



# BSS News

The Newsletter of the  
Botanical Society of Scotland

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The Botanical Society of Scotland is a Scottish Charitable Incorporated Organisation (SCIO) (No. SC016283)

### Front cover pictures

**Outside** Watercolour illustration of *Impatiens glandulifera*, Himalayan balsam by Janet Dyer. See article on page 24.

### Inside

*Top:* Scottish Uplands. See article on page 19. Image by Stuart Wilkie.

*Centre and bottom left:* *Ranunculus parviflorus* in Fife. See article on page 22. Images by Sandy Edwards.

*Bottom right:* *Amorphophallus titanum*, Titan Arum. See page 18. Image by Ron Smith.

## Botanical Society of Scotland

(Incorporating the Cryptogamic Society of Scotland)

c/o Royal Botanic Garden Edinburgh

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

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

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

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

Subscriptions fall due on 1<sup>st</sup> October each year:

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

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

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

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## Botanical Society of Scotland

### EDITORIAL

Thank you to all who have sent articles for this edition of the Bot. Soc. News. As you will see in this issue, despite our failure to obtain lottery funding for the Urban Flora project, we have made a great start this summer with several BSS members leading teams to look at the Urban Flora on walls, in cemeteries and on derelict ground. These activities have initially centred around Edinburgh and Dundee where we have the most active BSS Members. We look forward to receiving more articles about Urban Flora activities for future issues of the Newsletter. Prof John Grace will give an update about the Urban Flora project at the joint BSBI and BSS Scottish Annual Meeting on Saturday 7<sup>th</sup> November at the Royal Botanic Garden, Edinburgh. You can register for this meeting using the enclosed form, but it would help the organisers enormously if you were to use the new on-line booking system at:

<http://www.eventbrite.co.uk/e/the-botanical-societies-of-scotland-and-of-britain-ireland-annual-meeting-tickets-14216807855>

Thank you also to all the members who have been working hard this past year to settle the final details of the change of the society to a SCIO. We now have all of the organization, accounts and office holders in place and we hope that all future activities will run smoothly.

Please remember to check the BSS web site, and read the insert with this newsletter, to learn about our lecture programme and field meetings, and make a good effort to attend. Please also let us know, in particular, what we should do to encourage people to attend the field meetings. Remember that we need new members.

The RBGE web site also has a broad range of activities planned for the coming months. The RBGE have revived their photography competition, and there will be a series of films, both botanical and otherwise, shown at the gardens, in addition to botanical courses and their lecture programme.

Jill Thompson and Jane MacKintosh

## **PRESIDENT'S REPORT SEPTEMBER 2013 TO JULY 2015.**

This is a version of the report I gave at the AGM in May 2015, with some further additions to bring people up to date on the summer's activities. Note that, due to the change to a SCIO, and the concomitant change in AGM date, this report covers the period since Sept 2013.

**1. Implication of being a SCIO.** Since April 2014 we have been coming to terms with the implications and making the required shifts in the way we operate. The Council is now a Board of Trustees, and has additional freedoms and powers, with a legal status that enables us to apply for grants and employ staff. The SCIO also provides enhanced possibilities for interacting with the public and extending our charitable work. We will, for example, soon be meeting with Education Scotland, to see how we may be able to contribute to the teaching of biology in schools, including the production of educational material, field guides and the evaluation of biodiversity. However, we are still 'bedding down' our everyday running procedures, for instance keeping track of our memberships and subscriptions, and making sure we have a succession of Office Bearers as we older members prepare to pass the baton to a new generation.

**2. Organisation of the Board.** As a SCIO we were required to create a smaller Board with an Executive and a Secretariat, and now have Board Members who are the conveners of semi-autonomous groups that look after (i) lecture and field programmes, (ii) publications, (iii) outreach, (iv) education, (v) species specialist groups, (vi) students, (vii) projects and (viii) the IT activities. This gives us opportunities to involve more ordinary members in the Society through participation in the groups, and gives us a degree of flexibility.

