



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

Teasel, *Dipsacus fullonum*, from the Midmar Allotment site, Edinburgh. Photo by John Grace

Inside

Top left: Northern Marsh Orchid *Dactylorhiza purpurella*, part of a large colony in Craigmillar Park, including hybrids with *D. fuchsia*. Photo by Richard Milne

Top centre: Perennial Cornflower, *Centaurea montana* at Midmar Allotments, Edinburgh. Photo by John Grace

Top right: Common Evening Primrose, *Oenothera biennis* at Midmar Allotments. Photo by John Grace

Centre left: Dandelion clock at Craigmillar Park. Photo by Richard Milne

Centre centre: Wall Bedstow *Galium parisiense* (see page 28). Photo by Richard Milne

Centre right: Autumn Gentian *Gentianella amarella*, part of a large colony on a brownfield site at Millerhill. Photo by Richard Milne

Bottom left: *Sedum spurium*, a fairly common garden escape around Edinburgh. Photo by Richard Milne

Bottom right: *Vicia bithynica*. A patch turned up unexpectedly among long grass below a strip of planted trees at the western edge of Danderhall, Edinburgh. Photo by Richard Milne

Botanical Society of Scotland

(Incorporating the Cryptogamic Society of Scotland)

c/o Royal Botanic Garden Edinburgh

20A Inverleith Row, Edinburgh, EH3 5LR.

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

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. After more than ten years without change, membership subscriptions rose from October 2012 to:

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 now pay by PayPal via the BSS website membership page:

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

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EDITORIAL

Welcome to the 100th issue of BSS News. This august publication started life as the BSE News in 1970 (when we were the Botanical Society of Edinburgh) and has been in print ever since, three times a year initially and twice a year from 1980. Roger West marks the occasion on page 14 with an entertaining history of the newsletter gleaned from the back copies in the library of the Royal Botanic Garden of Edinburgh.

This issue is full of challenges for BSS members, from the initiatives announced in the following pages to an account of the revised Scottish Biodiversity Strategy, known as 2020 Challenge, on page 24. We hope to involve BSS members in a range of new projects - botanising, writing, publishing, promoting. There really is something for everyone – do have a look at the articles on pages 6 to 9 and see what interests you.

Expect to see a lot of this logo in 2013. This is the **Year of Natural Scotland**, one of a series of Scottish Government's focus years leading up to Homecoming 2014. It aims to promote Scotland's stunning natural beauty and biodiversity both to locals and to tourists. A programme of events is currently being compiled online at: <http://www.snh.gov.uk/news-and-events/events/>.



Finally, please note that you can now find the BSS on Facebook: <https://www.facebook.com/173595647140/> and on Twitter: <https://twitter.com/BotSocScot>.

Many thanks, as ever, to all our contributors.

Jane MacKintosh and Jill Thompson

CONGRATULATIONS

Congratulations to BSS News on its one hundredth anniversary. I am delighted to hear that it is still going strong. Best wishes for the future.

Margaret Lennard

(Margaret Lennard was BSS News editor from 1991-2000. Ed)



Botanical Society of Scotland

SECRETARY'S NEWS: UPDATES SINCE THE AGM

Notification of permanent change to timing of AGM from 2013

As announced in BSS News 99 (p10) the decision was taken by members present at the AGM, 21st June 2012, to change the timing of the Society's AGM from June to September in 2013.

In compliance with the instruction from members at the AGM an electronic 'doodle' poll and postal vote were set up to give all members of the Society an opportunity to vote on this important decision.

All additional votes cast by the close of poll were in favour of the proposal. As a result, from 2013 the Annual General Meeting of the Botanical Society of Scotland will be held in September of every year followed by a meeting of the newly elected Council in October and the winter lecture programme will run from September to May.

Changes to Council

Two of the Council posts that remained vacant at the AGM have now been filled.

Membership secretary: Mr Kim Harding

Publicity officer: Ms Niamh Britton

Vacant posts

Vice president; Cryptogamic secretary; Conservation secretary, Student Representative; Councillor (x2). If you are interested in applying for any of these posts or would like to suggest a suitable candidate (ideally with their agreement) please contact the *General Secretary in the first instance. We encourage potential applicants from outside Edinburgh to make enquiries.

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ATTENTION ALL MEMBERS!

WANTED: VOLUNTEERS FOR WORKING GROUPS

Council are in the process of setting up a series of working groups to facilitate, organise and run various projects that are planned over the next two years. The success of these projects is dependent on the knowledge base of our membership combined with enthusiasm and increased participation.

The Flora of Urban Scotland

The aim of this project is to compile an illustrated flora of towns and cities in Scotland using data collected by members across Scotland. The working group will build on the experience generated during previous field projects (*Plant Life of Edinburgh and the Lothians* and *Celebrating Diversity in Community Woodlands in Scotland*) to co-ordinate and take part in “post-code” surveys of urban areas. See John Grace’s article on page 8 for full details.

Working group contact *Professor John Grace (president)

Publications (including transactions)

BSS produce and publish a wide range of literature. The primary aim of this working group is to develop an online ‘Transactions of the Botanical Society of Scotland’ that will enable publication and archiving of articles that fall between the remit of *BSS News* (the Society’s Newsletter) and *Plant Ecology & Diversity* (the Society’s academic Journal). This electronic publication is intended for members only. We envisage that some members will be interested in the technical side of developing the new publication and others with proof-reading articles or contributing to one-off publications.

Working group contact *Chris Jeffree (vice president)

Publicity/promotion

The Society promotes and publicises BSS and its publications with displays, exhibitions and events by participating in large shows and festivals (e.g. Gardening Scotland, Edinburgh International Science Festival). The aim of this working group is to increase the Society’s profile and to take part in a wider range of events across Scotland (and beyond). We envisage that some members will be interested in developing promotional material and that others will suggest possible promotional events and will ‘sign up’ to helping with that particular event.

Working group contact *Niamh Britton (Publicity officer)

Improved members' area on BSS website

BSS Council also intends to develop the dedicated Members' Section of the society's website with (for example): a members' photo gallery; an 'answers please' area; links to archive documents. The remit of this working group is wide and will be integral to supporting the above projects in addition to creating new projects for the website. We envisage that some members will be interested in producing web pages/data/images/information and others with developing the templates and software that enable access by members.

Working group leader TBA

Popular science writing

And finally, a request from the editors of BSS News: can you take an article from Plant Ecology and Diversity (PE&D), the BSS Journal, and summarise it in plain English in fewer than 2000 words for a non-academic readership? We'll publish any submission that our reviewers agree is a fair version of the original (or the best if space is limited). This challenge has the twin aims of promoting good science writing and disseminating some of the work published in PE&D to BSS members who don't receive the journal. We think it will be of particular interest to students who wish to practice writing skills applicable to the wider world.

WE NEED YOU TO MAKE THINGS HAPPEN

You can express initial interest in any of these projects/groups via the *General Secretary. Or ask one of the contacts for more information at the next lecture meeting. Many of the plans are in the embryonic stages so you will have considerable input into the content and direction of development of these projects. We expect that, for the most part, members of the groups will interact via the appointed group leader using electronic media (email; Skype; tele-conferencing) therefore you will not be committing to attending regular meetings in Edinburgh or becoming a member of Council.

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ANNOUNCEMENT: A NEW CHALLENGE FOR THE BOTANICAL SOCIETY OF SCOTLAND, AND A PROJECT

The Scottish Government's recent consultation document "*The 2020 Challenge for Scotland's Biodiversity*" is a welcome expression of public concern for the conservation of nature¹. However, this public concern is not matched by any increase in public knowledge of the flora and fauna, which seems to be on a long-term decline. There are many indications of this. You can easily find first year biology students who are unable to name primroses and buttercups. I recently read a newspaper article on Ash Dieback disease that was illustrated by photographs of oak. And schoolchildren are not taken on field excursions because it is deemed too dangerous. Plants, it seems, are objects to be enjoyed from afar, or in books, or on You Tube.

The change in our flora, which has been brought about by intensification of land use, climate change and the spread of introduced species, remains a matter of deep concern². It behoves us, as members of the Botanical Society, to encourage awareness of botanical change, and to foster botanical knowledge and its application. What can we do?

At the Botanical Society Council meetings we have been discussing a way to engage young people and awaken the botanical interests of the public more generally, whilst at the same time contributing something useful to Scotland's biodiversity agenda. Some of you will fondly remember Phillip Smith's *Plant Life of Edinburgh and the Lothians*³. An army of botanists joined forces with the public and took on the task of describing the flora, albeit of a small part of Scotland. The Society was invigorated. Today, this sort of thing is called *Citizen Science*. Such work is much easier now than it was then, because of the electronic aids which are available.

We have decided to embark on a new project, to be called *The Flora of Urban Scotland*. We choose to focus on the urban flora because it is accessible to everyone, young and old, and because our towns and cities are the very places where change is most likely to occur. Moreover we can build on work already published. We have the *Plant Life of Edinburgh and the Lothians* and also the excellent work from Glasgow by Jim Dickson and colleagues⁴. The initial aim will be to define a baseline for Scotland as a whole against which future observations can be compared.

What habitats will be surveyed? We are still thinking about this, but in the first phase of the project we will aim to examine walkways, allotments, docklands, old buildings and waterways. Photography will be an important part of this survey, as it will not only provide illustrations for a published flora but also a geo-referenced record of the habitat itself.



The Scottish Government's Biodiversity Strategy document¹

outlines three important aims of its 2020 Biodiversity Challenge. We will play especially to this one: "to engage people with the natural world, for the health and the well-being benefits that it brings, and empower them to have a say in decisions about their environment".

2013 will be the preparatory year. We will need to make contact with experts and recorders, with institutions and organisations throughout Scotland, and we will need to contact stakeholders. Pilot studies will be necessary. We will keep in touch with you throughout the project with regular articles in BSS News and information on our web site.

Image of plants invading public bench at Midmar Allotments, Edinburgh, by J. Grace

¹The Scottish Government. *Challenge for Scotland's Biodiversity*, Press Release 6th July 2012.

²*Natural Heritage Trends, Species Diversity, Plant Species*. Information and Advisory Note 130, SNH. Retrieved April 2008.

³Smith PM, Dixon ROD & Cochrane MP (2002) *Plant Life of Edinburgh and the Lothians*. Edinburgh University Press.

⁴Dickson JH, Macpherson P & Watson K (2000) *The Changing Flora of Glasgow*. Edinburgh University Press.

Professor John Grace
President, Botanical Society of Scotland

PLANT ECOLOGY & DIVERSITY SPECIAL FEATURE: NEXT GENERATION PLANT ECOLOGY AND EVOLUTION

We are pleased to announce that the next issue of the Botanical Society of Scotland (BSS) journal, Plant Ecology and Diversity, will contain a special feature entitled 'Next Generation Plant Ecology and Evolution'. This feature compiles a series of papers that were presented at the BSS supported meeting, held in Edinburgh, in October 2011. The articles discuss a wide variety of topics, including how new techniques will be able to better resolve species relationships, to how we can manipulate gene expression to prove the functions of genes. This special feature ties in with previous articles published in BSS News on the theme of next-generation sequencing. Featured on the back outside cover of this issue of BSS News are *Fritillaria lusitanica* and *Pinus canariensis*, examples of the plant species with large genome sizes which have previously been neglected for genome-sequencing projects (discussed by Laura Kelly and colleagues in this issue of PE&D).

Alex Twyford

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UPDATE FROM THE FORMER BSS STUDENT REPRESENTATIVE

It has been a great pleasure to serve as BSS student representative over the last 4 years. Over this period the society has made some exciting changes, including the launch of the website (<http://www.botanical-society-scotland.org.uk>), and the re-launch of the society's journal (as Plant Ecology and Diversity). There have also been plenty of reasons to celebrate, most notably with the celebration of 175 years since the society was founded (as the Botanical Society of Edinburgh). My main contribution to the society as student representative was organising the well-received "Next Generation Plant Ecology and Evolution workshop". I have also been pleased to help grow the student membership of the society, as can be seen at the monthly lectures in Edinburgh. It has been a pleasure to contribute to the workings of the society, and I would encourage other members to get involved (for example the conservation secretary post on the council

remains vacant). I am pleased to continue contributing to the society as a guest editor of Plant Ecology and Diversity.

Since finishing my PhD in Edinburgh, I have moved to Syracuse University in New York State to start post-doctoral work. I am working on the evolution of the monkey flower *Mimulus guttatus*. This species has recently been in the press as it is believed to be a parental progenitor to a new *Mimulus* species of hybrid origin found in South Lanarkshire (*M. peregrinus*; see Mario Vallejo-Marín's article in the online journal PhytoKeys for details). My main interest in *M. guttatus* is that it grows with two distinct life-history forms at different sites: some sites only contain annuals, while others only perennials. This difference has a genetic basis, as plants that are transplanted between sites continue to grow with the same life-history. I am using new DNA sequencing approaches to look at the relationships between these different ecotypes, to test which one of them evolved first, and how many changes there have been between ecotypes. I am also studying the genes that differ between them. This is an exciting project that will hopefully tell us more about the earliest stages of speciation.

I would like to extend a warm welcome to the next student representative.

Alex Twyford
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A DATABASE OF SCOTTISH PLANT NAMES

In early 2012 Greg Kenicer and I started to collaborate on the creation of a database of Scots and Gaelic plant names and ethnobotanical notes. My original incentive for this project was writing "*Flouer o Scotland?*", which I inflicted upon you in *BSS News* 98. Greg had already made a start on this project with the help of others who have since left RBGE. The words and notes were mostly obtained from secondary sources, some of them recent.

We collected about 2600 Scots words and about 4000 Gaelic words, most of them plant names but including some names of parts of plants and words of ecological interest. We excluded almost all words of purely horticultural or agricultural interest. In our source documents plant names were mostly defined in terms of English or taxonomic names.

