



BSS News

The Newsletter of the
Botanical Society of Scotland

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The Botanical Society of Scotland is a Charity
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Front cover pictures

Outside

Alpine bearberry (*Arctostaphylos alpinus*) & reindeer lichen (*Cladonia portentosa*) in autumn at Dundreggan. © Alan Watson Featherstone. See article on page 20.

Inside

Top left: Alan Watson Featherstone beside one of the large junipers at Dundreggan. © Alan Watson Featherstone. See article on page 20.

Top right: Sawfly larva *Nematus pravus* feeding on a dwarf birch *Betula nana* at Dundreggan. © Alan Watson Featherstone. See article on page 20.

Centre left: *Gymnosporangium clavariiforme*, a fungus that fruits on juniper and hawthorn. © Alan Watson Featherstone. See article on page 20.

Centre right: Velvet-shank *Flammulina velutipes* under snow. Photo by Dave Stokes.

Bottom left: Salmonberry *Rubus spectabilis* on Corstorphine Hill. Photo by Jackie Muscott. See article on page 14.

Bottom right: Water Dock *Rumex hydrolapathum* on the Union Canal. Photo by Jackie Muscott. See article on page 14.

Botanical Society of Scotland

(Incorporating the Cryptogamic Society of Scotland)

c/o Royal Botanic Garden Edinburgh

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Website: <http://www.botanical-society-scotland.org.uk>

You can follow the BSS on Facebook and Twitter via the website.

Founded in 1836 as the Botanical Society of Edinburgh, the Society became the Botanical Society of Scotland in 1991. Meetings are held in Edinburgh, Glasgow, Aberdeen, Dundee, St. Andrews and Inverness. The Society incorporates the Cryptogamic Society of Scotland and so encourages the study of flowering and non-flowering plants. Activities of the Society include lectures, field meetings, symposia, surveys, and an annual exhibition meeting for exchange of information between botanists working in different areas. All people interested in plants are welcome to be members of the Society, including professional academic plant scientists, amateur field botanists and students. All members receive information about events of the Society, including programmes of lectures and field meetings, as well as a twice-yearly newsletter, *BSS News*. Standard membership also includes the scientific journal: *Plant Ecology & Diversity*, published by the Botanical Society of Scotland and Taylor & Francis.

Applications for membership of the Botanical Society of Scotland should be made to the Hon. General Secretary at the address at the top of this page. Please ask for a Banker's Order form if required.

Subscriptions fall due on 1st October each year:

Standard rate (with the Journal <i>Plant Ecology and Diversity</i>)	£40.00
Standard rate for undergraduate students (with the journal)	£30.00
Basic rate (without the journal)	£20.00
Basic undergraduate student rate (without the journal)	£5.00

Subscriptions can be paid by cash, cheque (payable to the Botanical Society of Scotland), or Banker's Order. Alternatively, you can pay by PayPal via the BSS website membership page:

<http://www.botanical-society-scotland.org.uk/content/bss-membership>

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EDITORIAL

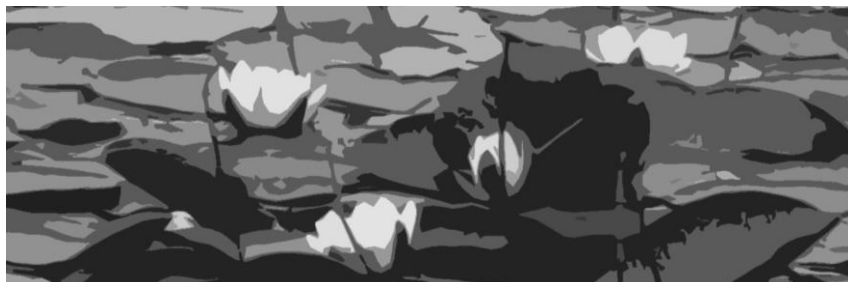
Following 2013's Year of Natural Scotland, 2014 is the Year of Homecoming Scotland, of the independence referendum, of the Glasgow Commonwealth Games and much more. More significantly for the BSS it is the year we become a Scottish Charitable Incorporated Organisation (SCIO) and the year we launch the Urban Flora of Scotland. You can read updates on both activities below.

The Year of Natural Scotland saw a number of surveys of Scotland's favourite species. While Scottish Natural Heritage ran a campaign about Scotland's 'Big Five', the Royal Botanic Garden, perhaps outraged by the fact that all five were animals, ran its own survey of Scotland's favourite native trees and flowers. Popular vote chose the Scots Pine as the nation's favourite plant, closely followed by the Scottish bluebell (or harebell) with Rowan, Scottish primrose and Silver birch in third, fourth and fifth places. The Forestry Commission joined in with a consultation to choose a national tree which found, not surprisingly, that the Scots Pine was the clear favourite.

What would the BSS have come up with if we had asked members about their favourite native plants? Perhaps something small and insignificant that's hard to find and all the more interesting for that. Or would we agree with the wider public that there is no more iconic plant in Scotland than the Scot's Pine? As for the Big Five, popular opinion chose the Golden Eagle – thank goodness it wasn't the tree-munching, biodiversity-destroying Red Deer.

It is always good to see a variety of unusual items in the BSS News and in this issue we go from academic studies to botanical poetry in the Scots language, taking in BSS news and reports, book recommendations, baking, botanical knitting and the crossword on the way. Many thanks to all our contributors.

Jane MacKintosh
Jill Thompson





Botanical Society of Scotland

SECRETARY'S REPORT ON BEHALF OF COUNCIL 2012/13

The change of date for the AGM (to September) has resulted in slightly more than the usual 12 months passing since the last report. This has been another successful year for the Society with considerable work taking place 'behind the scenes' in the continued development of our web-site and promotion of the Society at a range of events. Council thanks the many individuals who have been involved in the Society's continued success.

Council is discussing a Draft Strategic Plan for the Society covering 2014-2019. It includes: increasing engagement with the public, on-line publishing of articles and data of Scottish interest, development of the project 'Urban Flora of Scotland' and the introduction of Medals to reward high achievement by young botanists in Scotland.

We have welcomed 18 new members to the Society since the last AGM; 12 standard and 6 basic (listed at the end of the report) with a lower than usual student recruitment. Membership has remained almost constant, although this year has sadly seen the deaths of several long-standing members, including Richard Pankhurst and Paul Jarvis whose obituaries appeared in *BSS News* no. 101.

The Society's journal, *Plant Ecology and Diversity*, continues to go from strength to strength with outstanding contributions from scientists all over the world being delivered through four issues a year. The current issue, vol 6 (2), is now available to standard members and includes articles on pollination, hybridisation, succession and other diverse botanical topics. Council thanks the editor-in-chief, Dr Nagy, for all of his continued hard work in publicising the journal at conferences across the world and also to the specialist referees and editors who contribute to its successful publication.

The Society's other regular publication, *BSS News*, provides members with updates on Society business, field meetings, interesting and unusual finds, book reviews and other short items of botanical

interest; including the regular crossword feature. Members are now able to access past issues of the News (since March 2010) via the members pages of the Society's website. Council thanks the editors Dr Jill Thompson and Ms Jane MacKintosh for producing three excellent issues since the last AGM; BSS News 101, the September issue. Contributions are always welcome and the editors look forward to receiving your original articles, reviews and photographs.

The Society's web-site [<http://www.botanical-society-scotland.org.uk/>] is still developing. News of upcoming events in Scotland, and occasionally beyond are available on the web site front page. Additional features this year included an electronic link to the full text of *Flora of Sutherland* by John Anthony (published by the Society) courtesy of the Internet Archive project, and a cine film of the Botanical Society of Edinburgh's 1936 Centenary Tea Party that was retrieved from our archives. BSS publication *Celebrating Diversity in Community Woodlands in Scotland* can be purchased via the Society's website (inspection copies are available at meetings). Dr Richard Milne's beautifully constructed diagrams showing the relationships between vascular plant families and *Poems in a Botanical Dialect: a collection of botanical verse* written by Roger West, are exclusively available to members of the Society via the Members area. Council will continue to concentrate on the expansion of the members' section and related pages to enable improved links with our members outside Edinburgh (your thoughts and ideas are always welcome). Our thanks go to Mr Kim Harding for maintaining the site and to the increasing numbers of members that send contributions.

The BSS presence on Facebook [<http://www.facebook.com/groups/botsocscot/>] and Twitter [<https://twitter.com/BotSocScot>] promotes the work of the Society to the wider public and provides additional opportunities for members to communicate and share information. The Society currently has almost 200 'friends' and 'followers'.

The Edinburgh lecture programme continued to provide information on a wide range of interesting topics throughout the winter months and these were well-attended by both members and non-members of the society despite the temporary change of venue due to refurbishment of our usual lecture theatre part way through the 2012/13 season (lectures are now back to our usual venue at RBGE). Council thanks Dr Maria Chamberlain, the programme secretary, for arranging

this varied and entertaining programme. The Wright Smith Lecture in January was delivered by Professor Pete Hollingsworth, Royal Botanic Garden, Edinburgh and entitled *Genetics, biodiversity, conservation*. Other lectures included: Sandy Coppins on *Atlantic hazel: Scotland's special woodlands*; Mike Browne on *Geodiversity, geoconservation and ecosystem services*; and visits from Prof. Richard Bateman, Royal Botanic Garden, Kew with *Bee orchids challenge our perception of species*; and Prof. Richard Bardgett, Lancaster University *Understanding links between plants, soils and nutrient cycles*. The Society has also hosted and co-hosted successful lectures in Aberdeen, Dundee, Glasgow, Inverness and St Andrews during the past year including *A Nature Reserve in Angus - The Outer Limits of Gardening* presented by Dr Hugh Ingram, Dunbog - formerly Dundee University. Thanks as always go to the Local Secretaries of the BSS who liaise with universities and other societies to promote BSS-sponsored lectures throughout Scotland, and also to the local Botany and Naturalist groups who invite BSS members to participate in their lecture programmes. The 2013/14 winter lecture programmes have now been announced and we look forward to another interesting season.

The 2012 Field Programme provided opportunities to record, study and learn within a rich and varied range of events. Council thanks the many field leaders who gave their time and expertise to these events, and also the members who produced short articles describing the visits for BSS News. The 2013 summer field programme continued into autumn with trips to West Barns, Belhaven Bay, leader Dr Richard Milne, on Saturday 21/09/2013 and to East Wemyss, leader Dr Chris Jeffree, on Saturday, 26/10/2013 (details in BSS News 101 and on the BSS website).

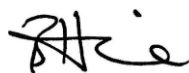
The annual BSS/BSBI Exhibition Meeting held at RBGE in November 2012 was, as always, an outstanding success. An account was published in BSS News 100 and our thanks go to the organisers and contributors. The 2013 meeting was held at RBGE on Saturday 2nd November.

The winning entry of the annual BSS Student Dissertation Prize 2012 was judged to be Philippa (Pippa) Stone with a final year undergraduate project carried out at Edinburgh University as part of her degree; BSc Ecological Science (Hons. Forestry). Title: The effect of Sitka spruce (*Picea sitchensis*) silviculture on stand structure and epiphytic lichen abundance in Glentress Forest. Pippa was presented

with her award on 21st February 2013 at the Edinburgh lecture. The abstracts of all entries for the Student Prize were published in BSS News 100 and the abstracts of the entries for 2013 are in this issue.

Council would again like to express our thanks to Professor Stephen Blackmore, the Regius Keeper of the Royal Botanic Garden Edinburgh, for his continued support of the Society and for providing accommodation for our meetings. Council continue to encourage all staff of RBGE to become members of the Society.

Vice-president Chris Jeffree, and Councillors Liz Kungu and Richard Milne will come to the end of their present terms of office in September 2013. We would like to take this opportunity to thank them for their contribution to the Society.



Dr Barbra Harvie (Hon Gen Secretary)

Council welcome the following new members to the Society in 2012/13:

Standard

Lewis Normand, Tunbridge Wells
David Holmes, Inverness
Katherine Buchanan, Humbie
Margaret Edwards, California

Clare Reaney, Auchtermuchty
Jenny Farrar, Edinburgh
Anthony McCluskey, Stirling

Student Standard

Susan Jarvis, Aberdeen
Clarinda Burrell, Edinburgh
Anja Groteluschen, Huntly

Sarah Greenwood, Callander
Zainab Abubakar, Aberdeen

Basic

Till Kroeber, Saline

Student Basic

Mellissa Bothe, Germany
Flora Paldi, Edinburgh
Smija Kurian, Manchester

Kirsty Wilson, Edinburgh
Manuel Loeffler, Edinburgh

A NEW CONSTITUTION FOR THE BOTANICAL SOCIETY OF SCOTLAND SCIO

Over the past 6 months, Council has been working hard to prepare the Botanical Society of Scotland for an important change in its charitable status. BSS has been an unincorporated organization since it was first registered as a charity in 1918. In an unincorporated organisation, it is the individual board members – we call them “Members of Council” – who are legally responsible for the actions of the Society. They could, therefore, be exposed to personal financial risk if the Society were to run into financial difficulty, and might have to face legal action from members of the public, as a result of the Society’s activities. The risk of such action is very slight – there is no precedent for action against us in our history - but it could be very damaging to a private individual, and this risk may be expected to increase, in proportion to our use of the internet as a means of publicity and communication. It is also likely to increase as we engage with the public in open meetings and projects, which is a concern as we move towards the launch of our new citizen science project on the Urban Flora of Scotland.

