humify 5. dd 6. pun
7. ACE(R) 12. anag RELATIONS
14. anag SAND(A)L IS 15. dd
17. ERIC/A 18. RUDER(AL)
21. e.g. in *Cardamine amara* – American Medical Association

CONTRIBUTIONS INTENDED FOR *BSBI NEWS* 135 should reach the General Editor before March 1st

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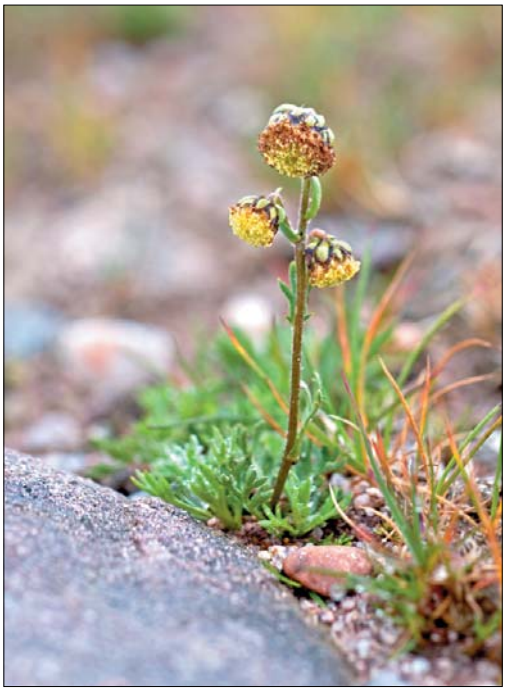
For other significant Society addresses see also pages 6 & 8-9

BSBI Yearbook is edited by Gwynn Ellis and David Pearman with the assistance of Trevor James and produced by Gwynn Ellis (address, etc., above) to whom all changes and corrections should be sent



Norwegian Mugwort (*Artemisia norvegica*) on Cul Mor (v.c.105).
Photo Simon Harrap © 2016 (p. 56)

Tall Bog Sedge (*Carex magellanica*) in Mid-Perthshire (v.c.88).
Photo Bill Boyd © 2016 (p. 56)

Chlorophyll deficient *Ophrys sphegodes*.
Photo M. Chalk © 2016 (p. 9)

Vicia villosa at Little Marlow (v.c.24).
Photo T. Harrison © 2016 (p. 42)

New Year Plant Hunt Coordinator Ryan Clark with exhibit ‘A Focus on Nature’ BSBI exhibition room at CEH Wallingford. Photo Richard Mabbutt © 2016 (p. 75)

“Look over there!” The Irish BSBI ‘rough crew’ on Knockboy (Cnoc Buí), Co. Cork’s highest mountain in July 2015 (v.c.West Cork, H03). Photo: Clare Heardman © 2015 (p. 73)