Our principal task was to identify the currently accepted taxonomic name for each Scots or Gaelic name. We have relied on Stace 2010, Braune and Guiry 2011, Phillips 2006 and the British Lichen Society (BLS) list as authorities on the taxonomic names of vascular plants, seaweeds, fungi and lichens respectively, as far as possible. The list exists at present as an Excel spreadsheet and is unlikely to have been put on-line by the time this issue of BSS NEWS is published, so we cannot give a web address. We intend that it should be available by the time that the next issue of BSS News hits the streets and that it should be hosted and maintained on the RBGE site, so keep a lookout for it!

Taxonomic names change quite frequently according to advances in taxonomic research, but English Standard names much less so since there is no requirement for them to conform to taxonomic fashion, and we were able to identify many vascular plants from the Botanical Society of the British Isles (BSBI) list. In quite a few cases I was able to find an 18th or 19th century taxonomic name marked as an obsolete synonym in Clapham Tutin & Warburg (CTW) 2nd edn, and CTW's taxonomic name marked as an obsolete synonym in Stace, and thereby to find the current taxonomic name. Thank goodness both these books were excellently indexed!

This method relies on the assumption that the original compilers of the lists upon which we ultimately relied correctly identified the English or taxonomic name current in their day and associated it correctly with a Scots or Gaelic name. The compilers were, we believe, well educated men such as ministers, who were familiar with the habits and language of their neighbours, so we are reasonably confident that their work was reliable. But we have a caveat: Linnaean ideas, including the idea of a one-to-one correspondence between species and their names, had entered Scotland through the influence of John Hope, still famous as a former Regius Keeper of RBGE, and it is possible that some of these compilers imposed a greater taxonomic discipline on the names that they collected than was justified by vernacular usage at the time or by the evidence available to them. There is no way of telling now.

Anyone who doubts that Scots and English are different languages should try reading an issue of *Lallans*, the magazine written entirely in literary Scots. But the two languages have a close linguistic relationship, so that Scots can import English words and syntax very easily. A very large number of plants have been introduced into the UK in the last three centuries and have been given names by plant collectors or nurserymen. These names are generally regarded as

English, even if they originated in Scotland. An example is *Pseudotsuga menziesii*. This tree was collected by a Scottish collector who was patronized by a Scottish aristocrat, and the first seedling this side of the Atlantic was planted in what is now the Royal Botanic Garden Dawyck, where it has grown to be a magnificent specimen tree. But its vernacular name, Douglas Fir, is regarded as an English name, even though the usage of the word Fir for a species not in *Abies* may be regarded as a scotticism. This means that there are few if any plant names dating from later than about 1700 that find their way into the Scots Name field of our database, and can make it difficult for a Scots lexicographer to decide whether or not they should be included in her dictionary.

Our principal target usership is scholars, such as local historians, who are not botanists but who may wish to know more about plants whose names they encounter in old texts. There was a report in December 2012 of an upsurge of interest by parents in Gaelic medium education of their children, and we hope that the database will also be a valuable on-line resource for Gaelic-medium high schools. Members of the BSS will probably find little in the database that they do not already know. There is very little current botanical information in the database, but with the correct taxonomic name users should be able to find such information as they require in Google or Wikipedia.

There will certainly be errors and omissions. We would be greatly obliged if you would email g.kenicer@rbge.ac.uk to correct any that you find.

Roger West (BSS)
Greg Kenicer (RBGE)

We thank Ms. Chris Robinson, lexicographer to the Scots Language Dictionary Association, and Ms. Lorna Pike, lexicographer of the Gaelic Dictionary, for their help with Scots and Gaelic names respectively.

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100 NOT OUT!

This is the one hundredth issue of BSS News, known in its earlier existence as the Botanical Society of Edinburgh News (BSE News). BSE Council had decided in 1969 to publish a newsletter and a Council minute of February 1970 notes that Dr. J.A. Rogers had been appointed editor. The first issue, printed by W.T. McDougall & Co., Leith, appeared in April 1970 and a Council minute of May 1970 congratulates the editor on an excellent publication. The opening words of that first issue were:

“The launching of this new venture has much in common with sowing a seed. For a seed to germinate ... it must not only be viable but the ground and climate must be favourable. Similarly, this Newsletter cannot grow and become established without an input of articles, short notes, news items and letters from Fellows and Members”.

There can be no doubt that the seed has grown into a fine tree bearing much fruit. No doubt also the present editors and their predecessors would say Amen to the sentiment expressed in the second sentence of that extract!

The newsletter has had only seven Editors, with one assistant editor, during the first 43 years of its existence: Dr. J.A. Rogers, 1970-1986 (issues 1-46); Alan P. Bennell, Acting Editor for issue 47; Heather Thom with Assistant Editor Tess Darwin, 1986-1991 (issues 48-56); Dr. Margaret Lennard, 1991-2000 (issues 57-74); Dr. Barbara Sumner, 2000-2010 (issues 75-94). Dr. Jill Thompson and Ms. Jane MacKintosh have been Receiving Editor and Coordinating Editor respectively from 2010 to the present (issues 95 onwards). The earlier editors were each at the crease for quite a long innings, which suggests that they found it a rewarding experience (I don't mean that in a pecuniary sense!). From 1970 to 1980 there were usually three issues per year, usually in February, May and September, which is why the 100th issue does not coincide with the 50th anniversary.

The content of the newsletter has remained broadly similar throughout its existence, and I have been impressed by the high standard of all of it. Field reports, reports of BSE/BSS meetings, book reviews, notices of forthcoming events and articles on a wide range of botanical topics have constituted most of the material. There has been

a good sprinkling of articles about the Society and on the achievements of eminent botanists of the past, which shows that we have a keen interest in our own history. The newsletter has also commemorated important anniversaries. 1970 was the 300th anniversary of the RBGE and was also the European Year of Conservation: the first two issues covered both of these. 1986 was the 150th anniversary of the BSE, which was marked by making issue 45 commemorative: it had a glossy cover, a Foreword by HRH the Duke of Edinburgh and an article by the Regius Keeper, Prof. D.M. Henderson, and others. Council were dissatisfied with the quality of printing of this prestigious issue and resolved to warn the printer that unless this improved he would lose his contract. Editors have also often had to nag members to contribute enough material to fill an issue. In October 1982 the editor remarked testily that if members had noticed the absence of the previous issue it was because he had not received any articles from them!

There is one respect in which the content has changed noticeably: during the first half of its existence BSE News published more details of the business of the Society than it does now. From time to time it included complete lists of the names and addresses of members, and on two occasions when the constitution of the Society was amended the whole of the new Constitution was included in the next issue, practices that have since been discontinued. In 1971 the Constitution included seven classes of membership: Honorary Fellows, Ordinary Fellows and Associates, Lady Members, Ordinary Members, Student Members and School Groups. Only Fellows had the right to vote on Society business. You could become a Lady Member if you were "Any Lady who is a relative of a Fellow or has assisted the Society may, on the recommendation of the Council, be elected as a member for life on payment of a single contribution as laid down by Council." This provision, which dated back to the early days of the Society, was presumably intended to encourage women to become members at a time when many of them were entirely dependent upon their husbands. There were 21 School Groups in 1971, all in Edinburgh and about equally divided between independent and local authority schools. This has lapsed, probably because the excellent service for schools provided by the RBGE Education Department has rendered it unnecessary. An Act of Edinburgh Town Council, dated 1839, was still in force by which "the Professor of Botany in the University of Edinburgh is constituted Hon. Curator ex officio, with access to the Society's Collection, whether a member of the Society or not." I wonder whether this has ever been

repealed? Only the City of Edinburgh Council or the Scottish Parliament could now repeal it! After the most recent change BSS News noted laconically that “copies of the Constitution, which was revised at the AGM in June 2000, may be obtained from the General Secretary”. I wonder whether it would now be possible to find a list of our membership as it existed in 1993? Or whether in 2033 it will be possible to find a list of membership as it is today? Future historians who wish to study the demography of participatory science may deplore that we have discontinued this practice.

The most noticeable change in the newsletter over the years has been in its presentation. The early issues had a bald masthead proclaiming BSE NEWS, the issue number and the date, with the editorial appearing beneath it on the first page. It was not until issue 24, February 1978 that the text below the masthead was replaced by a picture, an engraving of Sgurr nan Gilleann, Black Cuillins, Skye. Thereafter all issues have had an illustration on the front, occasionally only a large imprint of the Society’s logo. Line drawings gradually penetrated the interior of the newsletter, mostly to illustrate articles but some purely decorative. I have been impressed by the consistently high standard of these, and wonder who did them¹. The first black-and-white photograph appeared in issue 48 (Autumn 1987), and the reproduction was good, but there have been few greyscale illustrations since. The first issue to include a table of contents was 49 (Spring 1988), and the first crossword was in issue 58 (April 1992), although crosswords did not become a regular feature until issue 85 (September 2005).

In issue 37 (February 1983) the editor stated, “This issue of BSE News is the first to be printed ... by computer” and added wryly that “Even a Society as venerable as the Bot. Soc. must move with the times.” But this was not computer publishing as we now know it. Dr. Lennard tells me that in her time most articles that she received were typewritten, and were taken to a printer in Morningside. The printer’s proofs were returned to her for proofreading, and there was always the possibility of errors escaping detection. Nowadays, if articles are checked carefully by their authors before submission by e-mail, there should be little need for proofreading, thus sparing the editor(s) a tedious chore.

The first issue with a coloured cover was 75 (Spring 2000), which was also the first of Dr. Sumner’s editorship. (The inside front cover of this issue featured a reproduction of a beautifully engrossed testimonial sent by the Society to H.M. the Queen Mother on the occasion of her

100th birthday, and the first inside page featured the reply received from her.) This was made possible not only by digital cameras but also by software at the printer's which allowed them to be edited, placed on a page, and converted rapidly and accurately into CMYK plates for printing. Dr. Lennard also tells me that it was not her task to stuff and address the envelopes, in which the newsletter is posted. I believe that this task has for many years devolved upon the General Secretary. Future generations may be astonished that a busy academic should have been expected to do a chore, which in a middling business, would have been given to the office junior. We are lucky that our officers are so obliging.

What of the future? There is no reason why BSS News should not continue well beyond its 50th anniversary in 2020, but I anticipate its further evolution. The generation of botanists who are now students will expect to receive almost all of their information and communications electronically, and the increasing costs of printing and postage (not to mention envelope-stuffing) may mean that e-publication of the newsletter is seen by Council as an attractive alternative to increasing the subscription. There would be other advantages: a much higher proportion of coloured illustrations could be included and, if required, sound and moving pictures. When this happens, the present two issues a year will probably be replaced by a greater number of slimmer issues. Old fogies such as myself will cavil, but even a Society as venerable as the Bot. Soc. must move with the times!

Roger West

¹The line drawings in this issue and recent issues of BSS News, including lesser periwinkle below, are by Barbara Sumner, previous editor of BSS News and ex-BSS President. Ed.



ABSTRACTS FROM EDINBURGH LECTURES OCTOBER 2012 – JANUARY 2013

Thursday 18th October 2012. **Dr Adam Price**, University of Aberdeen. ***Genetic mapping in rice: Where has 20 years got us and what's new?***

Dr Price has been working on the genetics of rice since 1991, first at the University of Wales, Bangor and for the last 14 years at the University of Aberdeen. The initial emphasis of the research was on genetic mapping of genes controlling root growth and drought avoidance using a mapping population developed in Bangor which has resulted in a new variety of rice for India with improved roots produced by marker-assisted selection. More recently it has exploited genome sequence information, next generation sequencing technology and genome wide association studies to gain insights (including identifying underlying genes) of biotic and abiotic stresses and rice grain quality traits in rice. This work was presented into the context of increased demand, reduced recourses and sustainability.

Thursday 15th November 2012. **Dr Brian Coppins**, ***Atlantic hazel: Scotland's special woodlands***

This lecture, and also Brian and Sandy's book which it was based on, changed the way people think about hazel and in particular the hazel woods along the Atlantic seaboard. Until recently, most ecologists perceived hazel as just a coppiced shrub, the commonest component of the underwood in our widespread and enduring coppice-with-standards silvicultural system, and dismissed the hazel-dominated woods of the north and west as scrub – if they recognised them at all. Brian Coppins presented a lavishly illustrated lecture with a more discriminating view, which sees the Atlantic hazel woods as a distinctive and highly significant type of woodland, the rain forest – no less – of the British Isles.

Thursday 20th December 2012. Lecturettes by younger BSS members: Dr Jane Droop, Catherine Kwella, Niamh Britton and Cathy Horseley
Dr Jane Droop. *Christmas spices – what are they botanically?*

The recipe for a popular European Christmas biscuit (the Pfeffernuss) is presented, introducing five spices associated with Christmas time: ginger, cardamom, cloves, pepper and cinnamon. For each of these five, the binomial name and distribution of the spice species is given, along

with some information on the distribution and species richness of the family. Legends of the origins of these plants are also presented, where known.

Catherine Kwella. *Forest gardens and conservation*

Forest gardens are multi-layered agroforestry systems, in which a variety of useful, usually native, crops are grown. Forest gardening is a growing trend in temperate countries, especially amongst conservationists, but it is a practice going back thousands of years in tropical regions. Here they provide a relatively stable source of food, fuel, fibre and medicines, the multi-layered woodland structure prevents erosion and a steady fall of leaf litter maintains soil fertility. Forest gardens have been shown to be of significant conservation value: In Ethiopia, shade-grown coffee *Coffea arabica* harbours a significant diversity of epiphytes - more than sun-grown coffee or shade trees alone. In south west China, populations of *Acacia pennata* grown in forest home gardens have similar levels of genetic diversity to local wild populations, indicating that forest gardens may be useful in conserving intraspecific diversity.