The Scottish Charitable Incorporated Organisation or “SCIO” is a bit like a blend of a limited liability company and a charity, but unlike a charitable company it reports to a single regulator, OSCR, the Office of the Scottish Charity Regulator. The main benefit to us of the change of the Society to a SCIO is that BSS would have a legal personality in its own right, whereas at present, it is currently seen in law as a loose association of individuals. As a SCIO, our members who serve on our Council would enjoy increased protection against personal financial and legal liability, since any legal action against the Society would have to be directed towards the organization itself, and not towards individual members. Additional benefits are that the SCIO can enter into contracts, and therefore could employ staff if necessary.

At the Annual General Meeting of September 2013 members voted overwhelmingly in favour of the proposal to draft a new Constitution for the SCIO, and approved the addition to our existing constitution of a clause that will allow the original unincorporated organization to be wound up. During October, a SCIO Constitution Working Group was set up, chaired by Chris Jeffree, together with John Grace (President), David Chamberlain (Treasurer), Maria Chamberlain (Programme Secretary) and Barbra Harvie (Hon. General Secretary) and Julia

Wilson. The working group sought expert advice from Edinburgh Voluntary Organisations Council (EVOC) on the wording, greatly helped by the existence of a template prepared for the Scottish Council of Voluntary Organisations by the Scottish Law firm Burness Paull. Without this template, the job would have been almost overwhelmingly difficult. The working group's aim was to produce a new constitution with broadly similar effect to the original one, but which both takes advantage of some new opportunities and removes some unnecessary constraints on our freedom to act. It was also a perfect opportunity to redefine the purposes of the Society, following on from the new Strategic Plan, which was produced by our President during the summer, and to ensure that the purposes fully reflected the responsibility of any charity to benefit the public. The resulting draft Constitution was put before Council at their meeting on 22nd November and was unanimously approved.

The next stage of the application process required the members of BSS to approve the draft Constitution by a two-thirds majority at a Special General Meeting, and to give Council a mandate to proceed with the application to the Office of the Scottish Charity Regulator to convert the Society to a SCIO. The Special General Meeting was held at the Royal Botanic Garden Edinburgh on Thursday 19th December 2013, and both motions were unanimously carried. Following this vote of approval by members early in the New Year 2014, BSS will therefore be applying to change to a new legal form of charity that was introduced by the Scottish Government in April 2011.

So what changes can the members expect to see once the Society has become a SCIO? Will our name change?

Not in general usage, but the acronym "SCIO" for Scottish Charitable Incorporated Organisation will be added to our formal, legal name, so that we will formally be registered as The Botanical Society of Scotland SCIO. Informally, we will continue to refer to the Society as Botanical Society of Scotland or simply as BSS. The Society's Charity number SC016283 will remain the same.

Will our purposes change? Not fundamentally. The old Constitution stated that we incorporate the Cryptogamic Society of Scotland which amalgamated with the Botanical Society of Edinburgh (as it was then) in April 1935. The agreement at that time was that the words "Incorporating the Cryptogamic Society of Scotland" were to be added where appropriate. We may continue to do this, but the new Constitution will

not refer to CSS by name. That does not imply any weakening of our interest in cryptogams. BSS has always cherished its unique position nationally in having the broadest interest in plants *sensu lato*, and the first clause of the purposes reaffirms this, as follows:

4.1 To advance the study of plants, algae, cryptogams, fungi and associated organisms, to spread botanical knowledge and understanding of the part played by these organisms in Scotland's environment, culture, history and heritage.

All members of Council will have the status of Charity Trustees, elected by the members and answerable to them, but with full executive authority to do anything which is calculated to further the Society's purposes. A difference in the way Council will operate is that whereas hitherto the members have been asked to vote for individuals to fulfil specific roles on Council at the AGM, in future the individuals who serve on Council will be elected by the AGM, but their roles will be defined by Council at the first Council meeting. Council will also be free to re-allocate roles to elected Council members, without reference to the membership, as and when the management priorities require it. A further difference is that Council will be able to form sub-committees to perform specific tasks. A sub-committee will always be chaired by a Council member (Charity Trustee) but may be composed of ordinary members or even non-members where their expertise is necessary. This may be a way of involving people in the management of the Society in preparation for possible election to Council.

The new Constitution redefines the rules for membership of the Society. Existing Honorary memberships will continue to be honoured. An important change is that students in full time education and other young people from age 16 upwards will be eligible for full membership benefits, including the full right to vote, without losing their right to a concessionary rate. Provision has been made for a Family membership rate, although the details of how this will be applied are yet to be decided by Council, and proposals will be discussed with the members at a future AGM. Another innovation is that Corporate membership will become possible. Again, details of the subscription are still to be decided. A Corporate member will be able to nominate an individual to represent it and that individual will have a single vote. This opens the possibility that our BSBI representative, for example, might carry BSBI's authority to vote and to speak to the Society on their behalf.

The new Constitution is a much longer document than the old, now twenty pages of A4 as compared with four, but is written in straightforward language and is easy to understand. You can see the whole document on the members' area of the BSS web site: <http://www.botanical-society-scotland.org.uk/>.

Dr. Chris Jeffree
Chair of SCIO working group

THE URBAN FLORA OF SCOTLAND – AN UPDATE

In the last volume of the *BSS News*, we outlined a long-term project that seeks to engage not only our members but also the public in a botanical survey of cities and towns the length and breadth of Scotland. During 2014 we hope the project will achieve lift-off, and begin to engage ordinary citizens in the discovery of wild plants.

It is clear that the task is very large, and the best way to tackle it will be to initially concentrate on a set of distinct habitats, focusing on one or two in the early stages. In my talks to the BSS and BSBI I've suggested these in the following list should be the focal habitats, as they occur in most of Scotland's urban areas and, therefore, a comparison among habitats and cities will be possible:

1. Grasslands (including parks and golf-courses)
2. Walls, buildings, rocks
3. Farmland
4. Allotments
5. Coastal sites
6. Graveyards
7. Railways
8. Cycle paths
8. Roads/pavements
9. Woodlands
10. Gardens
11. Rivers/streams

Some of these habitats pose particular problems. Gardens, for example, contain strange plant forms that occur through introductions, and also from hybridization between closely related native and alien species. Should we be strict, and allow only native wild plants in our survey, or do we allow any plant that has become naturalized?

We want to achieve good geographical coverage, spanning the North-South and East-West gradients of temperature and rainfall. Most of Scotland's cities are in the East, and so it will be important to include towns of the west coast in the analysis. Where are all the botanists? Well, our membership list suggests that they are *everywhere*; and we need some of these people to come forward if they are willing to be 'champions' of the urban flora in their own locality.

We also want to achieve good taxonomic coverage, and this poses some interesting challenges. How should we sample sites for fungi, considering the strong inter-annual and intra-annual variation in their appearance? Likewise, how should we deal with bryophytes, given their fine-grain distribution patterns?

Most importantly, how shall we engage newcomers? Technology is increasingly helping us. In January 2014 we had an exciting lecture about citizen science, from Jonathan Silvertown of the Open University. He showed how total beginners are learning useful identification skills through taking photographs and putting these 'on-line' on the internet, using i-Spot, an App that runs on android smartphones. Perhaps we need our own App? If there are members out there with skills in App-creation then perhaps they would like to talk to us!

We will be having monthly meetings in 2014, and I will report on our discussions as they occur. In the meantime, if you want to participate, please send an email to jgrace@ed.ac.uk with subject line URBAN FLORA to tell me where you live and what your interests are in the Urban Flora project.

John Grace
President Botanical Society of Scotland



PLANTS ON THE MOVE

Some plant species seem to be increasing their population and number of locations in Edinburgh and the Lothians. Some are invasive aliens – and not just the official ‘baddies’. The most locally devastating is Few-flowered Leek *Allium paradoxum*, which has ravaged many damp woodlands, including Sites of Special Scientific Interest and Local Biodiversity Sites. It spreads by bulbils and out-competes nearly all our native plants producing a monoculture where once there was diversity in the spring.

The shrub Salmonberry *Rubus spectabilis* now dominates a large part of Corstorphine Hill in Edinburgh. It is quite an attractive plant but difficult to control. Apparently in North America, its natural home, the berries are attractive to bears, but locally it’s doubtless spread by birds. Another out-of-control shrub is Sea Buckthorn *Hippophae rhamnoides*, which is spreading over coastal turf and threatening rare native plants. It was deliberately planted to stabilise the dunes: now they are trying to cut it back. It is popular with winter flocks of Fieldfares, but there are always plenty of berries left over in the spring so there’s definitely too much of it.

Other plants are less of a threat. The spread of salt on our roads has led to a big increase in plants normally confined to the coast. Danish Scurvy Grass *Cochlearia danica* is probably the most obvious to passing traffic, but Lesser Sea Spurrey *Spergularia marina* and Reflexed Saltmarsh Grass *Puccinellia distans* are now widespread on the verges. When I first started recording in West Lothian there was a single site there for *Puccinellia distans* (now inaccessible) but these days the grass is not uncommon by roadsides.

On the Union Canal, 20 odd years ago, Water Dock *Rumex hydrolapathum* was only to be found near Falkirk, but in recent years it has crossed the Avon and settled along the West Lothian part of the canal. It is doubtless on its way to the Edinburgh section (if it hasn’t got there already). It has probably been spread by canal traffic. Similarly small clumps of Frogbit *Hydrocharis morsus-ranae* have been brought up from the Forth-Clyde Canal by the Falkirk Wheel.

Another plant with less obvious means of transport is Wood Small-reed *Calamagrostis epigejos*. Once confined to a few ditches on the Kerse of Kinneil it is now scattered over various parts of West Lothian, and has recently been found to the east of the Almond, and even a

small clump in the heart of Edinburgh. Prickly Sedge *Carex muricata* ssp *pairae* also seems to be turning up more often (or I am getting better at recognising it?). New sites were found this year as far apart as Dalmeny village and the grounds of Astley-Ainslie Hospital.

Similarly Wall Lettuce *Mycelis muralis*, once uncommon, is becoming a familiar Edinburgh weed. While Great Lettuce *Lactuca virosa* recently turned up at Philpstoun Bing where it is doing well. It had previously been found in waste areas at Leith Docks and Granton.

A number of annuals are also making a go of it. Shaggy Soldier *Galinsoga quadriradiata* has established itself in a few places on streets and allotments in Edinburgh. It has a very short life-cycle so intermittent spraying does little to deter it. A large colony of Canadian Fleabane *Conyza canadensis* was noted at Leith Docks in 1989, but has presumably been lost due to redevelopment. However the plant is now to be found below Edinburgh Castle and in the canal basin. But the Blue Fleabane *Erigeron acer* has had the greatest local success, as it is now well established on a number of coastal dunes in East Lothian.

One of the oddest introductions of recent years (it has to be an introduction) is Wall Pennywort or Navelwort *Umbilicus rupestris*. It must be be10-20 years ago that I first noticed a couple of plants on a bit of damp cliff on the side of Blackford Hill. I did not expect it to survive, but it's been going from strength to strength and now there are more than 200 rosettes. I wonder if warmer winters (on average) have been good for this normally western plant – and probably for others.

Perhaps the proposed survey of urban plants in Scotland will throw up some more interesting information about plants on the move.

Jackie Muscott

TWO DIFFERENT PUTATIVE INTERGENERIC ORCHID HYBRIDS IN THE SAME MEADOW!

The area around Kingussie has a wealth of botanical interest. While the botanical delights of the highlands and native pinewoods of the general area are well known, I was very pleasantly surprised by the diversity and abundance of plants in the meadows close to Loch Insh and the river Spey. The sheer quantity of some local plants is remarkable, especially *Trollius europaeus* north of Loch Insh, *Menyanthes trifoliata* is in fine

form, and *Platanthera chlorantha* on the "wildcat trail" by the river near Newtonmore. The latter also boasts an area of consolidated shingle locally called "the island" that has a remarkable community including *Antennaria dioica*, *Silene uniflora*, *Botrychium lunaria*, *Anthyllis vulneraria lapponica*, *Viola lutea* (purple form), *Lepidium heterophyllum*, and *Teesdalia nudicaulis*. The whole area has a broad diversity of sedges, with *Carex chordorrhiza* in Insh Marshes merely the cream of the crop.

Even so, I was amazed by what I found in Invertromie meadow in June 2012. The site, recommended to me by Maria Chamberlain, boasting magnificent lichen communities on its walls, is not at first sight as exciting as the "island", but held two remarkable surprises. I had never seen an intergeneric orchid hybrid in 37 years of botanist, but here I clocked up two!

First came what looked like an unusually long-spiked *Dactylorhiza purpurella*, but with spurs too long to be this species it could only I think be a hybrid with *Gymnadenia borealis*. Both grow in the meadow, and there was no other plant like this putative hybrid.

Next, among *D. maculata* and cottongrass in a wetter part of the meadow, were two more extraordinary specimens. Both clearly had some *D. maculata*, but deeper colours indicated hybridisation, whereas longer spurs again implicated *G. borealis*.

The only hybrid between these two genera listed on the BSBI maps website is *G. borealis* x *D. incarnata*, but Stace (2010) lists nine hybrid combinations between these genera, with *G. borealis* x *D. maculata* (*X Dactylogymnadenia evansii*) "found in N England and Scotland" whereas *G. borealis* x *D. purpurella* (*X D. varia*) is recorded mainly from western Scotland (Stace, 2010). In the absence of hard evidence, I retain a degree of necessary scepticism about the identity of my plants, but cannot see what else either of them could be.

Dr Richard Milne
Edinburgh University

Reference

Stace, C. (2010) New Flora of the British Isles. Cambridge University Press, 1266 pages

VIOLET ANTHER SMUT IN AMERICA

Violet Anther Smuts attack members of the *Caryophyllaceae* (Pinks, Campions, Stitchworts etc) hijacking the anthers of infected plants so that they produce dark spores instead of yellow pollen. Female structures do not mature, so infected plants are infertile but serve to spread the disease. In the case of dioecious plants, infected females produce anthers so that smut spores can be produced!

Until recently all forms of the smut were lumped together as *Microbotryum (Ustilago) violaceum* but now a number of different species are recognised attacking different plants.

For the last two years I have been sending specimens of the smuts to Professor Tatania Giraud a geneticist in Paris (see BSS news 2011 issue 97: p40-41), and she kindly sent me a copy of a paper describing some of the research in which she is involved: 'Anther smut fungi sterilizing Caryophyllaceae in Scotland'. There is a lot of interest at the moment in the spread of plant pathogens, and this particular paper was looking at the spread of *Microbotryum lichnidis-dioica* in North America.

Microbotryum lichnidis-dioica infects White Champion *Silene latifolia*, and both the plant and the fungus originate in Europe. White Champion has been in America for about 150 years, but its smut is a much more recent immigrant (at least it is not found in any old herbarium specimens). The Champion seems to have been introduced from various parts of Europe so there is a good deal of genetic variation. The smut by contrast has little genetic variation suggesting it was introduced from a single source.

It was thought possible that a related smut, already present in America could have jumped to a new host, the most likely candidate being *M. silenoides-dioica*, a closely-related smut that infects Red Champion *Silene dioica* - but genetic studies eliminated this possibility. So, where did the infection come from?

Previous studies of *M. lichnidis-dioica* in Europe had identified a number of different strains centred in different parts of Europe and comparison of the genome indicated that the American specimens came from north-west Europe and probably from Scotland! But the question remains how did it manage to cross the Atlantic?

It seems a most unlikely candidate to cross the Atlantic. It is an obligate parasite of White Champion and is normally spread from infected

to uninfected plants by pollinating insects - and the spores seem unable to survive in the environment. One explanation is that diseased plants may have been carried by boat along with fodder and that plant seeds germinated among the spores. Alternatively someone may have carried infected plants for their garden, perhaps thinking the ones with dark anthers were more striking. But it's not a normal garden plant. So the route is not certain.

It is interesting and perhaps worrying to note that such an unlikely plant pathogen should have managed to jump continents successfully.

Jackie Muscott

Reference:

- Fontaine MC, Gladieux P, Hood, ME, and Giraud, T (2013). History of the invasion of the anther smut pathogen on *Silene latifolia* in North America. *New Phytologist* 198(3): 946-956
- Giraud, T. and Hood, M. E. (2011). Anther smut fungi sterilizing Caryophyllaceae in Scotland. BSS News (The Newsletter of the Botanical Society of Scotland) No 97. 40-41.

Footnote: Professor Giraud is continuing her work on the genetics of all the violet Anther Smuts, and would appreciate more specimens of infected *Caryophyllaceae*. Just press the flowers and post them with details of where they were found (including a map reference) to: Tatania Giraud, Universite Paris-Sud, Bat 360, 91405 Orsay cedex, Paris, France

BSS ALPINE FIELD MEETING - MEALL NAN SUBH, 22ND JUNE 2013

Eight hardy souls turned up on a wet Saturday morning in June to attend the BSS alpine field meeting. Meall nan Subh (806m), which means 'Hill of the Berry' is a Corbett between Beinn Heasgarnich and Meall Ghaordaidh and is located to the east of the private hydro road that goes between Glen Lochay and Glen Lyon. The start of the walk went through an interesting area of old *Alnus glutinosa* (Alder) wood pasture. The route then followed the hydro road through a recently planted block of native woodland that forms part of the Glen Lochay Estate's major native woodland expansion project. Beyond the woodland deer fence we headed up the steep hill slope to the summit ridge of Sgiath Bhuidhe. The grazed hill slope was dominated by acidic grassland and wet heath species, however higher up, there were some base-rich flushes

containing *Linum catharticum* (Fairy Flax), *Saxifraga aizoides* (Yellow Saxifrage), *Tofieldia pusilla* (Scottish Asphodel), *Juncus triglumis* (Three-flowered Rush) and *Carex capillaris* (Hair Sedge).

As we climbed higher there were a few small patches of base-rich grassland with *Thymus polytrichus* (Wild Thyme), *Antennaria dioica* (Mountain Everlasting), *Thalictrum alpinum* (Alpine Meadow-rue) and *Persicaria vivipara* (Alpine Bistort). As we neared the summit ridge the vegetation changed to a blanket bog with *Calluna vulgaris* (Heather), *Vaccinium myrtillus* (Blaeberry), *Vaccinium uliginosum* (Bog Blaeberry), *Eriophorum angustifolium* (Common Cotton-grass), *Eriophorum vaginatum* (Hare's-tail Cotton-grass) and frequent *Rubus chamaemorus* (Cloudberry). Within this blanket bog there were also a number of patches of flowering *Cornus suecica* (Dwarf Cornel) and *Melampyrum pratense* (Common Cow-wheat).

As we walked over the blanket bog through the mist, we heard the plaintive call of a Golden Plover. The summit ridge itself was dominated by a low growing mat of summit heath vegetation which is scarce in the Breadalbane Mountains. The summit heath was dominated by *Calluna vulgaris* (Heather), *Empetrum nigrum* (Crowberry) and *Vaccinium vitis-idaea* (Cowberry), but also included frequent *Salix herbacea* (Least Willow) and *Loiseleuria procumbens* (Trailing Azalea). The most interesting species within the summit heath was *Arctostaphylos alpinus* (Alpine Bearberry) at its southernmost location in Britain.

Close to the summit of Meall nan-Subh we came across an outcrop of base-rich rock with cushions of *Silene acaulis* (Moss Campion) and scattered *Anthyllis vulneraria* (Kidney Vetch), *Botrychium lunaria* (Moonwort), *Galium boreale* (Northern Bedstraw) and *Saxifraga oppositifolia* (Purple Saxifrage). As we headed down off the mountain we saw a distant Peregrine and some Ravens. In one of the flushes on the way down we found some *Eriophorum latifolium* (Broad-leaved Cotton-grass). Despite the weather it was a very enjoyable and productive excursion.

The 2014 BSS Alpine field meeting will be on Saturday 28th June and will be to Beinn Dubhchraig near Tyndrum, in the north-west corner of the Loch Lomond and the Trossachs National Park.

John Holland
(BSS Alpine Secretary)

SOME BOTANICAL HIGHLIGHTS OF THE DUNDREGGAN CONSERVATION ESTATE

Dundreggan Conservation Estate is a 10,000 acre area of land in Glen Moriston that has been the subject of extensive biodiversity surveys since its purchase by the charity Trees for Life in 2008.

Located on the south-facing slopes of Glen Moriston, about 7 miles west of Loch Ness, on the A887 road that goes from Invermoriston to Kyle of Lochalsh, Dundreggan is typical of many Highland Estates in the region. Prior to its purchase by Trees for Life, it was owned by an elderly Italian man, who only visited for a few weeks each year, to shoot red deer (*Cervus elaphus*) with some of his family and friends. Although the estate contained about 250 acres of native woodland, in which birch trees predominated, and there were large numbers of naturally-regenerating tree seedlings on the edge of the woodland, very few new trees had become established in a century or more, because of the high numbers of deer maintained on the land.

Trees for Life was attracted to Dundreggan because of the wide variety of natural habitats it contains, including a range of different woodland types, and the potential to restore native forest and scrub to a significant proportion of the acreage there. With elevations ranging from 115 metres beside the River Moriston to 680 metres at the highest point, the estate provides an opportunity to re-establish a complete continuum of woodland types, from riparian forest on the valley bottom floodplain through oak woodland on the lower slopes and Scots pine/birch woodland above that, to montane scrub on the higher ground. This would provide a forest habitat network or corridor of woody vegetation over the northern watershed to Glen Affric and the nationally significant remnants of the native pinewoods in the National Nature Reserve there.

We initiated a series of biodiversity surveys of Dundreggan in 2006, and each year since then we've had specialists conducting detailed surveys for various groups of organisms, ranging from bryophytes and lichens to aphids, slime moulds and sawflies. In 2007, a comprehensive survey of the vegetation communities on Dundreggan was carried out by Ben and Alison Averis. They found a total of 102 vegetation and habitat types on the estate, and a total of 260 vascular plant species and 129 bryophyte species. (Averis and Averis 2007).

Habitats of particular note identified in the survey included a good extent of blanket bog, mainly in the northeast of the estate and with

northern characteristics, including good populations of the Nationally Scarce moss, *Sphagnum austinii*, and alpine bearberry (*Arctostaphylos alpinus*). Botanically interesting base rich flushes were found to be scattered widely among the heaths and grasslands, with good populations of uncommon plants such as Scottish asphodel (*Tofieldia pusilla*), globe flower (*Trollius europaeus*) and yellow saxifrage (*Saxifraga aizoides*).

The survey also noted the excellent population of juniper (*Juniperus communis* ssp. *communis*), which occurs all across the site, thinly scattered in many areas, but in dense stands of tall specimens in the birchwood in the southeast of the estate, just above the A887 road. Some of the junipers there are over 8 metres tall, and the size and abundance of them is unusual for a location west of the Great Glen. Typically, junipers of that stature and density are found in the drier woodlands of Strathspey and further east. Their existence here at Dundreggan points to an interesting observation – that the estate seems to be located in an area where plants and other species that are usually more common further east co-exist with species with more western or even a coastal distribution. The local topography appears to create a micro-climate where slightly drier conditions prevail in an otherwise fairly western location, giving rise to a species-rich ecotone.

The large junipers in the southeast of Dundreggan are also notable for the species associated with them. The most dramatic of these is the fungus, tongues of fire (*Gymnosporangium clavariiforme*), which fruits on the stems of junipers in spring (late April and May) with clusters of spectacular bright orange fingers (Holden 2008). These release spores that infect hawthorn trees (*Crataegus monogyna*), inducing the production of galls on the leaves and developing fruits in summer. The galls take the form of small hemispherical blisters, each with tufts erupting out of it. This gives rise to the suggested common name of ‘crown of thorns’ for this phase of the fungal life cycle. Spores released by these tufts then re-infect juniper, and so the cycle repeats each year. How this fungus came to depend on two completely different plant species is unknown, but the abundance of juniper at Dundreggan, together with the scattered numbers of hawthorn trees in the woodland, enable this remarkable relationship to continue and the fungus to flourish.

The junipers at Dundreggan have also been found to host some interesting invertebrate species, including the juniper sawfly

(*Monoctenus juniperi*), which is classified as Rare in the UK's Red Data Book of endangered species (Knight 2011), the juniper shield bug (*Cyphostethus tristriatus*) (thought to be the first record for this species in the Highlands) and a scarce bug (*Zygimus nigriceps*), which is confined to juniper and for which there are scattered records in northern England and Scotland (Botting 2010). In 2012, an aphid (*Cinara smolandiae*) was found on two junipers at Dundreggan. This species had not previously been recorded in the UK, and was only known from Sweden, Finland and parts of northwest Russia (Baker 2012).

Dundreggan is one of the study sites for a PhD research project being carried out by Prakash Aryal, a student working under the auspices of the James Hutton Institute and the University of the Highlands and Islands. His research is focused on testing and evaluating the viability of juniper seeds from different populations, and given the current concern about juniper populations in the UK, and its relative difficulty in reproducing, the stands at Dundreggan, and the substantial regeneration there, take on added significance.

Another key feature of Dundreggan is the widespread and abundant distribution of dwarf birch (*Betula nana*) on the higher ground in the northern part of the estate. In the words of Ben and Alison Averis: "The real star of the estate, botanically speaking, is the shrub *Betula nana*" (Averis and Averis 2010). Trees for Life has been carrying out surveys, monitoring and regeneration measures for dwarf birch since 2000, while the estate was still under the previous ownership. A ten hectare enclosure specifically for the natural regeneration of dwarf birch was erected in 2002, and further inadvertent regeneration has taken place inside a much larger enclosure erected for native woodland planting under the Woodland Grant Scheme, also in 2002. Subsequent surveys have shown a substantial increase in catkin production on plants protected by the fences, and some increase in height and spread.

More interestingly, perhaps, is the observation that while most of the plants have been found in wet and boggy conditions, and they have grown relatively little, it is those on drier sloping ground that have grown most dramatically. One plant found during a visit to the site by members of the Montane Scrub Action Group (MSAG) in June 2013 was measured to have a spread of 3.15 metres and a height of almost 1 metre. This is comparable in size to *Betula nana* plants in Scandinavia, but there are very few examples of this size in Scotland. This discovery, and the wider observation of how the species does better on drier,

sloping, well-drained ground has led to the suggestion that the present distribution of the species on wet, boggy ground is actually skewed, and is an artificial result, with it surviving there only because fewer deer visit those sites, whereas its preferred habitat is the drier ground, where increased pressure from grazing has largely eliminated it. We hope to commission research that will test this hypothesis in the near future.

The dwarf birch at Dundreggan has already been the subject of detailed scientific work, and plants from there were used for the first sequencing of the genome of a member of the *Betula* genus in 2012 (Wang, 2012). A PhD project is currently being carried out by James Borrell at Queen Mary, University of London, on 'Ecological and genomic research to optimise the conservation of dwarf birch in Scotland', with the dwarf birch population at Dundreggan forming one of the study sites.

Specialist surveys have identified a range of rare species associated with dwarf birch at Dundreggan. *Swammerdamia passerella* is a rare micro-moth whose larvae feed exclusively on *Betula nana*, and which is a priority species for conservation in the Scottish Biodiversity Action Plan. Survey work carried out in 2008 indicated that greater larval numbers of this scarce species occurred on dwarf birch inside protected areas, and that there may be a correlation between the larval populations and the increased number of catkins on those plants (Richards 2008). Further work will be required to clarify if this casual observation is indeed correct.