Niamh Britton. *Festive phytoplasmas*

Euphorbia pulcherrima (Poinsettia), a pot plant with vibrant red bracts, has adorned the shops at Christmas time since the 1960s. It was then that the Ecke family developed a short, bushy cultivar of this plant that grows tall and unbranched in its wild form. Plant breeders struggled to breed the bushiness seen in the Ecke's pot plants, until pathologists trying to rid the nursery trade of Poinsettia mosaic virus (PnMV) found that treatment also removed the branching phenotype. Ing-Ming Lee *et al.* (1997) were able to show that a phytoplasma (an unculturable bacteria) was causing this growth form and not the PnMV by linking the vasculature of infected Poinsettia to Madagascar periwinkle (a phytoplasma indicator species, not susceptible to PnMV) and subsequently linking this to an unbranched Poinsettia, thus infecting it with phytoplasma and inducing branching.

Reference:

Ing-Ming Lee *et al.* (1997) Phytoplasma induced free-branching in commercial poinsettia cultivars. *Nature Biotechnology*, 15: 178-182.

Cathy Horsey. Alien plant invasions - threats to native plant pollination?

Himalayan balsam, *Impatiens glandulifera* Walp. is an insect-pollinated alien invasive plant that is widespread across Europe. We measured its impact on the pollination of native white deadnettle *Lamium album* L. by comparing seed set and outcrossing rates (the relatedness of pollen received) in the presence of the invader with where we had removed it. In the presence of Himalayan balsam, we found a dramatic 40% reduction in the number of seeds produced and a trend showing reduced outcrossing rates. This demonstrates that bumblebee foraging patterns change as a result of competition from the invader, reducing white deadnettle's reproductive success.

THE WRIGHT SMITH LECTURE

Thursday 17th January 2013. **Dr Pete Hollingsworth**, Royal Botanic Garden, Edinburgh. ***Genetics, biodiversity, conservation***

Genetic approaches are increasingly being used to enhance our understanding of the natural world and to inform conservation management. In this talk, I focus on two main topics. Firstly - the use of genetic data to understand the diversity and evolution of *Araucaria* species on New Caledonia. This shows that the species are relatively recently evolved (not Gondwanan relicts), that there is cryptic taxonomic diversity, that they show signs of susceptibility to genetic problems from habitat fragmentation, and that some restoration programmes do not adequately capture the genetic diversity of wild populations. I secondly provide an overview of DNA barcoding. This use of DNA sequence data to tell species apart is extremely powerful in many animal groups. In plants the levels of resolution are somewhat lower, but DNA barcoding has nevertheless proved effective as a tool for species discovery and species identification, and been used for many practical applications such as assessment of the plant components of animal diet and checking the ingredients of herbal medicines. There is now a major international effort to build a DNA sequence reference library of life on earth.

BSS STUDENT DISSERTATION PRIZE 2012

The winning entry of the BSS Student Prize 2012 was judged to be Philippa (Pippa) Stone with a final year undergraduate project carried out at Edinburgh University.

Author: **Philippa Stone**

Institution: University of Edinburgh

Degree: BSc Ecological Science (Hons. Forestry)

Supervisor: Dr Caroline Nichol

Title: The effect of Sitka spruce (*Picea sitchensis*) silviculture on stand structure and epiphytic lichen abundance in Glentress Forest

Abstract: The study aimed to assess the role of Sitka spruce (*Picea sitchensis*) alternative silviculture in achieving UK biodiversity objectives, by using epiphytic lichen as an indicator of forest health and wider forest biodiversity. Stands in Glentress Forest were studied at different stages of the conversion to continuous cover forestry: plantation, thinned and converted. Lichen abundance, grouped into functional types, was recorded on twenty trees within each stand type. Stand structural differences were also quantified, using measurements such as stem density, basal area and canopy closure. Differences between stand types were tested statistically using a GLS model, which took into account the unequal variances between them.

Stand structure became significantly more open and spatially variable throughout the conversion process. Lichen abundance also increased significantly throughout the conversion process. Low lichen abundance in plantation stands was attributed to the lack of light and suitable substrate due to stem density and stand age. The intermediate lichen abundances within the thinned stands were found to increase significantly with the DBH of the host tree. The high abundance of lichen in converted stands, specifically the later successional types, suggested the beginnings of old-growth characteristics, such as increased dead-wood.

Overall *P. sitchensis* forestry was found to have the potential to contribute to UK forest biodiversity objectives, especially in the provision of dead-wood habitat, but only if managed effectively at the landscape scale.

Author: **Jemma Black**

Institution: Scottish Agricultural College

Degree: BSc Sustainable Environmental Management

Supervisor: Dr Alistair Hamilton

Title: **Modelling the reaction of Scotland's blanket peatland to climate change.**

Abstract: The aim of this study is to establish to what extent climate change will impact on the distribution and condition of blanket peatland in Scotland using climatic limits from previous research, and to establish the probability of future climates being outwith those climatic limits. The objectives are to use GIS and ArcMap to show the potential change in blanket peat distribution, use maps and graphs to show the areas of blanket peatland which may fall outwith climatic limits and use Monte Carlo modelling to calculate the probability of the future climates exceeding climatic limits.

The results showed a varied outlook between winter and summer scenarios with geographical differences across Scotland. Summer temperatures show blanket peatland to be at risk with large areas outwith limits, whereas winter temperatures show them to be largely within climatic limits. Summer precipitation shows the west having sufficient precipitation but large areas in the east being outwith limits with only small areas across Scotland outwith winter precipitation prediction. The general trend throughout all the results is for swings between large areas of peatland being outwith climatic limits and large areas of blanket peatland being within. This is due to the vast differences between summer and winter predictions for maximum day temperatures and minimum night temperatures. This points to the need for further research into how long peatlands can withstand being outwith climatic limits before they degrade past the point of repair, and how much more of an impact climate change will have on already degraded peatlands.

Author: **Helen Cunnold**

Institution: University of St Andrews and James Hutton Institute

Degree: BSc Biology

Supervisor: Prof Stephen Hubbard (U of St A) and Dr Timothy George (JHI)

Title: **Rooting for trouble? Root hair length in mutant barley: consequences of growth and nematode phytoparasitism**

Abstract: Many cereal crops are limited by the availability of soil phosphorus. In low-input systems, increasing root hair length has been identified as a trait for improving phosphorus acquisition. However, root hairs are a primary feeding target for phytoparasitic soil nematodes. Using four root hair length phenotypes of barley, this study tested whether the presence of phytoparasitic soil nematodes alters plant growth, root hair production and rooting habit in soils with different phosphorus contents. Whilst nematode abundance did not vary according to phenotype, the addition of nematodes did increase root hair length in phosphorus-deficient soils and improved plant growth slightly. However the presence of nematodes in the control soils made it difficult to determine the effect of parasitic nematodes; whilst growth varied between the phenotypes, this was most affected by the availability of soil phosphorus.

Author: **Martine Stoll**

Institution: University of Edinburgh

Degree: BSc Ecological Science (Hons. Environmental Science)

Supervisor: Dr Gail Jackson

Title: **The effect of rose-grain aphid *Metopolophium dirhodum* on barley *Hordeum vulgare* with and without stress**

Abstract: The climate is projected to become warmer and drier for most central and southern European countries. In light of this, the aim of this study was to look at the effect that rose-grain aphid (*Metopolophium dirhodum*) has on barley (*Hordeum vulgare*) and whether drought conditions amplify or reduce this effect. For this purpose, an experiment was set up with a factorial design, with the factors being water regime and aphid treatment. The control group consisted of well-watered plants without aphids. The other three treatment groups were 1) semi-droughted plants without aphids, 2) well-watered with aphids and 3) semi-droughted with aphids. The results showed that the presence of

aphids significantly decreased leaf number, chlorophyll concentration, above ground biomass and leaf water potential. Further, the plant variables stomatal conductance, plant height and, again, above ground biomass were significantly higher in well-watered plants, showing that the drought treatment was effectively reducing plant health. Nonetheless, droughted plants managed to osmoregulate and, hence, maintain a high turgor pressure in the cells. The fact that osmoregulation was not prevented by aphid presence, as was expected, was thought to be due to a Type II error. Overall, it was found that the impact of aphid infestation is similar to drought symptoms but, in general, more severe. Moreover, the general lack of interactions in this experiment indicates that aphid infestation effects on crops are unlikely to be enhanced or reduced by drought in the future. Nevertheless, predictions of higher aphid stress with climate change and prolonged drought periods still call for further research into effective pest control.

CHALLENGE 2020: THE REVIEW OF THE SCOTTISH BIODIVERSITY STRATEGY

The Scottish Biodiversity Strategy was first published in 2004 (under the title “It’s in your hands”) with the aim “*to conserve biodiversity for the health, enjoyment and wellbeing of the people of Scotland, now and in the future.*” A consultation paper in 2012 proposed additional elements of the Strategy, focused on desired outcomes for 2020. In the words of the consultation, it showed how “the Scottish Government, its public agencies, key Scottish businesses and others can contribute to the Strategy’s aim and support sustainable economic growth. The Scottish Government intends to designate the strategy paper that follows from this consultation as part of the Scottish Biodiversity Strategy, alongside the 2004 document. This would make it relevant to public bodies’ biodiversity duty under the Nature Conservation (Scotland) Act 2004.

This *2020 Challenge* is Scotland’s response to the European Union’s Biodiversity Strategy for 2020 and the ‘Aichi Targets’ set by the United Nations Convention on Biological Diversity. These call for a step change in efforts to halt the loss of biodiversity and restore the essential services that a healthy natural environment provides. Rising to this, our *2020 Challenge* aims to:

- increase the general level of biodiversity on land and in our seas, and support healthy, well-functioning ecosystems;

- engage people with the natural world, for the health and well-being benefits that this brings, and empower them to have a say in decisions about their environment;
- maximise the benefits for Scotland of a diverse natural environment and the services it provides, contributing to sustainable economic growth.”

The consultation ran from July to September last year and all responses are published on-line. You can read the BSS response at: <http://www.scotland.gov.uk/Resource/0040/00406084.pdf>. The strategy was debated in the Scottish Parliament on January 17th. It will be discussed by the Rural Affairs, Climate Change and Environment Committee and then by the Cabinet, before being signed off by all ministers - not just the Environment minister - in May.

Jane MacKintosh

CHALLENGE 2020: A PARTIAL VIEW FROM PLANTLIFE SCOTLAND

In July 2012, the Scottish government published a consultation on the draft of their review of the Scottish Biodiversity Strategy.

Scotland, along with all other countries in the world, is failing to meet its target to halt the loss of biodiversity. Biodiversity is the foundation of all life on earth and its continued loss has been called “Europe’s silent crisis”¹. It is resulting in declining well-being and is exacerbating poverty². The ongoing decline in diversity, at species, habitat and ecosystem levels and the decrease in habitat ecosystem stability are resulting in a loss of supporting, provisioning, regulating and cultural services³. While these services are increasingly recognised as having significant economic value to Scotland, over 80% of services provided by Scotland’s biodiversity are showing deterioration or equivocal changes⁴. Continuing to lose biodiversity is not an option in a sustainable Scotland.

Plantlife Scotland, along with other Environmental Non Governmental Organizations, submitted a detailed response to the review. The problem for ensuring the protection of biodiversity in Scotland, as we see it, is that biodiversity has no champions in the Scottish Government who will ensure that good policies are adopted and practises are followed. The services it provides are taken for granted. These services are not just the obvious ones like flood control, soil fertility and pollination services but also the less obvious ones, such as

resilient and robust ecosystems and a wild and beautiful landscape that draws visitors and keeps Scotland's morale high.

We believe that success now depends on all organisations and businesses delivering for biodiversity, and recognising that increasing their positive contribution to nature and landscapes can help them to better meet their own corporate priorities and performance.

Challenge 2020 needs to provide a vision, as well as guidance and leadership on what needs to be done to alter our current trajectory, to reverse rates of change and to build wider public support. Against this background and the need for urgent, coordinated and effective action, the current review of action to deliver the conservation and enhancement of biodiversity in Scotland⁵ needs to be well designed and ambitious. It needs to identify key steps required for Scotland to make progress towards our biodiversity targets. To be world leaders in this area and to match the international reputation of our wildlife and landscapes, Scotland needs to achieve much, much more.

Plantlife Scotland supports Scottish Environment Link's Wildlife Forum's (<http://www.scotlink.org/public/work/taskforce.php?id=2>) response to the consultation. The forum also wrote a briefing for the new Minister for the Environment:

<http://www.scotlink.org/public/publications/parliamentary.php>

The review is due to be presented to Cabinet for sign off in spring 2013. We hope that it will step up to The Minister for the Environment and Climate Changes' ambition to make '*a step change in what we aspire to do for biodiversity and ecosystems.*' Having the strategy signed off at cabinet level will be a great start to this new step change. Let's hope the review lives up to it.

¹ <http://www.publicserviceeurope.com/article/1425/loss-of-biodiversity-europes-silent-crisis>

² Millennium Ecosystem Assessment (2005). *Ecosystems and human well-being: Biodiversity synthesis*.

³ Cardinale et al (2011) The functional role of producer diversity in ecosystems. *American Journal of Botany* 98, 572–592.

⁴ UK National Ecosystem Assessment (2011) *The UK National Ecosystem Assessment*

⁵ Scottish Executive (2004) *Scotland's biodiversity: it's in your hands*

Dr Deborah Long
Programme Manager, Plantlife Scotland

RE-VISITING THE UNION CANAL

During the summer (so called) of 2012 I spent some time botanising along the Union Canal for the local Record Centre (and also for my own records). The area covered was just east of Linlithgow to the River Almond, the vice county boundary - a distance of about 20 km. Since I had not made such a concerted effort for over 10 years, it was a chance to note changes in the vegetation since the canal was re-opened and reconnected to the Forth-Clyde Canal.

When I first started recording in West Lothian the canal had a very small amount of traffic and was silted up in places. In effect it was a large pond. Now there is much more management – dredging and cutting back of vegetation both in and beside the water, and of course there is more traffic.

The most obvious change is a sharp decline in floating plants. Three Duckweeds were common along the canal, sometimes spreading right across it in the autumn. Common Duckweed *Lemna minor* is still to be found pretty well everywhere but in much-reduced quantity, sheltering along the edges or in an occasional quiet backwater. Ivy-leaved Duckweed *Lemna trisulca* is now very rare, while Fat Duckweed *Lemna gibba* seems to be extinct (last recorded in 2000). It was once almost as common as *Lemna minor* and generally mixed up with it, recognisable by its pinkish colour and, of course, its fatness.

Water Fern *Azolla filiculoides* was introduced in the early 1990s and reached its peak in mid-decade when it completely covered the canal at one site. It was last recorded in 1998 and does not seem to have survived the millennium. Frogbit *Hydrocharis morsus-ranae* appeared quite soon after the 2 canals were joined, presumably brought up with the boats, and it still appears occasionally, but does not seem to establish.

Of the mid-stream plants the Water Starwort *Callitriche brutia* is barely hanging on and Broad-leaved Pondweed *Potamogeton natans* is still present but in only about half the 1 km squares where it was previously recorded. Unbranched Bur-reed *Sparganium emersum* seems to be spreading westward but did not flower in 2012.

Reed Sweet Grass *Glyceria maxima* is still abundant by the water's edge but has been extensively cut beside the towpath, leaving large open stretches. Sadly a casualty of this cutting seems to be Tufted Loosestrife *Lysimachia thyrsiflora* which used to grow amongst the *Glyceria* (and is not easily distinguished from it). It was recorded from 6

1-km squares pre-2000 and was still present in at least 3 of them in 2002, but it has now disappeared from them all. However a single patch remains in the middle of Broxburn where it was not previously recorded.

Some plants however seem to have taken advantage of the open water: Water Plantain *Alisma plantago-aquatica* and Gipsywort *Lycopus europaeus* both seem to be doing well and spreading. (In fact the latter responded to last year's rainfall by growing to over 4 feet in places.) Large Bittercress *Cardamine amara* was also thriving and flowered well in 2002, while Water Forget-me-not *Myosotis scorpioides* is holding its own, and Watercress *Nasturtium mycrophyllum* is abundant in places, though some of the smaller water plants seem to be doing less well.

Most of the larger waterside plants which also grow on the towpath, Angelica *Angelica silvestris*, Great Willowherb *Epilobium hirsutum*, Meadowsweet *Filipendula ulmaria*, Marsh Woundwort *Stachys palustris* and Valerian *Valeriana officinalis* seem to be unaffected by the changes, while a newcomer to this stretch of the canal is Water Dock *Rumex hydrolapathum*. This plant has spread eastward from the Falkirk area and is now well established in places. Presumably movement along the canal has spread the seeds.

In conclusion there have been swings and roundabouts, but it's sad to see the demise of 2 of the rarest plants in the Lothians. According to the 'Flora of the Lothians' there are 3 other sites for Tufted Loosestrife (all in Mid-lothian), while Fat Lemna has only 1 other, Duddingston Loch (from which Tufted Loosestrife has already disappeared).

Jackie Muscott

GALIUM PARISIENSE RETURNS TO SCOTLAND (IF IT EVER LEFT!)

The coal bing and waste ground site at Millerhill, at the eastern edge of Midlothian, continues to throw up remarkable finds. It contains Midlothian's only ever record for *Anacamptis pyramidalis* (still extant, though looking rather weak in 2012), fine colonies of locally uncommon natives like *Gentianella amarella* and *Campanula glomerata*, and a seemingly endless list of very rare aliens, including *Clematis orientalis*, *Campanula carpathica*, *Primula denticulata*, *Verbascum speciosum*, *Sisyrinchium bermudiana*, *Lonicera tatarica*, many *Sedums*, and an expanding population of *Hypericum olympicum*.

To this can now be added the only extant Scottish population of *Galium parisiense* (unless any members know different!). This species has only two records on the BSBI map, one on the shores of the Tay between 1930 and 1969, and the other before 1930 in the Borders.

During summer 2012 my style of botanising had changed slightly, as was carrying my baby son Lawrence in a sling as I roamed around. As a result, I covered less ground and paid far more attention than usual to where I was putting my feet. It was probably because of this that I happened to notice plants of a tiny *Galium* growing on apparently bare stretches of concrete in between the islands of earth that contain most of the rare aliens. It was not yet in flower, but there was a substantial population present. I returned to the site in July and identified it as *G. parisiense*, following which plants were collected by Barbara Sumner and confirmed by Doug McKean. (See front inside cover.)

The population covers a fair few square metres within the site, but given the amount of old bare concrete available there it is still surprisingly localised. Despite this, the population could easily have existed for a long time, given that I have consistently overlooked it in six years of visiting the site. The threat of development still hangs over the site but it is to be hoped that any development could somehow preserve this welcome returner to Scotland's flora.

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A FURTHER FOLLOW UP ON *MEUM ATHAMANTICUM*

On reading Henry Noltie's excellent rendition of Wild Flowers: a sketch book by Charles and John Raven (RBGE, 2012), I came across the following note by Charles: "When we were staying on Loch Tay we got much interest out of the search for *Meum athamanticum* - largely because of its fantastic bevy of names. When the usually sedate, not to say pedantic, Bentham and Hooker so far forget its propriety as to label a plant 'Meu, Spignel, Baldmoney' the rich nonsense of those syllables introduce a new note into botanical research. We had no reason to

suppose this was more beautiful or desirable than any other unfound species but its names gave it a distinction. We resolved not to leave Scotland without it and ... at the top of Glen Lyon we found it - a fine patch looking curiously moss-like and submarine in the texture and colour and its leaves". (p. 99, accompanied by a sketch; Raven 2012).

George Ballantyne.

A HOLIDAY SUGGESTION FOR BOTANISTS

Browsing the BSS website I spotted the conjunction of a request for holiday suggestions and the notice of a lecture on the Bonnie Purple Heather.

Where I go each winter the heather is bonnie and many colours other than purple – red, orange, yellow, green, pink, white and combinations of the above. Not just bonnie but also braw – some getting to head height.

I go to Hermanus, a South African coastal town in the Cape floristic region. It has a gem of a nature reserve – Fernkloof – 1800 hectares with 1474 plant species (24 endemic to the reserve and its surrounds) growing in spectacular scenery. The active Botanical Society has a world class herbarium (HER) and has mounted one of the best websites I know (fernkloof.com). It is a pleasure to view the web-site photos even if you don't get to the reserve.

Around the town are other reserves including - Walker Bay, 1,000 hectares of coastal fynbos (say feign boss); Grootbos (grootbos.com) a private reserve with luxury accommodation; Harold Porter Botanical Gardens, 200 hectares where the red orchid (*disa uniflora*) blooms; Kogelberg Biosphere, (kogelbergbiospherereserve.co.za) 100,000 rugged hectares, Unesco recognised and boasting 1650 plant species.

There have been some major bush fires – but not the disaster you might expect. Regeneration is remarkable; fire lilies (*Cyrtanthus ventricosus*) out within a fortnight; bulbs and orchids in quick succession; within a year or so, great swathes of *Watsonia borbonica*. See the stunning photos of fire ephemerals (<http://fernkloof.com/veldfires.mv>). The herbarium volunteers are in the field recording the whole regeneration process.

Sadly, the remarkable flora of the Cape is constantly threatened by rampant aliens, agriculture and property development while the local

authorities seem unaware of the visitor attraction. Even the Fernkloof reserve is threatened by plans to build a by-pass road. So, if you go, please register your presence and your opinion.



For a change of activity, the bird watching is also excellent - colourful sunbirds, streamer-tailed sugarbirds, and this year plenty of flamingos and spoonbills on the lagoon. In season (May to November) the land-based whale watching in the marine reserve is very popular. In the aptly named Hemel en Aarde (Heaven and Earth) valley nearby, top class vineyards will offer a taste and there are lots of good value places to eat well.

Hermanus has plenty of accommodation of good standard – see the town web-site (hermanus.co.za). The direct flight (London-CapeTown) is overnight so can be largely spent asleep.

With the South African rand hovering near R14 to the £1, it's a good year to come.

Let me know if you decide to visit – and of course I'd be pleased to share anything I know about places to go, things to do etc.

See also local botanical society newsletter

<http://fernkloof.com/herbs/herbs-december-2012.pdf>

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GARDEN INTRODUCTIONS: INTENTIONAL AND ACCIDENTAL

I'm sure that all readers who have gardens are aware of the number of species that appear in them over the years that have not been deliberately introduced, whether they be from another garden, from waste ground, or wherever. Since flitting in 1980 to a house with large garden, I've been happy to accept and, indeed, encourage most of them even though a few may be classed solely as weeds, e.g. several willowherbs. I've also transplanted or sown seed of a number of plants growing in 'wild' or 'semi-wild' places, notably large estates, e.g. Leopardsbane (*Doronicum*) and broad-leaved Meadow-grass (*Poa chaixii*)

Perhaps the most curious plant falling into the category of non-intentional has been Pokeweed, a species of *Phytolacca* probably belonging to the *P. acinosa* agg., Indian or Asian Pokeweed. Clement & Foster (1994) consider it to be an "established garden escape in the south [of England]; also introduced for pheasant food" (p37); it appeared some 20 years ago and at first I was puzzled as to its vector, until recalling that a disorientated pheasant had once flown into and perched on our plum tree, under which the unknown plant then appeared. The bird had almost certainly come from a local estate less than a mile away, and left its 'calling card'. In the next summer, the plant flowered and eventually produced the distinctive spikes of red flowers followed by red berries turning jet black (see outside back cover); within 2/3 years it had spread in the immediate vicinity of the tree, only to disappear completely - but in 2011 we noticed a few tell-tale shoots and in 2012 the flowers and berries were even more prolific than first time round. There seem to be no other Scottish records, although it has been reported from St Andrews. Neither my wife nor I are particularly taken with it but are happy to let it be for its novelty value. Other species of bird, probably mostly of the thrush family, seem to have been responsible for the introduction of several bushes, notably at least four varieties of bramble, and some cotoneasters.

Bellflowers like to spread themselves around, and from having none in the garden in 1980 we now have at least three: one of the wall-adorning species, *Campanula poschkarskyana*; the tall, showy *C. persicifolia*; and, more recently, Creeping Bellflower, *C. rapunculoides*, which is now established in several spots including a white variety. Geraniums do not seem to be quite so prone to moving around but

Shining Cranesbill, *G. lucidum* arrived some time ago and is now almost all over; “in the wild” I’ve seen it carpeting the concreted/ hard standing bases of old out-buildings so I wasn’t surprised to find it occupying the corrugated roof of a neighbouring lock-up, accompanied by two *Sedums*, *S. album* and *S. acre*.

The attractive daisy-like *Erigeron karvinskianus* (Mexican Fleabane) turned up on the top of a low wall outside our porch, doubtless brought in with container plants from a garden centre. It is almost literally a “cracker” of a plant (see outside back cover) spilling as it does into any crack or cranny of a wall or paved area. It is often featured in gardening programmes or articles and is welcome not least for its lengthy free-flowering time span.

An example of a ‘wild’ plant intentionally brought into my garden is Oxford Ragwort (*Senecio squalidus*) shown below. Most readers will be



familiar with it, and know that in fact it originated from Sicily, not Oxford, being dubbed with that name after it was found to be naturalised on the walls of the local botanic garden. It is now quite widespread, having hitched lifts by rail to many corners of the country although in Fife it may have come in by sea for it is common near harbours, including Kirkcaldy, where my plant was procured. I’ve always thought it does not deserve the epithet of ‘squalid’ because it can be not unhandsome when gracing wall tops or decorating waste spaces and industrial sites such as railway yards and pit bings.

In conclusion, when mention is made of accidental introductions, most people think of “bird-seed aliens”, i.e. plants sprouting from spilt food put out for birds, and, originally, probably also for cage birds and perhaps even poultry. Although as a family we list bird-watching (not ‘birding’) among our pleasures, this has never extended to putting out other than scraps and bits of bread, certainly not buying specially bagged amounts of stuff from exotic sources, so that the ‘bird-seed phenomenon’ has not been a feature of my garden. However, I recall my first experience of coming across a patch of

strange flowers in my early botanising days in the 1960s, by a path near the shore at Dysart, that contained Opium Poppy and Cannabis - in those relatively innocent days, I thought nothing of their provenance, other than that someone had probably emptied their bird cage droppings out of doors. Friends and acquaintances from time to time bring me, or summon me to look at, odd plants they've found in their garden: the most frequent is Niger (*Guizotia abyssinica*), a pretty species mimicking Corn Marigold, but I have encountered less welcome strangers such as poisonous Thornapple (*Datura* spp.) and Apple of Peru (*Nicandra physalodes*).

Reference

Clement, E.J. & Foster, M.C. (1994). Alien plants of the British Isles. BSBI, London

G.H.Ballantyne, Recorder (joint), VC85.
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ALIEN PLANT INVADERS – FRIEND OR FOE?

Alien plant invaders, that is, non-native plant species that have successfully spread outside their native range, have received much attention in recent years as being a threat to biodiversity. For example, Japanese knotweed, *Fallopia japonica* is an aggressive alien invader that competes vegetatively with native plants and can quickly form a dense monoculture. However, for some alien invaders, the impact is not so clear to determine. Many alien plants flower profusely, having been introduced originally as ornamental species, and offer abundant food to pollinating insects. This could benefit native plant pollination by bolstering pollinator populations and facilitating pollinator visitation to native plants; or could be detrimental to their pollination by successfully competing for pollinators due to the superior rewards on offer. (The review by Bjerknes et al 2007, describes the contrasting effects of alien invaders). The impact of the alien invader Himalayan balsam, *Impatiens glandulifera* Walp., is not clear. Introduced from Asia, Himalayan balsam is now widespread across Europe. It is found primarily in riparian habitats, can grow up to 4 metres tall, and often forms dense stands. It is characterised by large numbers of purple or pink flowers that produce copious amounts of nectar, and reproduces via large

numbers of seeds, which spread, in part, by explosive dehiscence of the seed pod.