The real importance of the dwarf birch at Dundreggan has been illustrated though by the sawfly species discovered there. Initially one species (*Pristiphora borea*) was found there in 2010 (Knight 2011), and there were only 3 previous records for this sawfly in Scotland. Subsequent surveys in 2011 and 2012 identified a further two sawfly species (*Nematus pravus* and *Amauronematus tristis*) feeding on the dwarf birch, with neither species having been recorded previously in the UK (Knight 2013). It may well be that these sawflies are present, undetected until now, on other populations of dwarf birch in the Highlands as well, and searching for them is one of the objectives of the PhD project being carried out by James Borrell. One other species of note that has been found in association with the dwarf birch at Dundreggan is a tar spot fungus (*Atopospora betulina*). This occurs as black spots on the leaves of the plant, and there are very few records for the fungus in Scotland.

As already mentioned the vegetation survey identified 129 bryophyte species at Dundreggan, and a separate survey focussed specifically on bryophytes in 2007 produced a larger total for the group, of 262 species (87 liverworts and 175 mosses) (Rothero 2007). Surveys for lichens (which are part plant at least!) in 2007 and 2009 produced a list of 341 species for the estate, including one Red Data Book and UK Biodiversity Action Plan species (*Fuscopannaria ignobilis*) (Hope 2008, Douglass 2009).

Dundreggan also hosts good populations of orchids, including the UK Biodiversity Action Plan-listed species, lesser butterfly-orchid (*Platanthera bifolia*), as well as commoner species such as the small white orchid (*Pseudorchis albida*) and the greater butterfly-orchid (*Platanthera chlorantha*). In 2012, a healthy population of the rare Lapland marsh-orchid (*Dactylorhiza traunsteinerioides* ssp. *francis-drucei*) was identified on the estate – this species is included on the Wildlife and Countryside Act (Macdonald 2012). Dundreggan is one of two study sites being used for a two year research project led by Graham Rotheray, Curator of Entomology at National Museums Scotland in Edinburgh, on the pollination of orchids in Scotland, of which comparatively little is known. The field work on this project was begun in 2013 and will continue in 2014.

Aspen (*Populus tremula*) is a tree species which Trees for Life has had an active interest in since 1991, and there are 18 separate stands of aspen at Dundreggan. As in other sites throughout the Highlands, most of these consist of a few trees growing in an inaccessible location, as that's the only place where this highly palatable species can survive the grazing pressure from deer. It's likely each stand consists of only one or two clones of this diecious species that rarely flowers, and reproduces, if at all, by the production of ramets from the root system of a parent tree. We have instigated protection measures at several of the aspen stands on the estate, to allow the ramets to grow successfully without being overgrazed, and have also planted a large new stand of aspens in the riparian zone beside the River Moriston. This is a joint project with Forestry Commission Scotland, who own the neighbouring land to the east, and the objective is twofold: firstly to create a large area of aspen that in time could support the rare saproxylic invertebrates (such as the UK BAP-listed aspen hoverfly, *Hammerschmidtia ferruginea*) that require large contiguous extents of aspen for their survival, and secondly to create a future food source for any wider reintroduction of European

beavers (*Castor fiber*) that may be considered for the River Moriston, if the current beaver trial in Argyll is deemed a success.

In our native tree nursery at Dundreggan, we are propagating aspens from root cuttings, and are now growing several thousand young trees by this method each year. We have also engaged in some experimental research projects with the charity, Coille Alba, to propagate aspens by grafting, and will soon establish an aspen seed orchard, where the hope is that aspens can be stimulated to flower, and therefore produce seed, more readily than at present. In time, if these methods bear fruit, they will aid the wider restoration of aspen in the Highlands, thereby providing an expanded habitat for the suite of rare organisms associated with the tree. Amongst those organisms is the aspen bracket fungus (*Phellinus tremulae*) which was unknown in Scotland until its discovery in Strathspey in 2000 (Emmett 2001), and at Dundreggan we have what is probably the western-most population of this fungus in Scotland – another example of the ecotone effect referred to previously. The aspens at Dundreggan have also been found to host a sawfly not previously recorded in Scotland - the so-called 'palisade' sawfly (*Stauronematus platycerus*) (Knight 2011).

Building on the botanical and biodiversity interest at Dundreggan, the tree nursery we established there in 2012 is focusing on the reproduction of some of the scarce tree and plant species in Scotland. Our propagation of aspen and dwarf birch is well-established and successful, and we are now turning increasing attention to growing some of the rare montane willows, such as the woolly willow (*Salix lannata*) and the downy willow (*Salix lapponum*). We have also been carrying out some experimental work in propagating rare flowering plants from the Caledonian Forest, including twinflower (*Linnea borealis*) and creeping ladies tresses (*Goodyera repens*). In time we aim to produce those in larger numbers, both for planting out as part of the ongoing work of forest restoration at Dundreggan itself, and for distribution to other sites elsewhere in the Highlands.

In conclusion, Dundreggan is a remarkable site with considerable botanical and wider biodiversity interest. This continues to be elucidated by the ongoing programme of biodiversity surveys we are carrying out there. Our management plan for the estate aims to restore the woodland and other natural habitats, such as mire and bogs there, to a condition of greater ecological health, and we intend to develop Dundreggan as a

demonstration site of best practice for the wider work of habitat restoration and conservation in the Highlands.

Alan Watson Featherstone
Founder and Executive Director, Trees for Life
alan@treesforlife.org.uk

Information about visiting the estate can be found at
http://www.treesforlife.org.uk/visit_dundreggan.html

Directions coming from Inverness:

- Take the A82 south towards Fort William
- Turn right at Invermoriston onto the A887 towards Kyle of Lochalsh
- Follow the road for about 7 miles until you see a green sign on the right "Trees For Life Dundreggan Estate"
- Turn into driveway. Parking is available to the right of the track

Three way marked walks lead from the car park which allow you to access an attractive area of ancient semi-natural woodland as well as open moorland. Other walks through the estate are possible but you need an Ordnance Survey map and suitable footwear, appropriate clothing (wet weather gear, layers of warm clothing) and provisions. Only those with an appropriate level of fitness should attempt leaving the tracks.

References:

- Averis, ABG. & Averis AM (2007) *A survey of the vegetation of Dundreggan Estate* Commissioned report for Trees for Life.
- Averis, ABG. & Averis AM (2010) *Conservation Management Plan for Dundreggan Estate* Commissioned report for Trees for Life.
- Baker, EA (2012) *Aphids and their parasitoids at the Dundreggan Estate* Commissioned report for Trees for Life.
- Botting, J (2010) *Report on the Hemiptera (Heteroptera, Auchenorrhyncha, Psylloidea) of Dundreggan Estate* Commissioned report for Trees for life.
- Douglass, J (2009) *A Lichen Survey of Dundreggan Estate, East Inverness-shire* Commissioned report for Trees for Life.
- Emmett, E.E. and Emmett, V.E. 2001. *Phellinus tremulae*, a new British Record on Aspens in Scotland, *Mycologist* 15:3 105-106.
- Gymnosporangium cornutum/clavariforme – Species profile *Scottish Fungi website*. <https://sites.google.com/site/scottishfungi/species-profiles/gymnosporangium-cornutum-clavariforme>

- Holden, E (2008) *Fungal diversity scoping survey of Dundreggan Estate* Commissioned report for Trees for Life.
- Hope, JCE (2008) *Lichen Survey of Dundreggan Estate* Commissioned report for Trees for Life.
- Knight, G (2011) *Surveys for biodiversity on the Dundreggan Estate: Sawflies (Hymenoptera: Symphyta)* Commissioned report for Trees for Life.
- Knight, G (2013) *Surveys for biodiversity on the Dundreggan Estate: Sawflies (Hymenoptera: Symphyta) Appendix 5: Sawflies recorded from dwarf birch birch scrub in 2012* Commissioned report for Trees for Life.
- Macdonald, M (2012) *Pers. comm.*
- Richards, M (2008) *Montane scrub survey* Commissioned report for Trees for Life.
- Rothero, G (2007) *A survey of the bryophytes on Dundreggan Estate* Commissioned report for Trees for Life.
- Wang, N et al (2012) Genome sequence of dwarf birch (*Betula nana*) and cross-species RAD markers *Molecular Ecology* Vol 22, Issue 11. 3098–3111.
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DR. HEATHER MCHAFFIE MBE

All who know Heather were delighted to learn of her award of MBE in the New Year's Honours in recognition of her work in the conservation of the Scottish flora. This work was mainly carried out at the Royal Botanic Garden Edinburgh (RBGE) but Heather has also made valuable contributions elsewhere.

Her first real link with the RBGE was in connection with her PhD research on the biology and taxonomy of the puzzling endemic form of the Alpine Lady-fern, which she concluded to be best regarded as a variety of *Athyrium distentifolium* – *A. distentifolium* var. *flexile*.

In 2003 Heather took over the Scottish Plants Project at the RBGE and one of the main developments was the formation of an *ex situ* conservation collection of Vulnerable to Critically Endangered Scottish plants under Target 8 of the Global Strategy for Plant Conservation. In this work Heather worked closely with RBGE horticultural staff and was quick to draw attention to their skill and dedication. This collection has provided material for the reintroduction of species such as *Salix lanata*, *Woodsia ilvensis* and *Polygonatum verticillatum* and has also provided a

valuable facility for education and an attractive focus for explaining the taxonomic research carried out at RBGE which underpins conservation.

Besides her conservation work Heather has significantly contributed to botanical teaching at RBGE at all levels and instigated the now highly popular RBGE Certificate in Practical Field Botany.

Outside the RBGE Heather has been a stalwart member of the Scottish Field Studies Association, serving on its Executive Committee for over 20 years and has tutored a fern identification course at Kindrogan Field Centre for a similar period as well as carrying out regular voluntary work for Kindrogan. She has also been an active member of the Botanical Society of the British Isles and has supported the Botanical Society of Scotland for over 30 years. She has been the RBGE local secretary since 2009.

Overarching Heather's botanical achievements is her characteristic good nature, kindness and generosity. She is unfailingly helpful and reliable and it is virtually unknown for her to refuse the many requests and calls upon her time and expertise. This is why her well-deserved recognition has been met with such joy by her many botanical friends and colleagues. I feel privileged to write this short account in her honour.

Phil Lusby

TOP TEN FILMS ABOUT INVASIVE ALIENS AND WEEDS, BY RHODY

10. A passage to Indian Balsam
9. Dragnettle
8. The Rhododendron to Perdition
7. Groundsel-Hogweed Day
6. The Maltese Fallopi
5. Good Willow Herbing
4. Clear and Present Dandelion
3. The Quantum of Solidago Canadensis
2. Bramblo (First Blackberries part 2)
1. Driving Michaelmas Daisy

WHICH FLORA?

Which flora do you use in the field? Council members wrote about their favourite books and came up with a varied selection, though one book stands out as the most mentioned: Francis Rose and Clare O'Reilly's Wild Flower Key. Here are the Council's collected recommendations. There is no significance in the order, just in the number of mentions each book gets.

Wild flowers of Britain and Ireland

Fitter, Fitter and Blamey (1974) The wild flowers of Britain and Northern Europe. I used this one for many years- I liked it because it is more portable than the Keble Martin which I had been using.

Blamey, Fitter and Fitter (2013, second edition) Wild flowers of Britain and Ireland. Excellent. The text is better than Fitter et al (1974), the illustrations are better. it has distribution maps, and also manages to include grasses, trees, shrubs, ferns. This is surely the 'best buy' for the beginner.

The Wild Flower Key

Rose (2006) The Wild Flower Key. Very good, particularly if you are a teacher and you want to teach the idea of using keys.

I use "The Wild Flower Key" by Francis Rose. This was the flora I was given when attending the RBGE Field Botany course at Kindrogan. The General Key to flower families was fairly easy to use and keys to the family members was great. It contains lots of diagrams explaining the botanical terms and the illustrations were a real bonus.

I prefer using Rose's Flower Key, simply because that's the one I learned using early on at university. However, there is a really nice series of German Flower Keys that I often refer to as well. They're published by the publisher Kosmos and provide an incredibly fast and easy way of identifying plants simply by flower colour and number of their petals - so for German speaking folks that don't want to bother too much about sifting through endless lines of keys I can recommend: **"Was blüht denn da?"** Kosmos 2008.

Favourite flora for teaching = Rose, F. & O'Reilly, C. (2008). Wild Flower Key (Revised edition). Warne Books.

I used to carry the small version of Keble Martin and the small CTW (Clapham, Tutin & Warburg) Excursion Flora around with me so I

thought Francis Rose's Wild Flower Key was wonderful when it came out. Everything in one book! Well not quite – I still like to use Hubbard for grasses and the old BSBI Handbook No. 1: **Sedges of the British Isles** by A.C. Jermy, A.O. Chater and R.W. David. Alas both have been supplanted by newer, larger, heavier volumes and even Rose is not quite the handy size it used to be.

Excursion Flora of the British Isles

Favourite (and most used) flora for keying out = Clapham, A. R., Tutin, T. G. & Warburg, E. F. (1991). *Excursion Flora of the British Isles* (3rd Edition). Cambridge University Press (then check in Stace).

New Flora of the British Isles

Stace (2010) *New Flora of the British Isles* remains the standard reference for checking identifications made with any of the above. I never liked its presentation, its bulkiness, and I always found its keys confusing. I preferred Clapham, Tutin and Warburg but that is now out of date and out of print.

As a student I bought the 1st edition of Stace, which I still have. The lack of an index makes it difficult to use, something corrected in the 2nd edition (which came out not long after I bought the 1st). However, I have never gotten round to buying a copy of the 2nd edition, the continuing rumours of a 3th edition mean I keep putting off buying. That said I mostly use Rose; his vegetative key is particularly useful when plants are not in flower.