My PhD research has examined the impact of Himalayan balsam on the native plant community under different levels of invasion, in an attempt to reconcile differences between studies that found a negative effect (Chittka & Schurkens 2001), a facilitative effect (Lopezaraiza-Mikel et al 2007), or no effect at all (Bartomeus et al 2010). Using 16 field plots demonstrating a range in amount of Himalayan balsam invasion, we monitored the foraging patterns of bumblebees on all flowering species along a 20 metre transect, in June, July and August 2010. We used our data to create a simple model of plant “attractiveness” for each bumblebee-pollinated plant species recorded. This was based on the number of visits received relative to the proportion of flowers that the plant species represented in the community as a whole. The next step in model development was to add the effect of the Himalayan balsam into the model to examine how plant attractiveness to pollinators changed in the presence of the alien invader. In reality, plant attractiveness is the result of a series of complex interactions, including decisions made by individual bumblebees based on the net gain of reward. For our research, the important point was to find out how this attractiveness *changes* with abundance of the invader.

We found Himalayan balsam to be consistently highly attractive to bumblebees, regardless of the number of flowers available. This is perhaps unsurprising given that the rate of nectar production is 11312 µg per 24 hours, which is an order of magnitude higher than that recorded for any native plant (Raine & Chittka 2007). If most bumblebees are foraging on Himalayan balsam, it may be more rewarding for some individuals to forage on native species that are now largely unvisited. However, we found that plants in the Lamiaceae family and purple-flowered plants received significantly fewer visits with higher levels of balsam invasion. This suggests that Himalayan balsam successfully outcompetes these native plants that are close by, for bumblebee visits. An exception was found for one species, great willowherb, *Epilobium hirsutum* L., which benefited from significantly more bumblebee visits in the presence of the invader, compared to when the balsam was absent. This suggests that Himalayan balsam facilitates bumblebee visits to great willowherb. Therefore, it appears that some plant species could benefit from invasion, although many stand to lose out to a superior competitor.

An important point to recognise, however, is that native plants that share pollinators with alien plants may receive alien pollen onto their stigma. This can interfere with their pollination and reduce seed set (Brown & Mitchell 2001). We found that Himalayan balsam pollen dominated pollen samples taken from foraging bumblebees, which could mean that even if it facilitates visitation to some native plants, this may not increase seed set in native species.

What can we conclude about the impact of Himalayan balsam? There are certainly costs as well as benefits. It provides pollinating insects such as bumblebees and honeybees with a valuable food resource, and as such is very popular with honeybee keepers. However, this is likely to be to the detriment of many native plants that experience a reduced number of visits from pollinators. If fewer visits reduce seed set, in the long-term we could see changes in the composition of the local plant community. Our results indicate that the presence, and indeed the amount, of Himalayan balsam in the plant community can have important consequences for plant-pollinator interactions.

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THE CODE OF PRACTICE ON NON-NATIVE SPECIES

BSS News 98 included an article on changes to the law on non-native species, following the passing of the Wildlife and Natural Environment Act (Scotland) 2011. A Code of Practice on Non-Native Species then came into effect on 2 July 2012, setting out guidance on how you should act responsibly within the law to ensure that non-native species under your ownership, care and management do not cause harm to our environment.

Non-native species in the wild can damage or displace native species; disrupt ecosystems; spread diseases affecting native species; interfere with rivers, leading to increased flooding; cause damage to buildings and infrastructure; and pose risks to human health.

The Code explains that it is an offence to **plant** in the wild, or to **cause to grow** in the wild, any plant outwith its native range. Non-wild areas (called exempted areas) include gardens, of course, as well as agricultural, horticultural and forestry land, parks, sports grounds, allotments, burial grounds (provided they are regularly maintained) and urban road and railway embankments.

Examples of actions that may cause a non-native plant to grow in the wild are:

- management, such as strimming Japanese knotweed, that results in the spread of the plant;
- planting a non-native plant in a garden with the result that the plant spreads into an adjacent wild area;
- failing to take proper steps to prevent a non-native plant growing in a garden from spreading into the wild;
- inappropriate disposal of plant material (fly-tipping), leading to plant growth.

As the code says: “Put simply, it is necessary to responsibly manage an exempted (non-wild) area to prevent the spread of non-native plants into the wild. In this way, you should be able to demonstrate that you have taken all reasonable steps and exercised all due diligence to avoid committing an offence in the event that a non-native plant spreads to the wild.” Failure to comply with the Code is not itself an offence but might be used in court as evidence in the event of criminal proceedings.

Note that the code applies only to Scotland. It is published on-line at: <http://www.scotland.gov.uk/Resource/0039/00396355.pdf>

Jane MacKintosh

PHYTOLEXICON CRUCIFORMIS B.S.SCOT EX WORD

Xword 6. In this crossword there are ten botanical names, mostly angiosperms but including two fungi, three gymnosperms and two vernacular names; seven words of botanical or biochemical terminology; and some 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. But I am getting a bit worried about finding fertile seed of any of my cryptogrammic plants. Oh dear! Watch this space.

Crucifer

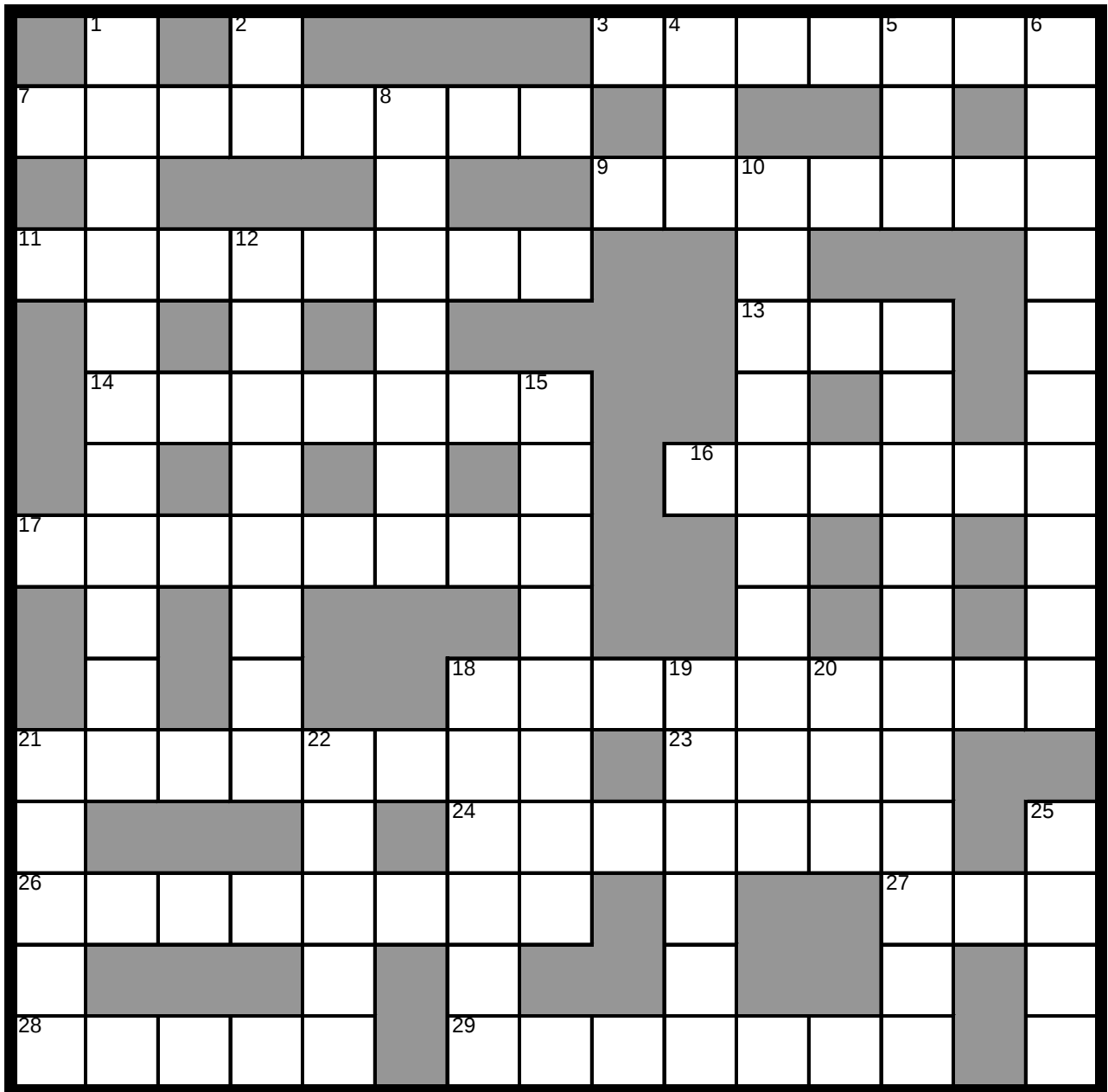
ACROSS

- 3 Sounds like access to ovaries is protected by small arms. (7)
- 7 Occurring in summer is temporarily growing tissue. (8)
- 9 Drier, indehiscent and with a woodier pericarp? That's even more eccentric. (7)
- 11 and 18a. I tax Dutch sodium; I'm concealing a conifer. (8, 9)
- 13 It sounds like you bend this in archery. (3)
- 14 *Oenothera biennis* could be *O. crepuscularis*. (7)
- 15 Runner sounds as if he crept along quietly. (6)
- 17 and 15d. Italian composer with a small mass in is combined to infest cereal crops. (Uredinales) (8, 8)
- 18 See 10a.
- 21 Immigrant pondweed in Britain. (8)
- 23 Irradiation from nuclear ad? Something in that! (4)
- 24 Vessel from giant arum? (7)
- 26 Pea lay thus, right? (8)
- 27 Means of advancement causes bitterness in brewery. (3)
- 28 A *Xylocarpus*, deprived of cupola, is useful in diagnosis. (5)
- 29 Sounds like a devourer of male persons, but only poisons them (Agaricales). (7)

DOWN

- 1 Tell AA some quiet dawn redwood grows (11)
- 2 Sir, I bear a rhyme excelling/In mystic power and magic spelling ... (2)
- 4 Promissory note extracted from English *Knautia arvensis* or *Succisa pratensis*. (3)
- 5 Chemical group found in xerophytic Iridaceae. (3)
- 6 See 18d
- 8 Teaching that is instinctive if within! (7)
- 10 Adjustment to pH in cytologist's stain yields essential amino acid. (10)

- 12 Openings for spores; otherwise in spores (8).
 15 See 17a.
 18 and 6d. Mounts raid: trauma arising from spiny fruit (Solanaceae) (6, 10)
 19 Radon in cave makes us cowardly. (6)
 20 Stupid person lost Old Testament, but became Ugandan dictator (3).
 21 Sepals found on scaly xerophytic plant...(5)
 22 ... without water and as eight petalled species perhaps. (Rosaceae)(5)
 25 Likely receptacle for nectar is an incentive. (4)



EPIPHYTIC MACRO-LICHENS IN THE HEHUAN MOUNTAINS

Community Impacts of Treeline Expansion

The Hehuan Mountains are located within the Central Mountain Range of Taiwan and reach elevations of almost 3500 m above sea level. Although much of the island experiences a subtropical climate, temperate and alpine conditions prevail at these high altitudes. Significant warming has occurred in this area in recent years, with a study by Jump et al. (2012) reporting a warming of 1.05°C compared with 1940-1970 mean values. When temperatures rise in mountainous areas it often results in an upward shift of plant species (Walther, 2003), which can have implications for species survival and coexistence.

Altitudinal Treeline (the upper altitudinal limit of tree occurrence) is widely accepted to be determined mainly by temperature (Körner, 1998) and can be a useful early indicator of responses to warming; many treelines worldwide have been found to be expanding in recent years (Harsch, 2009) and this is generally attributed to the temperature increases associated with climate change (Peñuelas and Boada, 2003; Kharuk et al. 2009). Comparisons of aerial photographs from Taiwan's Central Mountain Range, both modern and dating back to the 1940s, indicate that the position of the treeline has expanded upslope, probably in response to the increased temperatures, although spatial variation in this expansion indicates that topography plays a mediating role in treeline position.

My PhD project is to investigate the climate response of high altitude forests in the Central mountain region of Taiwan using a variety of methods such as dendroecology (the study of tree rings), forest inventory and aerial photograph analysis. The treeline forests of the Hehuan mountain region consist of almost monospecific stands of an endemic species of fir, *Abies kawakamii*, although *Tsuga chinensis* and several species of *Pinus* are present as minor components of the forest tree community. Above the treeline the vegetation is dominated by a dwarf bamboo species *Yushania niitakayamensis*, which, in defiance of its name, often reaches heights of several metres especially in the lower portions of its range, near the treeline.

A major part of my project aims to understand the community impacts of treeline expansion through the study of epiphytic macro lichen communities. The theory of community disassembly predicts that

individualistic species responses will lead to a break up of communities when a significant change, such as a change in climatic conditions occurs, and that this may be followed with a formation of new communities with no modern equivalent. Given the rate of current climatic change it is important that we can understand how species responses through range shifts will affect community dynamics and diversity.

Epiphytic macro lichens are ideal group with which to study the community impacts of treeline expansion; they have very different growth rates, colonisation ability, and reproductive rates from trees and are thus likely to exhibit different rates of response. They are also extremely sensitive to microclimate conditions, on which their metabolism is dependent (Nash, 2008). This means that they will be particularly affected by the changes in microclimate that accompany treeline shifts. A number of studies have found that changes in forest conditions, due to management (Kuusinen and Siitonen, 1998), or at forest edges (Eseen and Renhorn, 1998) can have impacts on lichen biomass, growth and diversity. Alpine lichen species are thought to be especially vulnerable to climate change (Ellis et al. 2007), and habitat structure is an important modifier of climate response (Ellis and Coppins, 2007). The importance of historic woodland structure for epiphyte diversity (Ellis and Coppins, 2007) shows the need to consider lags in lichen responses to changes in both climate and habitat.

The main aims of this work are to explore the change in species composition of macro lichens including species such as *Parmelia aduagescens*, *Lobaria isidiosa* and *Hypogymnia flavida* from forest interior to treeline, to find out whether this change is more pronounced in expanding treelines and whether species richness varies at treeline depending on the degree of expansion. I hypothesise that community composition will vary naturally with distance from interior forest towards the edge, but that expanding treelines will show the greatest change and will have lower species numbers at the forest edge/tree limit.

Over two field seasons I surveyed the epiphytic lichen communities occurring on the trunks of *Abies* tree individuals on transects running from interior forest to tree limit on both non-expanding treelines and a variety of expanding ones (the expanding treelines varied in distance and density of expansion). I also recorded a number of habitat variables such as canopy openness (using fish-eye lens photography), bark roughness, tree size and density.

Initial results of statistical analysis (using a general linear mixed effects model) suggest that species numbers are significantly lower at expanding treelines, and that distance from the interior forest is the main factor that explains species richness; treelines where the expansion is occurring over long distances have lower species richness values. These are, however, only preliminary results based on field identifications of species, I am currently working on accurate species delimitations using specimens collected from the field and will then DNA barcode several examples of each species in order to check the identifications. When I am sure of all the identifications I will then be able to examine changes in community structure using ordination techniques.

These initial results do however support my hypothesis that species numbers will be lower at expanding edges. This result shows the importance of understanding the wider community impacts of treeline shifts, an element often ignored in treeline studies. It will be interesting to see the results of analyses on community composition changes, and to further explore the traits of species that are missing from expanding edges. Hopefully this work will be more widely applicable, and will shed some light on the consequences of climate change for species co-occurrence at high altitude sites. Further work of this type could allow for the groups of organisms most at risk in these ecosystems to be better identified and the full consequences of climate change on high altitude ecosystems to be better understood.

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THE ECTOMYCORRHIZAL SYMBIOSIS IN SCOTLAND

The great majority of Scotland's land plants form beneficial associations with soil fungi, termed mycorrhizas (literally fungus-root). These are usually obligate associations with neither partner being able to complete its life cycle in the absence of the other. The ectomycorrhizal (ECM) symbiosis is one form of mycorrhiza typically formed between long lived woody perennials, most notably trees, and many of our characteristic woodland fungi (e.g. the Fly Agaric, Figure 1). The ECM symbiosis is usually considered to be mutualistic with the fungi exchanging soil-derived nutrients for carbohydrates from the host plant. Nutrient uptake into the host is enhanced both as a consequence of the physical expansion of the fungal mycelium into the soil and by the ability of the fungi to mobilise nitrogen and phosphorus from organic substrates through the action of extracellular enzymes. The symbiosis therefore carries out an essential role in nutrient cycling in ecosystems. It is also a significant factor in carbon sequestration in soil as 10-30% of photosynthate is allocated to the fungal partner by the plant host. The

fungus colonises the terminal feeder roots of the plants, forming a sheath or a mantle around about the root which effectively isolates the root from the soil (Figure 2). Internally the fungus ramifies between the outer cells of the roots forming a large interface through which transfer of nutrients and carbon can take place. The hyphae of the fungi proliferate out into the soil thereby acquiring nutrients (Figure 2).

The most common native ECM hosts in Scotland are trees within the Betulaceae, Pinaceae and the Salicaceae (Table 1). However, there are also a number of shrubs or herbs that support the ECM symbiosis (Table 1). The two *Arctostaphylos* species and members of the Pyrolaceae form associations with the same fungi that form ECMs on other host plants, but because the fungus penetrates into the root cells in these taxa, they are distinguished from typical ECM associations and called arbutoid mycorrhizas after *Arbutus unedo*. A few taxa can form both ECM and arbuscular mycorrhizal associations. This latter association is by far the most common mycorrhizal association formed by plants and it is the most ancient, dating from at least 450 million years ago. Indeed it is this association which enabled plants to first colonise land. In contrast the ECM association is much younger dating from around 100 million years ago.

Of the native plants in Scotland, around 40 spp. form ECM (Table 1). This rather small number contrasts markedly with the number of ECM fungi thought to occur in Scotland. Current estimates place this at ca. 900 species. Even allowing for fungi associated with introduced ECM host plants, it is clear that our native ECM plants support a very rich diversity of fungi. Some hosts support diverse communities of ECM fungi e.g. Scots pine with ca. 460 species recorded from pine woods, while others such as Alder only support a handful of species. A recent global survey of Alder found only ca. 200 species of ECM. However, it is important to appreciate that the species associated with Alder are largely specific to that genus. This means that should Alder be lost from an ecosystem then the fungi will also be lost – or indeed vice versa. Most of the ECM hosts listed in Table 1 have ECM fungi that are only found in association with that particular host. Interestingly, the exceptions to this general rule are the shrubby species. *Arctostaphylos uva-ursi* is remarkable in this respect because there are no fungi that are specific to this host and it forms ECM associations with a very wide range of fungi including species that are considered to be strict specialists associated with Scots pine or birch. This ability and the propensity for it grow at higher elevation than pine, means that *A. uva-*

ursi can act as a nurse species for pine seedlings during expansion of native Scots pine woodland.

Much of the commercial forestry in Scotland comprises introduced trees, particularly spruce species, which form ECM associations. However, it is a general pattern that there are very few spruce-specific ECM fungi in the UK. This is, I think, a consequence of Norway spruce never having made it back to the UK after the last glaciation and the fact that spruce has been introduced into the UK primarily as seed. Both these issues mean that it was not accompanied by the ECM partners from its natural range. There is another very interesting aspect to spruce forests in relation to ECM fungi. Very few people who collect fungi for eating or indeed who lead fungal forays would ever consider going to a spruce plantation to collect fungi in the autumn. Apart from often being uncomfortable places to walk through, they are not renowned for the richness of their fungi. One possible reason for this is that one of our native fungi, *Tylospora fibrillosa*, appears to form a remarkably efficient association with spruce, particularly Sitka spruce. It is very common to find that this single fungus has colonised 70-80% of all the root tips. At one site I studied in N. Wales, 95% of all the mycorrhizal tips were formed by this fungus! Ordinarily ectomycorrhizal communities are species rich with 4-5 species colonising 50-60% of the root tips and then the other species colonising the remainder. Even within small areas you can often record 30-40 species of ECM fungi. The extreme dominance exhibited by *T. fibrillosa* must leave few resources for other ECM fungi and I think this contributes to the lack of diversity of ECM fungi associated with spruce plantations. In addition, *T. fibrillosa* does not form fruiting bodies which are visible above ground, furthering the apparent paucity of fruit body production in plantations.

In addition to research on the potential impacts of climate change on the ECM symbiosis, we are carrying out large scale analyses of fungal diversity in Scotland. Part of these analyses focus on providing baseline data for establishing what taxa we have and where they are. Without these data we cannot develop monitoring strategies to safeguard the future of both the species rich fungal communities and the essential ecosystem services they provide.

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Table 1. Native plants of Scotland forming ECM associations. (AM – Arbuscular mycorrhizas)

Latin name	Common name	Mycorrhizal status
<i>Alnus glutinosa</i>	Alder	ECM
<i>Arctostaphylos alpinus</i>	Alpine Bearberry	Arbutoid
<i>Arctostaphylos uva-ursi</i>	Bearberry	Arbutoid
<i>Betula nana</i>	Dwarf birch	ECM
<i>Betula pendula</i>	Silver birch	ECM
<i>Betula pubescens</i>	Downy birch	ECM
<i>Corylus avellana</i>	Hazel	ECM
<i>Dryas octopetala</i>	Mountain avens	ECM
<i>Helianthemum nummularium</i>	Rockrose	ECM
<i>Pinus sylvestris</i>	Scots pine	ECM
<i>Polygonum viviparum</i>	Alpine bistort	ECM + AM
<i>Populus tremula</i>	Poplar	ECM + AM
Pyrolaceae	Wintergreens and allies	Arbutoid
<i>Quercus petraea</i>	Sessile Oak	ECM
<i>Quercus robur</i>	Pedunculate Oak	ECM
<i>Salix</i> spp (19)	Willows	ECM + AM
<i>Tilia cordata</i>	Small-leaved Lime	ECM

Some introduced ECM hosts - *Abies* spp., *Carpinus* sp., *Castanea sativa*, *Fagus sylvatica*, *Larix* spp., *Nothofagus* spp, *Picea* spp., *Pseudotsuga* sp., *Tsuga heterophylla*.

FUNGAL FORAY AT VOGRIE 2012



Artist's Bracket
Ganoderma applanatum



Mycena pura



A wet sulphur tuft



Stereum species growing on
Vogrie Park signpost

Photos by Chris Jeffree

REPORT OF THE BSBI / BSS ANNUAL WINTER MEETING, 5th NOVEMBER 2012

This year's meeting was held in the Scottish Natural Heritage conference centre at Battleby, near Perth. Martin Robinson, Chair of the Scottish Committee of the BSBI, introduced the meeting and thanked SNH for the invitation to use Battleby and for help with funding the catering. Summerfield Books set up shop in a side room and Jim Carruthers, head gardener at Battleby, led a tour round the grounds at lunchtime.

Ian Bainbridge, Head of Science at SNH, spoke about the need for environmental information to help government decision making. 90% of the biodiversity data that SNH uses comes from the voluntary sector. Ian thanked everyone for their participation and spoke about recording in the future: how there will be an increasing need to record population trends and monitor changing habitats.

Ian Bonner, BSBI President, described recent structural changes in the organisation and management of the BSBI to cope with its expanding staff complement. Membership has been growing too and is now approaching 3000. Scottish officer Jim McIntosh is back in post after a year on Tristan da Cunha and will be responsible for all the country officers in future.

Barbra Harvie, BSS Secretary, talked about the Scottish Geodiversity Charter. Geodiversity links biodiversity, landscape, people and their culture. It underpins ecosystems, influences landscapes and determines plant distributions while, at the same time, plants affect geodiversity through the effect of the roots on the soil.

Iain MacDonald, vascular plant specialist at SNH, introduced the review of the Scottish Biodiversity Strategy, published for consultation under the name 2020 Challenge for Scotland's Biodiversity. This is Scotland's response to the European Union's Biodiversity Strategy for 2020 and the Aichi Targets set by the United Nations Convention on Biological Diversity. See the articles on pages 24 and 25 for more information about the Strategy.

Tom Humphrey, from the BSBI Plant Unit, demonstrated the new BSBI Distribution Database, a central store for all the BSBI's records of plants and charophytes. It currently contains 33 million records of plants and charophytes and will be frequently updated with new records.

Angus Hannah, BSBI Scottish officer for the year of Jim McIntosh's absence, gave an account of his year, illustrated with images of the many places he visited and the species he recorded.

Eric Meek talked about aspects of Orcadian botany, and compared the plant specialities of Orkney and Shetland., concluding that Orkney is superior to Shetland!

Sandy Coppins described the Atlantic Hazel Woods in the west of Scotland and challenged the view that multi-stemmed hazel must be old coppice, and ex-woodland understory. Hazel is a light-demanding, naturally multi-stemmed shrub, which supports a diverse epiphytic flora of lichens, bryophytes and fungi.

Margaret Bradshaw argued that *Alchemilla* species are neglected in Scotland (and she runs *Alchemilla* ID weekends). Margaret illustrated the differences between the three main groups of British *Alchemillas*.

Jim McIntosh, BSBI Scottish officer, gave an account of his adventures while surveying the plants on Tristan da Cunha, the world's remotest inhabited island. This was a baseline systematic survey to allow an assessment of the impacts of climate change and the spread of non-native species on the island.

BSBI / BSS SCOTTISH ANNUAL MEETING 2012 ABSTRACTS

Two new Cumbrian aliens (v.c. 69) Geoffrey Halliday

Two aliens are exhibited, both new to Westmorland and Cumbria. *Hottonia palustris* (Water Violet), found earlier this year flourishing in a field pond near Arnside. This represents a modest extension of its range in northwest England from the Lancashire Fylde coast. A single plant of *Sorbus vilmorinii* appeared in a field hedge by my garden in south Westmorland a few years ago. As with the *Hottonia* its origin is obscure. Presumably bird-sown but I know of no other tree in the vicinity. It is a handsome small tree with many leaflets and berries which start deep red but become pale pink with age. According to the *Sorbus* Handbook there are only three other British records of plants escaped from cultivation.

Some Salix hybrids found recently in Dumfriesshire (v.c.72) Chris Miles

Over the past few years I have been collecting hybrid willow taxa across the Vice County. In the past relatively few have been recorded. At least one appears to be recorded in the vc for the first time. It appears that hybridization is common. As expected common species involved in the hybridization found so far are *S. caprea*, *S. cinerea*, *S. phylicifolia* and *S. myrsinifolia*. *S. myrsinifolia* and *S. phylicifolia*, in particular appear commonly involved in hybridisation in the upper and middle sections of burns and rivers. Specimens exhibited:

Salix x laurina (*S. cinerea* x *S. phylicifolia*), *Salix x multinervis* (*S. cinerea* x *aurita*), *Salix x tetrapla* (*S. myrsinifolia* x *S. phylicifolia*), *Salix x latifolia* (*S. caprea* x *S. myrsinifolia*), *Salix x strepida* (*S. cinerea* x *S. myrsinifolia*), *Salix x rubra* (*S. purpurea* x *S. viminalis*).

Urban botany – a new approach to recording (v.c.75) Alison Rutherford and Dave Lang

There is a feeling in some vice-counties that relatively little of the botanical recording to date, including that represented by the most recent Atlas date class, has been focused on those counties' more urban areas. It may be that many believe that urban recording might only involve aliens and garden escapes. However the 2012 urban field meeting in v.c.75 Ayrshire showed that this is not in fact the case, and that there are many fascinating native wild plants to be found, often very close to our doorsteps. We hope that we can begin to foster an appreciation of the value of urban botanical recording, as well as hopefully to inspire more of it to be done. There is much of interest to be found in such places if people can be encouraged to look for it and furthermore, for those of us with less free time or perhaps less capacity than we may once have had for romping off into the wild, recording plants in and around the places where they live can be a rewarding experience, as well as a valuable one in the wider terms of comprehensively mapping the distribution of our flora.