Grasses

For grasses, I still use the Penguin book, Hubbard: C.E. 1992. *Grasses*.

Handbook of the British Flora

Favourite of all floras: Bentham, G. & Hooker, Sir J.D. (1930) *Handbook of the British Flora* accompanied by Fitch, W.H. & Smith, W.G. (1931) and Butcher, R. W. & Strudwick, F.E. (1931) **Further Illustrations of the British Flora**. All published by L. Reeve & Co. Ltd., Ashford.

The Concise British Flora in Colour

I would nominate the first one that I ever used. I was given a copy of Keble Martin as a teenager and from its excellent, good sized drawings unconsciously learned the characters of different plant families. This gave me a head start when graduating to using a flora with keys. Some of the family names are a bit out of date now, but I still use it and would

recommend it. Used hardback copies are currently available on Amazon from £0.01 - a bargain! The Concise British Flora in Colour by W. Keble Martin.

Norsk, Svensk, Finsk Flora

I regularly use Johannes Lid, Norsk, Svensk, Finsk FLORA. I don't know Norwegian, but I can understand what I need to. Wonderful line drawings of almost every species, chromosome numbers, and distribution maps in Norway, Sweden and Finland. A model for a new illustrated UK Flora.

THE TRUTH BEHIND THE FLOUER O SCOTLAND

Oh, ye wha traivel 'roond the warld,
Ye mebbe think you're teuch,
But if tae Scotland ye maun gang
Think, are ye teuch eneuch?

It's nae the wind that bites yer skin,
Nor ettercaps nor ants.
It's nae the snaw that stangs ye so,
Gods' trowth, it is the plants!

The brammle by the babblin' burn
Will wrap aroond yer shanks,
The mair ye fecht tae get it aff
The mair the brammle yanks.

Ye'll bray an yowt, ye'll winze an greet,
At lang an last ye're free,
But scaurs ye'll hae upon yer shins.
Until the day ye dee.

Ye canna blame the thistle's spine
For broggin' throu yer buit,
Hae mynd it wis the thistle's jag
That kept the Vikings oot.

The ramblin' rose that bonny flouer
Whase scent is verra grand
But ilka bonnie rose ye pou
Leaves prickles in yer haund.

An' heich upon ilk craig an tail
Ye'll struggle throu the whin,
An vou ilk buss was plunket by
Hlssel auld Nickie-Ben.

An jennie-nettles by the score
Will mak ye writhe an hotch,
Their prickles sic a heap o pyne
Will mak ye holler, Och!!

The simmer's end brings ripenin'
O hyndberries an slae,
These twa alang wi hollin thorns
Will jab whaure're ye gae.

An when ye've truly haed eneuch
An wish that ye war deid,
A haw-tree thorn will lowpit up
An thirl ye throu the heid.

Aye, Scotland is a preecky place,
Yet ilka jagged dairt,
An ilka spine an ilka thorn
Haes pierced mah verra hert.

Peggy Edwards

(Editor's note: Peggy Edwards lives in California and writes, "We may have rattlesnakes, poison oak and mountain lions out here to contend with, but nothing on the scale of the thorns and prickles I have dealt with in Scotland!")

PHYTOLEXICON CRUCIFORMIS B.S.SCOT EX WORD

In this crossword there are twelve botanical names, mostly angiosperms but including an extinct gymnosperm, a fungus, and two vernacular names; ten words of botanical, ecological or biophysical terminology; and other words to fill in the gaps. Words do not read across grey squares or thick lines. I hope you don't find it too easy!

I hope that work will soon start on planting the maze and the *Araucaria* for the cryptogrammic garden. I have cannot find Erewhon in any atlas, and I am getting a bit worried about finding fertile seed of any of my cryptogrammic plants. Oh dear! Watch this space.

Crucifer

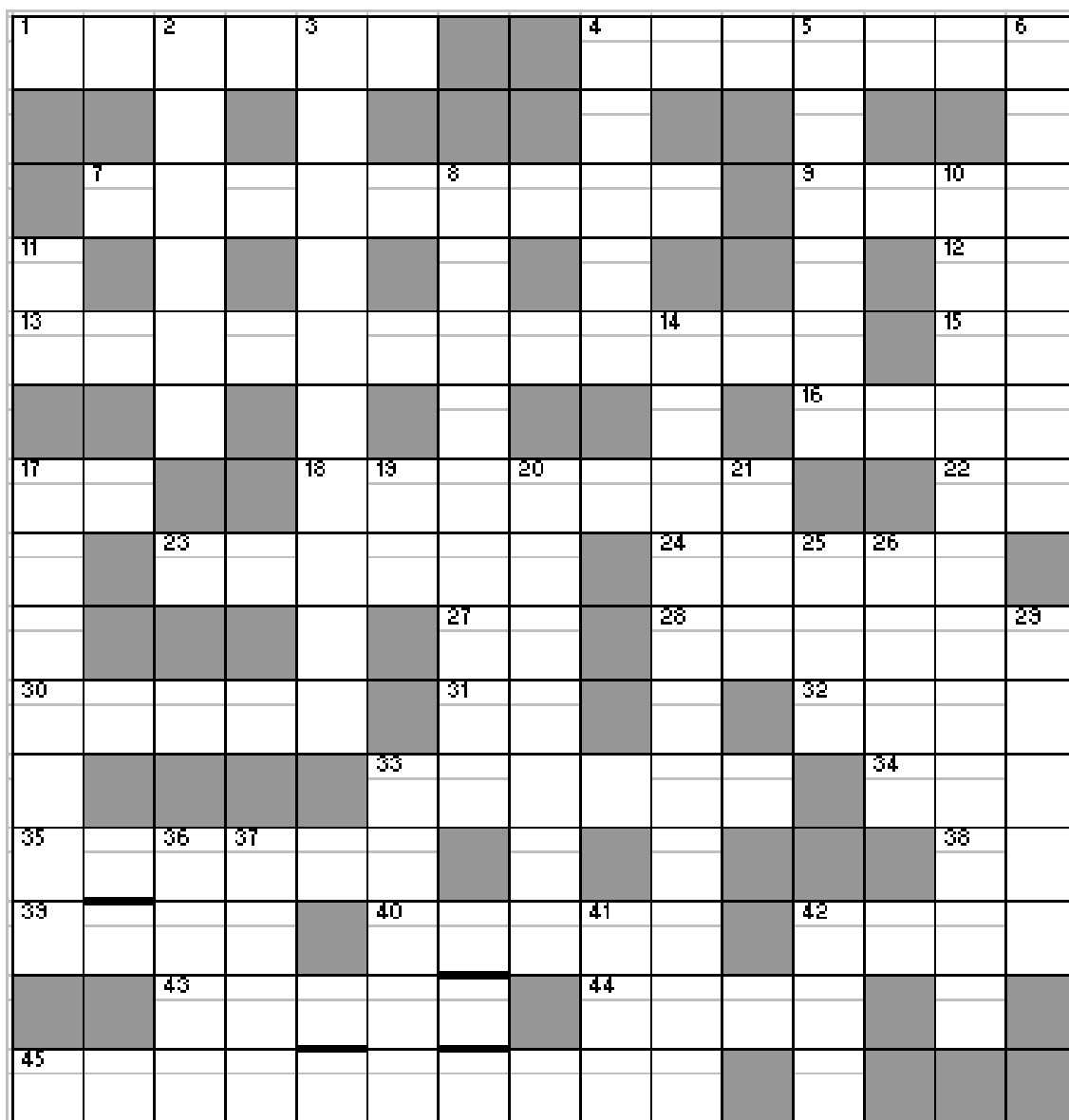
ACROSS

- 1 Useful cup, almost without fuss, is still a useful cup. (6)
- 4 Fruit perhaps outsize in the world, but well rounded. (7)
- 7 Hocus pocus here's a crocus, in season of mellow fruitfulness. (9)
- 9 Northerly poem dedicated to leaves and buds. (4)
- 12 Within batting order. (2)
- 13 Three hundred million years BP I was a thirteen metre tree; If bring my name to mind you can't It means "I was a nerveless plant". (Progymnospermopsida) (12)
- 15 Diplomats briefly replete with data? (2)
- 16 Genus: if true, then found in toilet tissue, otherwise found in autumnal *Oenanthe* (Liliaceae) (4)
- 17 Staff Officer, briefly referred to in dispatches, and therefore hidden in *Galinsoga parviflora*. (2)
- 18 Was it atomic? Without a saw it could concern nuclear fission. (7)
- 22 Member of Dail lost in hot desert. (2)
- 23 Easel I contrive bears oleaginous fruit. (Palmae) (6)
- 24 Question arising from cheque rye-grass presented. (5)
- 27 Printers measure found in stem of plant perhaps. (2)
- 28 *Russula* left south to find girl. (6)
- 30 Leaves opposite, or alternate form of European city. (5)
- 31 Negative number found in gynoeceum. (2)
- 32 Part of plant just emerging from soil? (4)
- 33 Valuables ensue when small horses take first sip of tea. (3)
- 34 Much of this within cladodes, or about nothing Shakespear wrote. (3)
- 35 Departs, but abandons organs of photosynthesis. (6)

- 38 Push back 31a in cotyledons. (2)
- 39 Jamaicans eat scrambled egg? No, only fruit of *Blighia sapida* (Sapindaceae)... (4)
- 40 ... with Italian sauce. (5)
- 42 Tip shale at end of grubbing for site where students may now botanise. (4)
- 43 Oxford college window. (5)
- 44 Money found when poseur obtains credit perhaps (4)
- 45 Senna and Thyme hybridised: they're probably now in 42d! (Gentianaceae) (10)

DOWN

- 2 Plant growing in peat or Antipodes? (6)
- 3 See 17d.
- 4 College festival in which Dorothy L Sayers committed murder. (5)
- 5 We can grow a cultivated fruit if we ban a natural one... (6)
- 6 ... whose stem ended improved inflorescence perhaps. (7)
- 8 Paint semi, and cultivate flowering plant (Balsaminaceae) (9)
- 9 Toil sodden Cy undertook to create major phylum of vascular plants. (12)
- 10 Find Elodea in this; find this in Elodea or fenland. (2)
- 14 Our quitters become three sided. (11)
- 17 and 3d. Run a charmless play about a very obnoxious bracket fungus. (7, 10)
- 19 Abbreviation that is in lieu of a Latin phrase. (2)
- 20 Moss, so I conjecture, gains water by a diffusive process. (7)
- 21 Copper infrequent pursuer when dangerous drug is extracted from *Chondrodendron tomentosum* (Menispermaceae) (6)
- 25 Character lurking in cypress forest. (3)
- 26 Bitterly regret plant detained in Beirut arboretum. (4)
- 29 Preposition included in a Mongolian dictionary. (2)
- 33 Trembling after London borough announces name for tree. (5)
- 36 Vast age in evolution of Paeoniaceae. (4)
- 37 Extreme displayed when lorry reversed. (4)
- 41 Golf fixture held in Upper Teesdale. (3)
- 42 Where 45a and *Narthecium ossifragum* may be found. (3)



BOTANICAL SOCIETY OF SCOTLAND PHOTO BLOGS

Up until now, the fantastic photos taken by members of the society have flown under the radar, confined to our Facebook group, our website and occasionally on the BSS newsletter cover pages. In response to this the society is proud to unveil new ways of sharing their many wonderful photos to give them the attention they deserve! Tumblr and Flickr accounts have been created and photographs that are sent in by members will be uploaded and become available to the entire community of users to view, share and comment on.

For those not familiar with these sites, Tumblr is a blog site that allows users to 'reblog' (add the photograph to their own page for their followers to see) and 'favourite' the posts (indicate they like the photograph), with some posts garnering thousands of responses. Flickr is primarily a photo blog site where users show off their photographs, the uploaded photos are then viewable to a wide audience. If you'd like to see your photos on our blog please e-mail them to photos@botanical-society-scotland.org.uk and include the species name and location of where the photographs were taken.

Ewan Cole

To see the photographs and contribute to the blogs visit:

www.flickr.com/photos/botanical-society-of-scotland

www.botanical-society-of-scotland.tumblr.com

Also see Ewan Cole's personal blog page at:

www.plantsiveidentified.tumblr.com

(Editors note: photographs shared in this way must have been taken by the person who is sharing them, or posted with the photographer's knowledge and permission. Please give only the approximate, general location of rare or protected species.)



Feverfew. Photo by Ewan Cole

STUDENT DISSERTATION PRIZE WINNER 2014

The winning entrant in this year's student dissertation prize competition is Zak Gratton from the University of Edinburgh. The quality of all the dissertations submitted was very high, as always, although the number of entrants was low. Titles and abstracts from all four dissertations are presented; winner first, then in alphabetical order (by author).

Author: **Zak Gratton**

Institution: University of Edinburgh

Degree: BSc with Honours in Ecological Science (Ecology)

Supervisor: Professor Mathew Williams

Dissertation Title: **Interactions between Canopy Structure and Leaf Trait Distribution in Arctic Shrub Communities**

Abstract/Summary: The pan-arctic expansion of shrubs is likely to exert considerable but highly uncertain perturbations to regional and global climate. Determining how shrubs interact with their environment will aid predictions of future arctic vegetation-climate coupling.

The objectives of this study were to compare leaf trait variation, canopy structure, and the effects of interspecific interaction between tundra shrub species *Betula nana* and *Salix pulchra*. Point-frame based leaf sampling was combined with through-canopy leaf area index (LAI) measurements to generate three-dimensional profiles of foliage distribution in plots dominated by either species. Selected plots were harvested for leaf area, leaf mass and nitrogen (N) content analysis. Distribution profiles were compared using linear regression, general linear modelling and frequency analyses.