The Plantain Family: A dull plant group? (v.c. 77) Peter Macpherson
Examples from Lanarkshire show the very wide range of size of the more common species. Abnormalities seen included the "Carmen Miranda" form (Cragg-Barber 2005) and Rose Plantain (*Plantago major rosularis*) (Gerald's Herbal 1633). Two are coastal plants which have now been found either on roadsides or in an area frequented by lorries.

Selkirkshire (v.c. 79) Rod Corner

Another colony of the rare putative hybrid grass *Calamagrostis* x *gracilescens* (*C. stricta* x *canescens*) was found near Shaws Under Loch during an excursion by The Wildlife Information Centre of the Lothians and Borders. This grass is now known from 5 monads in the vice-county which must hold the largest population in the British Isles. *Betula pubescens* ssp. *tortuosa* is a new county record. This small leaved shrub with resin glands on the young stems amongst the abundant ssp. *pubescens* caught the eye. Is it being over-looked?

Roxburghs (v.c. 80) Rod Corner

Acaena ovalifolia is a new county record and locally abundant at one site, *Silene uniflora* (*S. maritima*) is a surprising introduction, presumably from a wildflower mix from waste ground at Town Yetholm by Roger Manning, and *Galium mollugo* subsp *erectum* (now *Galium album* in Stace 3) from a probable continental wildflower mix meadow is also new and the distinguishing features between it and ssp. *mollugo* are presented.

Berwickshire BSBI Site Register update 2012 (v.c.81) Michael Braithwaite

As part of the ongoing Berwickshire resurvey 2007-2013, the 2011 fieldwork has been used to update the relevant hectads in the Berwickshire BSBI Site Register. A further update is planned using the 2012 fieldwork with a fully revised edition of the Site Register when the resurvey is complete. It is suggested that such annual updates are a useful and achievable way to share the results of ongoing county surveys.

The Wildflowers of a Berwickshire Bard (George Henderson of Chirnside, 1800-1864). Michael Braithwaite

This is a full-colour 80 page book by Michael Braithwaite that has been published by the Berwickshire Naturalists' Club. It has poetry and prose by doctor/poet/botanist George Henderson with illustrations and comment. It gives a graphic personal account of the 'Lowland Clearances' of the Agricultural Revolution and their effect on the wildflowers of Berwickshire. A few copies will be available for £6; orders for delivery by post £7.

Some finds and re-finds in Midlothian (v.c.83) Barbara E.H. Sumner

This display of photographs and pressed plant specimens includes native and introduced taxa. Some are new, possibly new or almost new to v.c.83, and others are scarce or rare plants re-found. The newcomers are *Conyza sumatrensis* and *Verbascum speciosum*, and possibly also

Juncus ranarius. Almost new are *Anacamptis pyramidalis*, *Cynoglottis barrellieri* and *Senecio inaequidens*. Scarce or rare plants re-found are *Arenaria balearica*, *Catapodium rigidum*, *Circaea x intermedia*, *Galium parisiense*, *Gymnadenia densiflora*, *Lathraea clandestina*, *Platanthera chlorantha*, *Potentilla tabernaemontani*, *Pyrola minor* and *Trachystemon orientalis*. Also shown is a Jubilee Surprise!

Rare Midlothian Plants (v.c.83) Douglas McKean

Two second records for Scotland are shown, the False Alkanet *Cynoglottis barrellieri* (3rd) and *Symphytum* 'Hidcotense' (2nd?), the latter with white flowers and reddish buds. Some *Cotoneaster* species are also shown, *C. conspicuus* (2nd), *C. sternianus*, *C. franchetii*, *C. juranus*, the latter originally mistaken for *cambricus*! but corrected by Hugh McAllister.

Figworts in Fife (v.c.85) Sandy Edwards

Scrophularia auriculata (Water Figwort) is a new record for v.c.85, found at West Wemyss by the coastal path. This prompted a look at the occurrence of other Figworts in Fife. *S. nodosa* is very common, *S. umbrosa* (Green Figwort) is found by some burns in NE Fife but is rare elsewhere and *S. vernalis* (Yellow Figwort) is local, found in just a few woods. There have been name changes and a bit of confusion historically, probably because *S. umbrosa* grows by water and *S. auriculata* does not! George Ballantyne has researched this and written an historical account of these Figworts.

Some finds in v.c.87 West Perth in 2012 Liz Lavery, Jane Jones and Paul Stanley

Alpine Foxtail, *Alopecurus ovatus* (*borealis/magellanicus*), was re-found in two beautiful montane flushes on the northwest slope of Ben Buck by a BSBI Field Meeting on 11 August 2012. This rare alpine grass had originally been discovered by Rod Corner in 1992, although there is one anonymous record from 1970. Roy Sexton took us straight to the flushes from a map he had constructed from a description of the location by John Mitchell, who visited the site in 1998. We counted 110 flowering heads in the lower flush at 608m in short vegetation dominated by mosses, *Caltha palustris* (Marsh-marigold) and *Ranunculus hederaceus* (Ivy-leaved Crowfoot) and tall *Juncus effusus* (Soft Rush), and there were 21 flowers in the upper flush at 635m with *Sedum villosum* (Hairy Stonecrop) nearby. Maps and photographs showing the location of *Alchemilla wichurae* at 750m on Ben Ledi monitored by Jane and Arthur Jones on 11 August 2012, NVC U15. Other species on cliffs were *Polystichum lonchitis* (Holly-fern), *Oxyria digyna* (Mountain Sorrel),

Sedum rosea (Roseroot), *Cystopteris fragilis* (Brittle Bladder-fern), *Draba incana* (Hoary Whitlowgrass), *Epilobium anagallidifolium* (Alpine Willowherb) and *Saxifraga aizoides* (Yellow Saxifrage). A mystery sedge found growing precariously in the road gutter of a bridge on the Langside Moor road to Comrie was identified by Mike Porter after collection of mature fruit as *Carex muricata* subsp. *pairae*.

Hybrid Lupins in Mid-Perthshire (v.c. 88) Alistair Godfrey

The triple hybrid *Lupinus x regalis* (*L. arboreus* x *L. polyphyllus*) x *L. nootkatensis* is listed in the BSBI Vice-County Census Catalogue for v.c. 88 Mid-Perthshire and v.c. 95 Moray and the hybrid *L. x pseudopolyphyllus* (*L. polyphyllus* x *L. nootkatensis*) is also listed for these two vice-counties. The New Flora of the British Isles (Stace, 2010) relates that the triple hybrid “probably occurs on river-shingle with the parents in Moray and M Perth, but it is difficult to identify; it is intermediate and fertile.” There is a similar entry for the other hybrid. I was asked by Clive Stace what I knew about the triple hybrid, and had to report that I did not hold the record and that neither did the BSBI database. Suspecting where the triple hybrid might grow, I found lupins on a shingle island of the River Tay at Murthly, and compared this to a population by the River Tay on the Thistle Brig SSSI at Stanley. Both populations measured about 90m x 10m; and in mid-June 2012 plants with different morphological features were noted, collected, photographed and compared. Examining the results verified the presence of the triple hybrid at Murthly.

Botanical highlights of West Ross (v.c. 105) in 2012 Duncan Donald

Carex maritima and *Ophioglossum azoricum* have been recorded for the first time; nearly 1400 plants of *Alchemilla glaucescens* – thought recently to have been on the verge of extinction near Ullapool – were counted during the BSBI workshop there; *Catabrosa aquatica* was refound at one of its 3 sites, where not seen since 1973. On the down-side, doubt was cast on the 1969 record of *Melampyrum sylvaticum* near Loch Broom; and *Cotula alpina* is beginning to spread from its epicentre at Polbain.

Off the ground in Easter Ross (v.c.106): Vascular epiphytes Brian Ballinger

Vascular epiphytes growing on trees more than 1 m above the ground were noted in the course of routine recording visits. 60 examples were found involving 13 epiphytic species on 13 tree species. Nearly half of the epiphytic specimens were *Polypodium vulgare* (29) which could be regarded as an obligate epiphyte in these woodland habitats. The other

species are better classed as accidental epiphytes and the commonest were *Oxalis acetosella* and *Luzula sylvatica*. The trees most frequently involved were *Alnus glutinosa*, *Betula pubescens* and *Quercus* sp. Frosts may be a factor accounting for the relatively low prevalence of the phenomenon here.

Plants on walls in Easter Ross towns and villages

12 small towns and villages were visited on 3 occasions in 2011 and vascular plants on walls noted. 65 species were identified. The most frequently found were: *Taraxacum* spp., *Festuca rubra*, *Chamerion angustifolium*, *Cymbalaria muralis*, *Epilobium montanum*, *Asplenium trichomanes*, *Asplenium scolopendrium*, *Dryopteris* sp, *Urtica dioica* and *Asplenium ruta-muraria*. The species list is considerably shorter than that from some English surveys. Town walls are of some importance for some locally relatively scarce species, especially ferns.

West Sutherland: 2012 (v.c. 108) Pat and Ian Evans

‘Square-bashing’ and serendipity have been equally productive this year. The Hybrid Deergrass *Trichophorum x foersteri* was recorded by Eric Meek in two places and by us in two others (new to the vice-county?); we have yet to see its rarer parent *T. cespitosum*. Wild Onion *Allium vineale* was found on a dry bank at Scourie, where it looks well-established. It is at least 100km outside its known range but seems unlikely to have been deliberately introduced. American Skunk-cabbage *Lysichiton americanus* has escaped from cultivation in Kinlochbervie, where it is quietly taking over a ditch. Two locally scarce species were discovered in Assynt on sites with reduced grazing pressure: Shady Horsetail *Equisetum pratense* in a small enclosure at Knockan (new hectad record) and Bugle *Ajuga reptans* on wooded islands in Loch Awe (confirmation of old record). Finally, Northern Rock-cress *Arabidopsis petraea*, usually montane, was found at low altitude (20m asl) on gravel banks beside the River Dionard (update of old records).

If You Go To St Kilda: *Taraxacum pankhurstianum* Claudia Ferguson-Smyth

If you go to St Kilda in the spring you will certainly have a chance to see Britain’s newest dandelion, *Taraxacum pankhurstianum* Richards & Ferguson-Smyth, (2012). It is also possible and probable that *Taraxacum faeroense* (Dahlst.) Dahlst. (1925a) could be found. Its existence on the island of Hirta or elsewhere in the archipelago has yet to be confirmed. These two species can easily be confused. As an aid to identification, the characters of both species will be illustrated and compared.

If You Go Down To The Sea: *Taraxacum limbatum* Claudia Ferguson-Smyth

Taraxacum limbatum Dahlst., the Bordered Dandelion, was first identified in Britain on the Isle of Tiree vc 103 in the spring of 2010. It was growing just above the strand line on an east facing beach. In 2011, another plant was found on a west facing beach and most recently in 2012 it was seen in calcareous grassland not far from the sea. *T. limbatum* is a lovely native dandelion with very distinctive characters which makes it easy to identify. It is hoped that by reviewing and illustrating the characters and by comparing it to its nearest look-a-like, *Taraxacum luteum*, C.C. Haw. A.J. Richards (1984) more records of this rare dandelion will be forthcoming.

The Genus *Agrostis* Arthur Copping

Seventeen herbarium sheets bearing *Agrostis* specimens, mounted to display and emphasise the diagnostic features separating the species, are shown, together with an explanatory handout. *Agrostis capillaris*, *A. stolonifera*, (including var. *stolonifera* and var. *palustris*), *A. gigantea*, *A. vinealis*, *A. canina*, *A. castellana*, *A. scabra* and *A. lachnantha* are featured, all except the last known to occur in Scotland. The exhibit was originally prepared for display in East Anglia so a supplementary note gives guidance on its Scottish relevance.

***Alchemilla* species in Scotland and their identification.** Margaret Bradshaw

An outline of the classification of the *A. vulgaris* agg. followed by a mention of two Identification Keys - one a pictorial key translated from the Norwegian by Barbara Hogarth and modified by MEB, annotated silhouettes of leaves and an ID Pack. Photographs of *Alchemilla* spp. including the rarer *A. glaucescens*, *A. glomerulans* and *A. wichurae* and the Scottish distribution as in the New Atlas and more recent finds.

***Alchemilla* micro-species in the northeast of Scotland** Barbara Hogarth

The story begins in July 2008 with the discovery of *Alchemilla glaucescens* in the defile scoured out by the Moulzie Burn, Glen Clova. This was followed by a survey of the Moulzie Burn in May 2009 (for which there is a brief report outlining the results). In June 2010 a population of more than 50 plants of *Alchemilla acutiloba* was found along a 14 m stretch of roadside embankment and ditch in Glen Isla by Bridge of Forter. The rockiness of the embankment appears to have protected the plants from the destructive effects of modern verge maintenance. In spite of searching suitable habitats no further

populations of *Alchemilla glaucescens* have been found. *Alchemilla acutiloba* has now been recorded at three more localities in Angus. This exhibit demonstrates work underway to describe *Alchemilla* micro-species with the view to a publication in the near future. The aim is to provide clear, detailed accounts and illustrations which will assist with identification. During the search for typical specimens it became clear that other micro-species with distinctive characteristics are present in north-east Scotland. These are currently being described.