Comparing leaf trait distributions with height produced high levels of unaccounted variation. Substantial improvement in the prediction of N distribution by leaf mass per area (LMA) was interpreted as a more accurate representation of responsive resource allocation to canopy gradients of light. Leaf N and LMA interact through their roles in photosynthesis optimisation to light availability.

B. nana exhibited a wider vertical foliage distribution than *S. pulchra*, explained by strong relationships between leaf N and LMA, and trait allocation plasticity between dominant and subdominant canopy positions.

A strong linear relationship between leaf area and N was observed across all plots. This finding indicates that previously observed divergence in the total foliar N-LAI relationship within shrub tundra communities may not be attributable to differences in shrub physiology, but to some other canopy level process.

Author: **Francesco Benvenuti**

Institution: University of Edinburgh

Degree: BSc with Honours in Ecological Science (Conservation and Ecological Management)

Supervisor: Professor Maurizio Mencuccini

Dissertation Title: **Drought-Induced Scots Pine Decline in The Mediterranean: Exploring the Role of Local Environmental Factors and Bark Beetles Attacks in Facilitating Successional Processes**

Abstract/Summary: Increased temperatures and aridity have resulted in worldwide episodes of drought-related Scots pine (*Pinus sylvestris* L.) mortality and defoliation. By comparing tree physiological traits and local environmental factors across gradients of drought-induced stand decline we aimed to gain further understanding on drought-driven forest mortality processes. Data on average Diameter at Breast Height, Basal Annual Increments, Matrix-Water-Gas wood volumetric fractions, soil depth, Leaf Area Index, stem density and C¹³ isotopic signatures were obtained for 20 drought-affected Scots pine stands, selected to encompass either High or Low decline conditions as indicated by levels of defoliation and mortality. High decline stands showed significantly lower soil depth and growth rates, as well as higher Gas wood volumetric fraction and high stem density. We argue that shallow dry soils coupled with high competition for resources at high stem density, may enhance Scots pine cavitation as well as promote Non-Structural-Carbohydrate allocation toward the development of more competitive roots system. A greater capacitive effect of cavitation is also suggested to promote growth and endurance to drought for larger pines.

The associations of stands' decline with xylophagus invertebrate abundance and diversity was also explored by deploying three types of invertebrate traps, replicated across High and Low decline stands over three subsequent sampling periods. High decline stands showed both the highest xylophagus abundance and lowest diversity, with a predominance of species associated to rapidly colonizing deciduous species (e.g. *Quercus ilex* L.). The local abundance of moribund pines

was detrimental to local biodiversity by favouring only a few dominant sapro-xylophagus species. Finally we show a spatiotemporal variation in xylophagus communities associated with Scots pine decline and argue that a temperature driven early emergence of scolytids, misaligned with periods of highest pine stress, may preclude successful bark beetles infestations. Stronger conclusions will only be possible by repeating similar studies over longer time periods, ideally designed to sample both before and after the occurrence of drought events.

Author: **Sophie Chattington**

Institution: University of St Andrews

Degree: BSc with Honours in Biology with French

Supervisor: Professor Stephen Hubbard (in collaboration with the University of Neuchâtel)

Dissertation Title: **Effect of Parasitoid Presence on the Fitness of *Brassica oleracea* Infested by *Peris brassicae*: A Comparison of Two Species, *Cotesia glomerata* and *Hyposoter ebeninus***

Abstract/Summary: *Brassica oleracea*, an economically important food crop worldwide, like all crops is under pressure from herbivorous insects, especially *Pieris brassicae*. Although there are chemical pesticides that are effective against these insects, the possibility of bio-control, exploiting the natural parasitoids of *P. brassicae* larvae, is of potential interest, in particular for organic farms. *Cotesia glomerata* and *Hyposoter ebeninus* are two such parasitoid species. These two species have different parasitism cycles, and *H. ebeninus* has been found to have a more positive effect upon plant fitness than *C. glomerata*. *C. glomerata* was found to be significantly more attracted to plants that have been damaged by its host *P. brassicae*, and natural parasitoid populations were found to be much larger on well-established organic farms specializing in *Brassica* species.

Author: Rosemary **Erin Haskell**

Institution: University of Edinburgh

Degree: BSc with Honours in Ecological Science (Ecology)

Supervisor: Professor Richard Ennos (in collaboration with the Royal Botanic Garden Edinburgh)

Dissertation Title: **Categorisation of Morphological Characteristics of Three Cryptic Taxa within the Fungal Endophyte Species, *Lophodermium Pinastri* on Scots Pine (*Pinus Sylvestris*)**

Abstract/Summary: Endophytes are organisms which infect living plant tissues and subsequently enter into a quiescent state; the presence of which causes no effect on the host plant. Many endophytes emerge as saprophytes on senesced host material. *Lophodermium* is an Ascomycete fungal genus that contains several species of saprophytic endophytes on Scots pine (*Pinus sylvestris*). Detailed genetic analysis on *L. pinastri* revealed three distinct molecular and morphological clades: *L. pinastri* I which correlates with the original description of *L. pinastri*, *L. pinastri* II which correlates to the species *L. staleyi* and *L. pinastri* III which was predicted to be a new species (Reignoux, 2010). Detailed data on the morphology of these clades remains uncollected.

This project aimed to isolate representatives of these clades and identify trends in morphological variables within them, through the use of Principle Component Analysis (PCA). This study shows that morphology of the clades is not clear-cut and highlights differences in the timings of the developmental cycles as based on frequency of isolation and maturity of fruiting structures of each clade. Contrary to the previous study, the majority of the data collected suggests that *L. pinastri* I is the undescribed species, *L. pinastri* II correlates to the existing *L. pinastri* and *L. pinastri* III correlates to descriptions of *L. staleyi*. High within-clade variability of morphological data suggests that measurements are required from mature specimens, and that the clades may not be able to be shoe-horned into existing species descriptions.

BOTANICA MATHEMATICA

A Textile Taxonomy of Mathematical Plant-like Forms.

Simple mathematical rules can be used to create the most unexpected shapes and patterns, and nowhere is this more evident than in the world of plants. 2013, being the Year of Natural Scotland and the year of Maths for Planet Earth, seemed the obvious time to look at these ideas. In their project Botanica Mathematica, artist Madeleine Shepherd and mathematician Julia Collins did just that, exploring how different mathematical knitting rules can mimic the growth of botanical forms. The project also considers how the basic “genetic” instructions in these rules can be affected by external factors to produce variations from the ideal forms.

For example, the idea behind their 'Binary Bonsai' is to begin with a main tree trunk which splits into two branches, which each split into two branches, which each split into two branches...until all the stitches are exhausted. It is a very simplified idea of how a tree really grows, but produces specimens that are remarkably similar to real trees.

But nature never produces the same plant twice. In the same way that the environment creates variation within the same species of tree, each crafter interprets this pattern in a different way. Some will choose to knit, others to crochet. Some will use a single colour yarn, others will use variegated yarn or will change colour for different branching levels. Some will create a fixed number of rows between each branching point, others will create randomly placed branches. The choices (and the mistakes) made while making the tree are analogous to the effects of nutrition, weather, disease, etc. There have also been a few spontaneous mutations into "trinary" trees, where the trunk and branches split into three parts, but otherwise follows the pattern.

If you are intrigued by Botanica Mathematica and the ideas behind it then you can take part. Madeleine and Julia are looking for knitters and crocheters across the country to pick up their needles, dig about in their yarn stash and have a go at some of the patterns.

As well as binary bonsai there are patterns based on hyperbolic curvature, seen in many algal and leaf structures. A simple rule like "increase at a constant speed" can produce crazy varieties of lettuce, kale and even chanterelle mushrooms! Or why not try making a Fibonacci flower with two colours and a rule called an 'L-system'?

For the last year or so, crafters in the UK, Europe and the USA have contributed specimens to the collection. Donations and photographs continue to arrive at Madeleine's studio in Leith (where she has also been working on new botanically-inspired textiles). The trees will be classified as though they had been collected on plant hunting expeditions, and the assembled work will finally be exhibited as an art installation.

In addition to its collaborative art aspect, Botanica Mathematica has also provided a useful tool for engaging the public in the interactions between mathematics and the natural world. Over the past year, it made appearances at LateLab, the Edinburgh Yarn Festival, Edinburgh Mini Maker-Faire, the Orkney Science Festival, Doors Open Day & the Midlothian Science Festival and was the subject of a public talk at the

International Centre for Mathematical Sciences(ICMS). The workshops provided at these events could not, and would not have been possible without support-in-kind from McAree Bros. Ltd and anonymous donors of yarn.

Julia and Madeleine are now looking forward to exhibiting the collection of specimens in Summerhall Arts Centre at the Edinburgh International Science Festival and participating in Botanics Late at RGBE, both in April 2014.

To read find the patterns and details of events, visit the Botanica Mathematica blog <http://botanicamathematica.wordpress.com/>.

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ROAD VERGE MANAGEMENT FOR BIODIVERSITY

The most common form of management of roadside verges in Scotland (one or more cuts each year) partially mimics the traditional management of hay meadows (cut once and grazed afterwards) so verges might be regarded as relics of a declining grassland habitat. Although their biodiversity value is limited by their lack of width, they can be relatively herb rich and support a diverse invertebrate fauna if appropriately managed. A recent SNH report: The management of roadside verges for biodiversity, SNH Commissioned Report No. 551, reviewed the biodiversity value of road verges and the practicalities of their management. Practical considerations, logistics and costs limit the extent to which optimal cutting and clearing regimes can be applied. However, there is significant provision for identifying and recording important or sensitive verges and introducing appropriate management in the current policies for trunk roads. In the case of roads under local authority management, the report recommends support for existing locally based roadside verge biodiversity initiatives.

THE PLANT BIODIVERSITY CHRISTMAS CAKE 2014 CHALLENGE

Christmas cake is one of those things, like Marmite, that you either love or loathe. Personally I like it. Christmas cake has its origins in the 16th century, evolving as a floured- and egged-up version of the Christmas pudding, eaten on Twelfth Night and with the potential to last through until Easter. Originally, it would have been boiled in a cloth, but in posh houses that enjoyed the luxury of ovens it would have been baked and decorated extravagantly. Christmas cake was exported to the four corners of the European empires because it would last (even better if boiled) and even improve with age, particularly if alcohol, rum, calvados or whisky, were added to it every day throughout advent. The conversion of the Twelfth Night cake to a Christmas cake appears to have occurred around 1870, when Queen Victoria expressed the opinion that the traditional Twelfth Night overindulgence was inappropriate. So we're about to push back the tide of history here.

While making our Christmas cake in late November (giving ample time to feed it with alcohol) it occurred to me that while there were ingredients in there from several different plant species and families, in the modern world there is scope for using many, many more. It is surprising, in view of the world reach of modern commerce that brings us asparagus out of season from Chile and ginger from China, that Christmas cake recipes are still dominated by a very narrow range of dried or candied fruits, largely of European origin – citrus peel (Rutaceae), dried grapes of several varieties (Vitaceae) and glace cherries (Rosaceae), with almonds (Rosaceae again) and walnuts (Juglandaceae) and a narrow range of spices that traditionally represent the spices brought to the baby Jesus by the three wise men, but which should probably be subjected to some taxonomic scrutiny. Where would they have obtained cinnamon from (or cloves, or nutmeg)? The fascinating thing about these recipes is how conservative they are, notwithstanding the fact that they come from places like Jamaica, Belize and Cyprus, each of which could add a number of unique and exotic local ingredients. Delia Smith's famous Creole Christmas cake is said to have originated in Jamaica, but almost everything bar the sugar and spices comes from Europe.

The challenge was put to friends of the BSS Facebook page to come up with a credible, edible Christmas cake recipe incorporating

ingredients from the greatest number of plant families. The deadline was eight days before the final lecture of the BSS 2013 series, and the deal was that I would make the winning recipe to enjoy with the mulled wine after the meeting. As a starting point, I suggested a modified version of Delia Smith's Creole Christmas cake recipe, with a few tweaks by Nigella Lawson that used plant ingredients from a total of 14 families and 19 species.

In the back of my mind I thought 25 families might be achievable, but the winning result was staggering. It came from Dawn Nelson, a BSBI member who lives in Sussex, and it contained no fewer than 125 plant species from 55 families, giving me a serious headache to find the ingredients in time. Some I had to reject on grounds of health and safety – yew arils, for example and bulbils of lesser celandine *Ficaria verna*. Others were simply unavailable because of the season, such as calendula flowers and sweet chamomile. In the end, I was able to source ingredients from 49 plant families and 80 species.

The resulting cake, shown in the photo, was quite heavy, but the flavour was very rich and aromatic and (*it was so good – Jill T*) several people went away from the meeting with cake samples in doggie bags to share with their families and friends.

The new challenge for 2014 is to come up with a workable recipe for a Christmas cake that uses none of the European plant species included in Delia's Creole Christmas cake. You have until two weeks before the December lecture of the 2014 programme (probably 18th December) to optimize your recipe and iron out any bugs - this is a plant biodiversity cake, so we don't want any of those! Entries must be sent by email to chris.jeffree@facebook.com, **to be received by Wednesday 3rd December 2014**. The winner will be announced at the Botanical Society of Scotland meeting on 18th of December 2014 (*when Jill T hopes someone will bring samples of the winning cake to share!*).

Chris Jeffree
Christmas cake maker

Ingredients list: Dawn Nelson's BSS 2013 recipe (species used in Delia's modified Creole Christmas cake recipe indicated by *)

name	species	family	used as
Kiwi fruit	<i>Actinidia deliciosa</i>	Actinidiaceae	fruit and syrup
Elderflower	<i>Sambucus niger</i>	Adoxaceae	elderberries
Beetroot	<i>Beta vulgaris</i>	Amaranthaceae	grated beetroot
Mango	<i>Mangifera indica</i>	Anacardiaceae	dried mango
Cashews	<i>Anacardium occidentale</i>	Anacardiaceae	cashew nuts
Pink peppercorns	<i>Schinus molle</i>	Anacardiaceae	pink peppercorns
Pistachios	<i>Pistacia vera</i>	Anacardiaceae	pistachio kernels
Parsnip	<i>Pastinaca sativa</i>	Apiaceae	pureed parsnip
Coriander	<i>Coriandrum sativum</i>	Apiaceae	seed
Fennel	<i>Foeniculum vulgare</i>	Apiaceae	seed
Coconut	<i>Cocos nucifera</i>	Arecaceae	creamed coconut
Date	<i>Phoenix dactylifera</i>	Arecaceae	fruit
Tansy	<i>Tanacetum vulgare</i>	Asteraceae	leaves
Sunflower	<i>Helianthus annuus</i>	Asteraceae	seed
Stevia	<i>Stevia rebaudiana</i>	Asteraceae	sweetener
Borage	<i>Borago officinalis</i>	Boraginaceae	crystallized flowers
Wallflower	<i>Erysimum sp.</i>	Brassicaceae	crystallized flowers
Pineapple	<i>Ananas comosus</i>	Bromeliaceae	crystallized fruit
Hemp flour	<i>Cannabis sativa</i>	Cannabaceae	seed flour
Sweet potato	<i>Ipomea batatas</i>	Convolvulaceae	tuber, puree
Pumpkin	<i>Cucurbita pepo</i>	Cucurbitaceae	seed
Juniper	<i>Juniperus communis</i>	Cupressaceae	whole berries
Blueberries	<i>Vaccinium spp.</i>	Ericaceae	dried berries
Cranberries	<i>Vaccinium macrocarpon</i>	Ericaceae	dried berries
Bell Heather	<i>Erica cinerea</i>	Ericaceae	honey
Peanuts	<i>Arachis hypogaea</i>	Fabaceae	peanut butter
Soya	<i>Glycine max</i>	Fabaceae	silken tofu
Chestnuts	<i>Castanea sativa</i>	Fagaceae	roasted nuts
Hazelnuts	<i>Corylus avellana</i> *	Fagaceae	nuts
Figs	<i>Ficus carica</i>	Ficaceae	dried fruit
Blackcurrant	<i>Ribes nigrum</i>	Grossulariaceae	frozen fruit, crème de Cassis
Orris root	<i>Iris germanica</i>	Iridaceae	powdered root
Saffron	<i>Crocus sativus</i>	Iridaceae	threads
Pecans	<i>Carya illinoensis</i> *	Juglandaceae	nuts
Mint	<i>Mentha suaveolens</i>	Lamiaceae	fresh leaves
Lemon balm	<i>Melissa officinalis</i>	Lamiaceae	fresh leaves
Thyme	<i>Thymus vulgaris</i>	Lamiaceae	fresh leaves
Lavender	<i>Lavandula spp.</i>	Lamiaceae	fresh leaves
Rosemary	<i>Rosmarinus officinalis</i>	Lamiaceae	flowers, fresh leaves
Cinnamon	<i>Cinnamomum verum</i> *	Lauraceae	bark
Brazil nuts	<i>Bertholletia excelsa</i> *	Lecithydaceae	nuts
Flax	<i>Linum usitatissimum</i>	Linaceae	seeds
Cocoa	<i>Theobroma cacao</i>	Malvaceae	chocolate (G&B 90%)
Arrowroot	<i>Maranta arundinaceae</i>	Marantaceae	powdered root

Banana	<i>Musa x paradisiaca</i>	Musaceae	dried banana
Nutmeg	<i>Myristica fragrans</i> *	Myristicaceae	fresh grated nutmeg
Cloves	<i>Syzygium aromaticum</i> *	Myrtaceae	fresh grated cloves
Allspice	<i>Pimenta dioica</i>	Myrtaceae	powder
Olive	<i>Olea europaea</i>	Oleaceae	oil
Winter jasmine flowers	<i>Jasminum nudiflorum</i>	Oleaceae	fresh, crystallized flowers
Vanilla	<i>Vanilla planifolia</i> *	Orchidaceae	vanilla pods, split
Poppy	<i>Papaver somniferum</i>	Papaveraceae	seed
Sesame seeds	<i>Sesamum indicum</i>	Pedaliaceae	seed
Pine kernels	<i>Pinus pinea</i>	Pinaceae	seed
Black pepper	<i>Piper nigrum</i>	Piperaceae	whole seed
Rum	<i>Saccharum officinarum</i> *	Poaceae	rum, blackstrap molasses, muscovado sugar
Barley	<i>Hordeum vulgare</i>	Poaceae	malt extract
Lemongrass	<i>Cymbopogon citratus</i>	Poaceae	fresh leaf
Wheat	<i>Triticum aestivum</i> *	Poaceae	SR flour
Buckwheat	<i>Fagopyrum esculentum</i>	Polygonaceae	flour
Macadamia	<i>Macadamia integrifolia</i>	Proteaceae	nuts
Apricots	<i>Prunus armeniaca</i> *	Rosaceae	dried fruit, apricot conserve glaze
Raspberries	<i>Rubus idaeus</i>	Rosaceae	frozen fruit
Plum	<i>Prunus domestica</i> *	Rosaceae	dried prune
Cherries	<i>Prunus avium</i> *	Rosaceae	glace cherries
Almonds	<i>Prunus amygdalus</i>	Rosaceae	whole and ground almonds
Coffee	<i>Coffea arabica</i>	Rubiaceae	coffee beans in chocolate
Orange	<i>Citrus sinensis</i> *	Rutaceae	zest and juice
Lemon	<i>Citrus limon</i> *	Rutaceae	zest and juice
Lime	<i>Citrus x latifolia</i>	Rutaceae	zest and juice
Sugar Maple	<i>Acer saccharum</i>	Sapindaceae	maple syrup
Star anise	<i>Illicium verum</i>	Schizandraceae	whole fruits
Goji berries	<i>Lycium barbarum</i>	Solanaceae	dried fruits
Chilli/Paprika	<i>Capsicum annuum</i>	Solanaceae	fresh red pepper, dried paprika
Tea	<i>Camellia sinensis</i>	Theaceae	leaves
Lime Blossom	<i>Tilia platyphyllos</i>	Tiliaceae	fruits
Violets	<i>Viola odorata</i>	Violaceae	crystallized flowers
Grapes	<i>Vitis vinifera</i> *	Vitaceae	dried fruits, wine, brandy
Ginger	<i>Zingiber officinale</i> *	Zingiberaceae	preserved stem ginger
Turmeric	<i>Curcuma longa</i>	Zingiberaceae	preserved stem turmeric

BOTANICAL SOCIETY OF SCOTLAND AND BOTANICAL SOCIETY OF THE BRITISH ISLES: SCOTTISH ANNUAL MEETING

The annual BSBI/BSS meeting was held at the Royal Botanic Garden Edinburgh on 2nd November 2013.

Martin Robinson, Chair of the BSBI Scottish Committee, welcomed members and friends of both organisations to the meeting with the announcement that this was the biggest turnout ever for the Scottish annual meeting. He then spoke about Richard Pankhurst (whose obituary was in BSS News 101) and reminded us of Richard's contribution to the BSBI as chair of the Scottish committee, always willing to share his knowledge, with a great eye for detail, evangelical about critical groups and a trailblazer for computing in botany.

John Grace, BSS President, described the new BSS Citizen Science project, The Urban Flora of Scotland, which will involve members of the public and schoolchildren. Why urban botany? Because these are the plants everyone sees every day. Cities can be species-rich. Interesting plants can be found amongst the 'weeds' of allotments, on walls and rocks, gutters and chimney stacks, golf courses, old railway lines, woods, riversides and untidy gardens. There are even upland urban habitats, such as on Blackford Hill in Edinburgh. Scotland has seven cities and many large towns to be sampled. The project will need to engage schools and interest the local Councils (Councils need to be thinking about invasive plants and the effects of climate change). There will be ID workshops, photography projects, academic studies, scientific papers, a website and eventually a book.

BSBI President **Ian Denholm**, and BSBI Head of Operations **Jane Houldsworth**, gave a joint presentation on the Changing BSBI. By the end of 2013, the Botanical Society of the British Isles will have changed into the Botanical Society of Britain and Ireland, a charitable company limited by guarantee, to better manage the increasing numbers of projects and staff that the organisation is taking on. There will be formal rebranding, a slightly changed logo and a refurbished website. Staff and membership are being transferred to the new organisation, and a strategic review of all BSBI activities will consider topics such as better exploitation of BSBI data, recruitment and training.

BSBI Scottish Officer **Jim McIntosh** gave a report of his year's work, including educational workshops and field meetings, producing guidance on leading field meetings, running a stand at the Scottish Bird Fair, joining vice-county recorders in the field and applying for the next grant to fund his post. The 2013 Scottish Recording Week on Islay produced 700 plant records. Next year's recording week will be at Glen Shiel from 29 June to 6 July.

Davie Black from Plantlife Scotland gave an update on the Coronation Meadows project, which will choose a meadow in every county of the UK to mark the anniversary of the Queen's coronation, along with a second site for restoration using green hay or seed from the meadow. The term 'meadow' is difficult in a Scottish context, where species-rich grasslands are mostly grazed pastures, not hay meadows, so it has been defined as 'flower-rich permanent grassland maintained by traditional practices'. Chosen meadows should be semi-natural, species-rich and characteristic of the area, and must have potential for harvesting. Restoration sites must be a good ecological match to their donor sites. Suggestions for good restoration sites would be welcome (contact davie.black@plantlife.org.uk).

The BSBI Scottish AGM, before lunch, was dominated by discussions of recording issues. Following lunch, BSBI and RBGE staff ran mini plant Identification workshops, herbarium tours and a tour of the Garden's Scottish Rare Plant collection.

In the afternoon, **Keith Watson** spoke about The Flora of Renfrewshire. The old county of Renfrewshire includes coast, hills, sub-alpine habitat up to 2400m, and the city of Glasgow. Keith described the landscape ("the hilly, the gently rising and the flat"), soils and geology of the vice-county, and showed some of the more distinctive plants of the area, such as Whorled Caraway *Carum verticillatum*, pignel *Meum athamanticum*, Coralroot *Corallorhiza trifida* and Holy-grass *Hierochloa odorata*.

Andy Amphlett introduced his Checklist and Rare Plant Register of the Cairngorms National Park. He has created a dataset of 280,000 records, all stored on an Excel spreadsheet. Andy demonstrated how this allows sophisticated searches and analyses of species groups by defined categories, all of which would be very difficult if the data were published in the traditional book form.

Doug Gilbert, speaking about Plant and Habitat Conservation on RSPB Reserves, described a selection of the Society's 80 Scottish reserves. The oldest is Inchmickery in the Firth of Forth; the newest is the Endrick Mouth at Loch Lomond, which will be managed in collaboration with Loch Lomond and the Trossachs National Park and Scottish Natural Heritage. Other reserves highlighted were Vane Farm at Loch Leven, where the Bumblebee Conservation Trust sowed a wildflower meadow to create the first bumblebee reserve in the UK, and Abernethy, stretching from the lower pinewoods to the high tops of the Cairngorms. Examples of habitat restoration projects include Nigg Bay, where the sea wall was breached to realign the coast and create saltmarsh out of unsuccessfully improved agricultural land, and the Forsinard Flows, where the RSPB is reversing the destruction of the peatlands by removing the forestry plantation and allowing the bog surface to regenerate. Another RSPB highlight was the finding on Oronsay in last year of a colony of 160 Irish lady's tresses. Doug ended with a plea for members to get involved in recording and monitoring plants on RSPB reserves.

Afternoon tea was followed by the final presentation of the day, **Rod Corner's** comprehensively illustrated talk entitled: A Botanist in North and North East Greenland. Although Greenland is part of the continent of North America, the flora on the east side of the island is more closely related to that of Europe. Rod showed photographs of many British species growing in the Greenland landscape, including, dwarf birch *Betula nana*, mountain willow *Salix arbuscula*, bearberry *Arctostaphylos uva-ursi*, cranberry *Vaccinium microcarpa* and saxifrages *Saxifraga* spp. Less obviously northern plants included goldilocks *Ranunculus auricomus* and lady's smock *Cardamine pratensis* - a high arctic species! These survive thanks to the warm sea current that keeps the pack ice along the eastern coast at bay. Greenland has plenty of animal wildlife too and the botanist must keep a wary look out for polar bears and the occasional bull musk ox defending its territory.

Jane MacKintosh
BSS News Editor

(Editor's note: Normally we print the Exhibition Abstracts from the BSS/BSBI Scottish Annual Meeting in the BSS News. This year they came to 14 pages so, regretfully, we have not included them. They can be seen on-line at: <http://www.bsbiscotland.org.uk/meetings.htm#Saxifraga>.)

SELECTED EVENTS AT THE ROYAL BOTANIC GARDENS

Edinburgh

1. Coffee Morning: The Edible Garden

Royal Botanic Garden Edinburgh Tues 8 Apr 2014

The Edible Gardening Project volunteer team have helped thousands of visitors and local community groups to learn the horticultural skills they need to grow their own food. Hear about the practicalities, success and future plans for this project.

2. Edinburgh Friends of RBGE AGM and Talk by Professor Peter Hollingsworth: 'Biodiversity Science at the Botanic'

Royal Botanic Garden Edinburgh Thurs 24 Apr 2014

The AGM at 19.00 will be followed at 19.30 by a fascinating talk about biodiversity science at the Botanic. Professor Peter Hollingsworth, Director of Science at the RBGE will be giving the talk.