The BSS Alpine Field Meeting – The Last 40 Years. John Holland (BSS Alpine Secretary)

The annual alpine field meeting has been an excursion organised by the BSS (BSE) for many years. Although species recording has formed an important part of the field meeting the main emphasis has always been on enjoying the magnificent landscape, flora and wildlife of the Scottish mountains with a bit of informal learning in the company of like-minded people. Over the last 40 years the excursions have covered much of Highland Scotland and beyond, from St. Kilda in the West to Glen Clova in the East, from the Moffat Hills in the South to Glen Affric in the North. Unsurprisingly, many of the field excursions have been to the mountains of Perthshire which are within easy reach of the Central Belt, particularly to the Breadalbane Hills (v.c.88), many of which are designated as Special Areas of Conservation or Sites of Special Scientific Interest for their alpine flora. The popularity of the alpine meeting has varied greatly from year to year with as few as three people attending one meeting to Ben Lomond (1998) to well over twenty attending an excursion to Meall nan Tarmachan (2003). A comprehensive list of Scottish alpine plants (and fungi) has been amassed over the years, including many rarities. Hopefully this long standing annual excursion will continue for many years to come. Where to next?

Harebell (*Campanula rotundifolia* L.): Western British populations are unique.'

Julia Wilson¹, Annika Telford¹, Jess Shepherd^{1,2,3}, Chris Jeffree³ and Stephen Cavers¹

The harebell (*Campanula rotundifolia* L.) is widespread in the British Isles. Its chromosome number (cytotype) varies across its range and shows strong spatial structuring, correlating with oceanicity of climate. Diploids (2n) are absent and while tetraploids (4n) are the predominant type, hexaploids (6n) occur in some western locations. Studies of nuclear and chloroplast DNA confirm the distinctiveness of the 4n and 6n cytotypes which have recently been given sub-species status (subsp.

rotundifolia - 4n, and subsp. *montana* - 6n). Conservation and restoration policy should recognise these differences and the particular rarity of the hexaploid and review the suitability of the origins of seed in grassland restoration mixes – matching site to cytotype. ¹ CEH, ² RBGE, ³ University of Edinburgh

Traits of Mountain Willows: *Salices arbuscula*, *×luiensis*, et cetera
Leslie Tucker

Hooker's *Flora Scotica* (1821) indicated *Salix arbuscula* (Little Tree Willow) as inhabiting "Highlands of Scotland", particularly "vallies of ... Clova" and "Banks of the Nith". BSBI maps still show widespread old records, but recent fragmentary DNA bar-coding exercises imply that most populations beyond the Lawers-Lui ranges are infested with other species' hybrids. Inferably, suitably situated 'little trees' are repeatedly re-misrecorded as *S. arbuscula*, without adequate confirmation. Hooker noted: "My specimens become black in drying. Wahlenberg says his remain green ... and leaves much more serrated" Morphology is still contentious. Our 'pure' populations match Wahlenberg's type; blackening (pace Poland !) indicates *S. myrsinifolia*(*nigricans*) or *S. repens* hybridity. Glandular-serrations do point strongly to *S. arbuscula*, but not exclusively so; environmental stunting can make some hybrids also look similar, especially those of *Ss. cinerea* & *myrsinifolia*. Since discovering *S. ×luiensis* (= *S. arbuscula* × *S. aurita*), I have been comparing cuttings *ex loco classico* with others collected further afield: some appear equivalent. Potted and pressed 'vouchers' of such from Perth, Angus and Aberdeen are exhibited for appraisal. Supposing 'lost' *S. arbuscula* colonies always have *S. aurita* nearby, perhaps *S. ×luiensis* should be sought there too, as a still-lingering cryptic relic (culprit ?) of competitive miscegenation. Evidence that this occurs spontaneously *in horto* is presented.

***Viola rupestris* (Teesdale Violet) - Mike Porter and Jeremy Roberts**

The 'Standard Texts', even the most recent, give a confusing and frequently erroneous picture of the Teesdale Violet and its separation from congeners. Yet it is a distinctive and well-characterised species within its few known habitats. This exhibit provides clear pointers to its ready identification. Are there populations still awaiting discovery?

PLANTLIFE SCOTLAND EVENTS CALENDAR 2013

Plantlife Scotland would welcome Botanical Society of Scotland members and friends/families to any of our guided walks and workshops taking place in 2012. All our events are free of charge (donations welcome) and are open to participants with any level of experience.

Sun 21 April, 10.30am–4.30pm

Holyrood Park, Edinburgh

Plantlife and BSBI: Getting to know your families. Find out about the basics of identifying wild flower families, a first step in confidence in using wildflower keys. Led by Dr Faith Anstey. For further information or to book a place, contact Ruth McGuire at bsbiscotland@gmail.com or on 07585 609008.

Sat 27 April, 10.30am–4.30pm

National Museum of Rural Life, Wester Kitchside, East Kilbride

Plantlife and BSBI: Getting to know your families. For details see 21st April event.

Sun 28 April, 12–3pm

Linn Park Local Nature Reserve, Glasgow

Drop-in event. Come along to the launch of 'Wild About Plants' our new initiative to encourage people to explore their parks, gardens and wild spaces. There will be family activities, games and crafts with Plantlife and Glasgow Countryside Rangers and Conservation Team. Entrance to the park is adjacent to Linn park golf course club house, Simhill Road, Glasgow G44 5TA.

Sat 18 May, 11am–4pm

Mugdock Country Park, near Milngavie, Glasgow

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 contributing to our national plant survey.

Mon 27 May, 11am–3.30pm

Ben Nevis, Fort William

Important Plant Area - Guided Walk. This iconic mountain is an Important Plant Area, home to many rare alpine plants. Although we won't reach the top, we'll look at the wonderful array of species on the slopes of Scotland's highest peak. Led by local expert Ian Strachan.

Sat 8 June, 11am–4pm

Taliesin Woods, Castle Douglas

Getting the most out of Wildflowers Count. See 18 May.

Wed 12 June, 10am–4pm

Centre for Stewardship, Falkland, Fife

Learn how to identify wild flowers. 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, Royal Botanic Garden Edinburgh.

Sat 22 June, 10am–5pm

Ben Lawers, Perthshire

Guided walk. A high-level walk with the National Trust for Scotland's ecologist Dan Watson, to see some of the arctic-alpine plants for which Ben Lawers is famous. We can expect to see such gems as Alpine Forget-me-not, Alpine Gentian and Alpine Saxifrage, among many others. The walk requires a reasonable level of fitness, with an ascent of about 800 metres. Please bring walking boots, warm, waterproof and windproof clothing, packed lunch and drink.

Sun 14 July, 2-4pm

North Berwick Law, East Lothian

Important Plant Area - Guided walk. Enjoy this Important Plant Area with its species-rich grassland, basalt outcrops and panoramic views. There will be a chance to see a variety of plants that are uncommon in the area and learn some history of the Law. Led by Countryside Ranger Sam Ranscombe.

Sat 20 July, 11am–2pm

Tentsmuir, near St Andrews, Fife

Guided walk led by local botanical recorder Sandy Edwards. Find out more about the ecology of the Tentsmuir dune system and dune succession, and about the management of the site. The walk will focus on the dunes, but time permitting there are a variety of other habitats to explore including woodland, marsh and pools. Bring a packed lunch.

Sun 28 July, 11am–4pm

Wooplaw Community Woodland, near Lauder, Scottish Borders

Getting the most out of Wildflowers Count. See 18 May.

Sun 28 July

Forsinard Flows, Sutherland

Celebrate **International Bog Day** with Plantlife, RSPB and the Bumblebee Conservation Trust at the Forsinard Flows Visitor Centre. Free admission to find out about all things peaty.

ANNUAL ACCOUNTS 2011-2012

Botanical Society of Scotland Financial Statements For the Year to 30 April 2012

Statement of Financial activities Incorporating income and expenditure account

	2012	2011
	£	£
Incoming resources		
Subscriptions	4,592.00	5,665.11
Donations	1,264.00	84.00
Misc: (Gift Aid Tax Rebate)	-	806.95
175 th Anniversary, Outing to Benmore	420.00	-
Activities in furtherance of the charity's objectives:		
Journals and publications sold	-	18.00
Editorial Subvention	3,198.16	6,182.70
Misc.: (Unallocated, Royalties, etc.)	2,650.39	3,743.48
Interest received	150.00	3.34
Total incoming resources	12,274.55	16,649.80
Resources expended		
Costs of generating funds:		
Printing Journal	5,984.00	7,558.00
Journal Editor's Expenses	-	2,566.00
Printing newsletter	1,504.00	1,557.00
Steward at Annual Meeting	50.00	-
Total	7,538.00	11,681.00
Charitable expenditure		
Costs of activities in furtherance of charitable expenditure:		
Lecture Expenses	733.10	552.48
Student Essay Prize	200.00	200.00
Summer Studentship	-	300.00
Student Grants	210.00	-
Donation (RBG Edinburgh)	-	150.00
Phenology Conference expenses	894.03	2121.97
Ecology Workshop	2,000.00	-
Community Woodland Report	2,451.45	-
Total	6,488.58	3,324.45
Management and administration		
Printing, stationery & Postage	617.00	1,012.38
Insurance	-	190.63
Accounting Fees	140.00	140.00
Web page	132.00	1,190.40
Council expenses	-	59.20
Misc (Coach Deposit)	-	265.00
(Coach Hire)	185.00	-
175 th Celebration, Catering, Cake, Beverages	484.20	-
Total	1,558.20	2,857.61
Total resources expended	15,584.78	17,985.06
Deficit for the year	(3,310.23)	(1,213.26)
Unrestricted Funds at 1 May 2011	46,072.33	47,285.59
Unrestricted Funds at 30 April 2012	42,762.10	46,072.33

**Botanical Society of Scotland
Financial Statements
For the Year to 30 April 2012**

Balance Sheet

	Notes	2012 £	2011 £
Current Assets			
Cash at Bank		2,196.62	10,650.51
Cash in reserve fund		49,032.54	48,885.88
Gross Reserves		51,229.16	59,536.39
Creditors			
Amounts due within one year	4	<u>1,289.00</u>	<u>6,286.00</u>
Net Current Assets		49,940.16	53,250.39
Creditors			
Amounts due in more than one year	5	4,120.00	4,120.00
Net Assets		45,820.16	49,130.39
Funds			
Designated funds			
Symington Grieve Trust Fund		500.00	500.00
Sir W. W. Smith Lectureship Fund		300.00	300.00
Botany of the Lothians Fund		<u>2,258.06</u>	<u>2,258.06</u>
		3,058.06	3,058.06
General unrestricted funds		<u>42,762.10</u>	<u>46,072.33</u>
Total Funds		45,820.16	49,130.39

**Botanical Society of Scotland
Financial Statements
For the Year to 30 April 2012**

Notes to the Financial Statements**Note 1 Accounting Policies****Accounting convention**

The financial statements are prepared under the historical cost convention and are in accordance with applicable accounting standards in the United Kingdom, with the relevant statutory requirements and with the Statement of Recommended Practice "Accounting and Reporting by Charities" 2005.

Income and Expenditure

Income and Expenditure is accounted for on an accruals basis, except for investment income, which is credited to the income and expenditure account in the year that it is received.

VAT

The trust is not registered for VAT and accordingly expenditure includes VAT where appropriate.

Unrestricted funds**Revenue**

The Revenue Fund represents the unrestricted funds of the Society which the Council are free to use in accordance with the Association's objects. Any unrestricted revenue surplus is transferred to the unrestricted capital fund.

Note 2 Council members remuneration and expenses

Council members do not receive any remuneration or expenses in their role as council members

Note 3 Taxation

The Fund is recognised by the Inland Revenue as a charity and no charge for taxation arises on the results for the year

Note 4 Creditors – due within one year

	2012	2011
	£	£
Accounting fees	140	140
Insurance	200	200
Printing journals	-	5,814
Speaker hospitality	146	132
Secretarial Expenses	603	-
University Student Project Prize	200	-
	1,289	6,286

Note 5 Creditors – due after more than one year

	2012	2011
	£	£
Tenth International Botanical Congress	4,120	4,120

Note 6 Commitments and contingent liabilities

There are no contingent liabilities at the year end (2011 £nil).

BSS COUNCIL 2012-13

President:	Prof. John Grace
Vice-President:	Dr Chris Jeffree
Vice-President:	<i>vacant</i>
General Secretary:	Dr Barbra Harvie
Treasurer:	Dr David Chamberlain
Programme Secretary:	Dr Maria Chamberlain
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	Dr Stephan Helfer
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Aberdeen:	Dr David Burslem
Dundee:	Dr Brian Ballinger
Edinburgh (KB):	Dr Barbra Harvie
Edinburgh (RBGE):	Dr Heather McHaffie
Glasgow:	Mr Keith Watson
Inverness:	Mrs Margaret Fraser
St. Andrews:	Professor Robert Crawford

BSS NEWS – INFORMATION AND GUIDELINES FOR CONTRIBUTORS

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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 archaeo-botany.
- 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 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
Edinburgh
EH3 SLR

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 21st July 2013.
Earlier submission would be appreciated.**

Back cover pictures

Inside

Top left: Fungus table at the 2012 Fungal foray, Vogrie Country Park. Photo by Chris Jeffree

Top right: Mycorrhizal tip with mycelium (see page 44). Photo by Andy Taylor

Centre right above: *Amanita muscaria* (see page 44). Photo by Andy Taylor

Centre right below: *Oxalis corniculata* - on gravel by Edinburgh Royal Hospital. A plant virtually dependent on urban habitats in Britain. Photo by Richard Milne

Bottom left: Frosted *Mnium hornum*. Photo by Willie Donachie

Bottom right: *Brachythecium rubabulum* on a wall along the Water of Leith walkway at Belford Bridge, Edinburgh. Photo by Willie Donachie

Outside

Top left: *Fritillaria lusitanica* (see page 11). Photo by Chris Jeffree

Top right: Pokeweed *Phytolacca* sp. (see page 33). Photo by George Ballantyne

Centre left: Mountains of Hehuan, Taiwan (see page 40). Photo by Sarah Greenwood

Centre right: Mexican fleabane *Erigeron karvinskianu* (see page 33). Photo by George Ballantyne

Bottom left: Himalayan Balsam *Impatiens glandulifera* (see page 34). Photo by Cathy Horseley

Bottom right: *Pinus canariensis* on La Palma (see page 11). Photo by Richard Ennos