3. Royal Caledonian Horticultural Society and Friends of RBGE Joint Lecture: Twenty Years of Plant-Hunting in the South Seas Islands

Royal Botanic Garden Edinburgh Thurs 1 May 2014

Alistair Watt (Victoria, Australia), plant collector, amateur botanist and furniture maker gives this joint talk with the Royal Caledonian Horticulture Society.

4. Coffee Morning: Birds, Bees and Badgers at the Botanic

Royal Botanic Garden Edinburgh Tues 13 May 2014

The Edinburgh Botanic contains much more than plants. It is home to a wide variety of life and these have been catalogued by Dr Robert Mill, much helped by the Bioblitz in June 2013. He will talk about his expanding list of identified species.

5. A Spring Walk in the Edinburgh Garden

Royal Botanic Garden Edinburgh Tues 27 May 2014

Simon Crutchley, Horticultural Supervisor, will show us the highlights of the season on a guided walk through the Garden.

6. Coffee Morning: Botanic Cottage Reborn

Royal Botanic Garden Edinburgh Tues 10 June 2014

Discover the story of a unique building in the history of the Botanic: a 250 year old cottage which has been moved stone-by-stone from Leith Walk, and is being re-built in the Edinburgh Garden in 2014.

7. Evening Talk: Foraging for Food - Scotland's Wild Harvest

Royal Botanic Garden Edinburgh Thurs 25 Sept 2014

Fi Martynoga, editor of the book 'Scotland's Wild Harvest' will tell us which wild products we can find in the Scottish countryside and where and when to forage.

Benmore

1. National Tree Collections of Scotland

Benmore Botanic Garden Thurs 13 Mar 2014

Join Tom Christian, National Tree Collections of Scotland, and Brian Atkinson of the Glasgow Information Hub for the National Tree Collections of Scotland. Afternoon tea follows.

2. Benmore AGM & Talk

Benmore Botanic Garden Thurs 17 Apr 2014

Members' AGM followed by a talk by Olwen Hemmings on the Scottish Beaver Trial.

3. Open Day

Benmore Botanic Garden Sun 1 June 2014

There will be fun for all the family at this year's Open Day, plant sale, craft fair, tours, cake & candy and more.

Dawyck

1. Children's Craft Workshop

Dawyck Botanic Garden Sat 12 Apr 2014

In this outdoor workshop Poppy Browne will use garden materials to show children how to make different crafts.

2. April Garden Guided Walk

Dawyck Botanic Garden Sun 13 Apr 2014

Enjoy a walk around the Garden with one of our Garden Guides & enjoy the swathes of cheerful daffodils.

3. May Garden Guided Walk

Dawyck Botanic Garden Sun 11 May 2014

Enjoy a walk around the Garden with one of our Garden Guides looking at Rhododendrons.

4. Friends of Dawyck Botanic Garden Annual Plant Sale

Dawyck Botanic Garden Sun 18 May 2014

Bring and buy plant sale - come and find something new and interesting for your garden. All plants sourced from local gardens. Free for all.

5. June Garden Guided Walk

Dawyck Botanic Garden Sun 8 June 2014

Enjoy a walk around the Garden with one of our Garden Guides looking at the beautiful blue poppies.

PLANTLIFE SCOTLAND EVENTS 2014

Plantlife Scotland would welcome Botanical Society of Scotland members and their friends/families to any of our guided walks and workshops taking place in 2014. Our walks and workshops are free of charge unless otherwise indicated (donations welcome) and are open to participants with any level of experience. All events must be booked in advance - for more details or to book a place, contact scotland@plantlife.org.uk or (01786) 478509.

Sat 1 March, 12.00 – 3.00pm

Drummond Wood, Perthshire

Lichen Identification workshop

Learn the basics of lichen identification in dramatic Drummond Wood. Led by lichenologist John Douglass.

Sat 15 March

National Juniper Day

We would be grateful for any juniper records from BSS members for our new Scotland juniper survey. Downloadable form is available from www.plantlife.org.uk/scotland.

Sun 16 March, 2.30 – 4.30pm

Scottish Seabird Centre, North Berwick, E Lothian

Legends of the laws – Special storytelling event

Traprain and North Berwick Law dominate the local landscape and are important sites for wild flowers and lichens. They are also steeped in history with buried treasure, ancient rock carvings and a rich folklore of plants. Join us for an afternoon of tales of Celtic warriors, druids and saints, fairies and herbal healers, inspired by these iconic sites. With storyteller Alasdair Taylor. Suitable for families.

Sun 27 April, 10.00am – 4.30pm

Glasgow Botanic Garden

Plantlife and BSBI joint workshop: Identifying Wildflower families

Learn how to identify wildflowers by studying the families they belong to. Led by Dr Faith Anstey. Fee £15 (full-time students £10). For further information or to book a place, contact Jenny Farrar at jenny.farrar@bsbi.org or on 07929 830765.

Sun 4 May, 10.00am – 4.30pm

St Andrews Botanic Garden

Plantlife and BSBI workshop: Identifying Wildflower families

For details see 27th April event.

Sun 18 May, 10.00am – 4.30pm

Holyrood Park, Edinburgh

Plantlife and BSBI workshop: Identifying Wildflower families

For details see 27th April event.

Sat 24 May, 11am – 2.30pm

Duchess Wood, Helensburgh

Spring walk

Join us for a spring walk in Duchess Wood. Part of the festival to celebrate the opening of the John Muir Way (details at www.snh.gov.uk). Bring your own lunch for a picnic in the woods. Joint event with the Friends of Duchess Wood.

Sun 25 May, 11am – 4pm

Wooplaw community woodland, nr Lauder, Scottish Borders

Wildflowers count survey day

Come along to help survey the wildflowers of Wooplaw. A chance to explore this inspiring site, improve your wildflower identification and learn some folklore of the plants we find.

Sat 7 June, 11am - 4pm

Crathes castle, nr Banchory, Aberdeenshire

Getting the most out of Wildflowers Count

A practical workshop, full of ideas and tips on what to look for while enjoying a walk through the countryside, and finding out more about our national plant survey.

Thurs 12 June, 10am - 4pm

Falkirk Wheel, Falkirk

Learn how to identify wildflowers

This event is for people who would like to find out how to use wildflower keys and build up their expertise on Scottish wild flowers. Led by Dr Heather McHaffie.

Mon 16 June, 11am - 3pm

Inchnadamph, Assynt, Sutherland

Guided wildflower walk

An opportunity to see a rich assembly of limestone wildflowers, in this fascinating area of the North Highlands. This 5km walk will follow the valley of the Traligill and visit the Allt na Glaic Mòire tributary which has the best flora. Walk is off-path in places so requires a reasonable level of fitness and good footwear. Led by Highland Council Assynt rangers.

Wed 25 June, 11am - 4pm

Lochwinnoch, Renfrewshire

Getting the most out of Wildflowers Count

For details see 7th June event.

Sat 28 June, 10.30am - 3pm

Langlands Park, Jedburgh, Scottish Borders

Wildflower meadow walk

A demonstration of how flower-rich fields can be created and managed from seed. Part of Plantlife's Coronation Meadows project; meet a landowner who created her own Peoples' Meadow, and take a walk through this now colourful part of the Borders.

Wed 9 July, 10.30am - 4pm

Almondell and Calderwood Country Park

Wildflower Identification and Folklore

Take a closer look at plants, learn some top tips on how to identify them and learn the many ways people have used them for food, medicines and craft. With Plantlife and the Central Scotland Forest Trust.

Sat 19 July, 11am - 2pm

Caerlaverock, Dumfries

Guided saltmarsh walk

Find out about the ecology and wild plants of the saltmarshes at the Caerlaverock National Nature Reserve starting from the Wildfowl and Wetland Trust's Caerlaverock Wetlands Centre. Led by BSBI Recorder for Dumfriesshire Chris Miles. There is a coffee shop and a wide selection of natural history books at the WWT centre.

Sat 23rd August – 11am - 3pm

Aberfeldy, Perthshire

Scottish Clan Plants & Cultural Plants – Botanical & Cultural Walk

Many clans had a badge plant or battle emblem which may have been used for identification. There are also many other plants which are part of Scottish cultural and literary history. Join us for a walk to find out more about some of these plants and their connections with the peoples of Scotland. Led by Dr Seona Anderson, Plantlife European Projects Co-ordinator.

Sun 24 August, 10am - 1pm

Elie, Fife

Guided seashore walk

Find out more about seaweeds and seashore ecology. The walk will explore different areas of the shore at picturesque Elie on the East Neuk of Fife, where a good range of seaweeds can be seen. Led by Professor Martin Wilkinson of the Centre for Marine Biodiversity & Biotechnology, Heriot-Watt University.

CROSSWORD SOLUTION

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St. Andrews:	Professor Robert Crawford

BSS NEWS – INFORMATION AND GUIDELINES FOR CONTRIBUTORS

The Newsletter of the Botanical Society of Scotland
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Aims of BSS

The chief aims of BSS News are to communicate with the membership, to keep members informed and to act as a vehicle for members' contributions on all things botanical. By these means members can keep in touch with each other. There is also a further aim of providing interest, entertainment and stimulation for BSS members. Sometimes this may involve contributions from non-members. All contributions are welcome.

Scope of the newsletter

The content of BSS News is as kaleidoscopic as possible around the botanical theme and we are keen for this variety to continue. For a list of ideas for contributions see the BSS website (www.botanical-society-scotland.org.uk) and the following list, but please don't feel constrained by it. New ideas are welcome. Regular contributions include the following items:

- Reports of field excursions (leaders please take note) picking out the botanical highlights.
- Descriptions and recommendations of other botanical sites in the UK or abroad. (It might help people to plan their holidays.)
- Articles of current or historical interest, including ethno- and archaeobotany.

- Biographical profiles of botanists.
- Botanical poems.
- Botanical notes, news items, announcements of future events, reports of meetings attended, correspondence, small ads., etc.
- Book reviews.
- Crosswords and quizzes.
- Illustrations, including paintings, photographs and line drawings (the latter to be in black ink on white paper). Subjects could include plants, habitats, people, events, or even witty cartoons if they are your forte!

Guidelines for contributors

Don't worry if you cannot comply with all of the following guidelines. Just send what you can and the Editors will make adjustments.

File name for email submissions and web uploads

Please include your own name and indicate article content in the file name. Also add your name, preferred title and affiliation etc. to the end of your article.

Text

The Newsletter is set up on a PC and saved as a document in MS Word 2010. Although it is printed on A5 pages it is set up on A4 pages using Arial font (size 15 for major text, 18 for main headings and 14 for acknowledgements and references). Margins are set at 2 cm (sides), and 2.5 cm (top and bottom), with headers and footers at 1.5 cm. Text is justified and single-spaced.

Text figures

Illustrations for the text can be line drawings, maps or graphs in black ink on white paper. Black and white photographs can also be reproduced. There is no colour reproduction in the text. Hard copy or digital images can be accepted.

Cover pictures

The cover is the display area for colour pictures (paintings, photographic prints or digital images). Original artwork will be returned to the author after careful use. Please ensure (and indicate in your correspondence) that you have appropriate copyright permission and permission from any people in photographs for publication in BSS news.

Submission

Please send your contributions to the Receiving Editor in any of the following forms:

- 1 E-mail attachment. This is the preferred option but, if you have many images, please send the images on a CD.
- 2 CD.
- 3 Hard copy (computer print-out and original artwork).
- 4 If you have no access to a computer, a typewritten or handwritten manuscript will be acceptable.
- 5 Through the template on the BSS website: <http://www.botanical-society-scotland.org.uk/content/bss-news-newsletter-botanical-society-scotland>.
- 6 If you are not a BSS member receiving the BSS News then please send a postal address to receive your complimentary copy of the newsletter.

Send email with text and photographs to: jill.thompson99@gmail.com.

For emailed pictures, please add the name of the photographer and the subject to the file name of the photograph. For photographs in articles, please add information and the credit to the photographer at the end of your article.

Send hard copy and CDs by post to:

Dr Jill Thompson
C/O Botanical Society of Scotland Newsletter
Royal Botanic Gardens Edinburgh
20A Inverleith Row
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When sending something by post please phone 0131 258 2358 or email jill.thompson99@gmail.com to let Jill know something has been posted.

**The LAST deadline for the next issue will be 15th July 2014.
Earlier submission would be appreciated.**

Back cover pictures

Inside

Top left: The plant biodiversity Christmas cake, 2013. Photo by Ewan Cole. See article on page 43.

Centre left: Binary bonsai crochet and knit. Photo by Madeleine Shepherd. See article on page 40.

Bottom left: L-system crochet. Photo by Julia Collins. See article on page 40.

Right: Prickles and thorns. Photos by Peggy Edwards. See poem on page 31.

Outside

Top left: *Dactylorhiza purpurella* x *Gymnadenia borealis*? Photo by Richard Milne. See article on page 15.

Top centre left: *Dactylorhiza maculata* x *Gymnadenia borealis*? (1) Photo by Richard Milne. See article on page 15.

Top centre right: *Dactylorhiza maculata* x *Gymnadenia borealis*? (2) Photo by Richard Milne. See article on page 15.

Top right: Lapland marsh orchid *Dactylorhiza traunsteinerioides* ssp. *francisdrucei*. © Alan Watson Featherstone. See article on page 20.

Bottom left: Knopper acorn gall (*Andricus quercuscalicis*) on oak. Photo by Dave Stokes.

Bottom right: Moss campion *Silene acaulis*. Photo by John Holland. See article on page 18.