**3. The Urban Flora of Scotland.** We launched this project, although we failed to obtain lottery funds. Without external funding the project will have to run at a lower level for now, providing opportunities to engage with citizens including schoolchildren. We will for example, soon be meeting with a senior officer of Education Scotland, to see how we may be able to contribute to the teaching of biology in schools, including the production of field guides and the evaluation of biodiversity. The urban project started, at short notice, with 'Walls Week' (May 2015), and we did attract members of the public to join us in surveys at several sites. We realise that we need to improve our publicity, produce good field

guides to support our endeavours, and we also need to follow up the contacts that have been made. Several reports of our Urban Flora surveys are in this issue of the News, including a survey of the street where Maria and David Chamberlain live, Julia Wilson and Chris Jeffries survey of Seafeld Sewage works and Brian Ballinger's surveys in collaboration with other local societies in Dundee. If every one of our 400 members followed these examples, we could complete a survey of Scottish walls in a year, whilst increasing botanical knowledge and skills throughout the population. Let's try to do it, shall we? Since Walls Week, the pace of data collecting has picked up, with over 2000 records from a variety of habitats (not just walls) in Edinburgh, Dundee, Glasgow, Perth and Inverness entered to iRecord, covering 470 species, of which the commonest is *Galium aparine* (aka 'cleavers' or 'sticky willy'). We found 170 species along the Innocent Railway line and 84 species associated with walls at Midmar Paddock. We know there are further records to be entered, when recorders have time to transcribe records from their muddy sheets of paper.

**4. Lectures and Field Programme.** The lecture programme was diverse, well attended and well received. For many years we have enjoyed the hospitality of the RBGE, who have provided its excellent lecture room for a nominal charge. It seems however, that charges may be about to be levied and so we may have to change the venue. I hope not – the RBGE has always been the epicentre of botany in Scotland. The field programme, likewise, has been diverse and interesting. This year has included urban botany and joint excursions with other groups. It has also catered for those who wish to forage for food! However, participation by ordinary members of the Society has been poor. Why is that? I fear that people's lives and diaries become ever-complicated with professional and family demands, with travel and vacations, and not much time is left for the exploration of nature or for urban botany.

**5. Publications.** We are fortunate to have two highly competent and enthusiastic editors of our News, which all members receive. I hope you feel the News is useful and stronger than ever. We are always on the lookout for newsworthy items, so please consider writing something or submitting photographs. Our international journal, *Plant Ecology and Diversity*, is still doing very well, thanks to hard work by its editor Laszlo Nagy. From next year it will carry regular review-style articles by world authorities, to be called 'The Grubb Reviews' after Peter Grubb the Emeritus Professor of Botany at Cambridge University. We expect this

addition will attract more readers, especially students, and start to generate a significant income to the Society.

6. **Student Projects.** We have funded a number of student projects, and you will have read articles about them in the Botanical Society News each year. I'm heartened to see that botanical ecology is alive and well in our Universities, and may even be on the increase.

7. **Membership.** I am pleased to see that 22 new members were welcomed to the Society. Let's try for more this year. Please make an attempt to recruit a friend or two.

Finally, I wish to warmly thank those who have served on the Council over the period. Some have contributed massively over many years and special thanks go to Barbra Harvie, who was the Edinburgh branch secretary until June 2008, and then served as Honourable General Secretary of the Society until she retired in August 2014. Others have made large contributions over a shorter period, including Jacob Assmann, Niamh Britton, Derek Christie (Membership Secretary, retired August 2015), Alison Hester and John Holland. Although John Holland has stepped down from the new board of trustees, he will continue to lead the annual alpine field meetings. On behalf of the Society, I extend a warm welcome to new office bearers Trudi Dorr (Secretary) and Brian Ballinger (the Dundee representative, seconded to the board July 2015).

I shall soon step down from the role of President, having lasted a bit longer than the previous Presidents, only because of the change in our Constitution! It has been an interesting and educational experience for me, and an honour to serve. But you are not rid of me altogether. I intend to remain as a Trustee of the Board, and to work on the Urban Flora project.

Looking ahead, we really do need to make a massive effort to attract young botanists and ecologists, and to increase the participation beyond Edinburgh and Dundee to the rest of Scotland. We have several younger members on the Board already but we need to be more active and more positive if we are to pass the baton without it falling to the ground, and we are keen to hear from people who would like to help with the running of the Society.

Professor John Grace

## **URBAN FLORA OF SCOTLAND – WE NEED HELP FROM OUR MEMBERS**

You will remember that we have started our work on the Urban Flora of Scotland, with the aim of producing a definitive flora and at the same time engaging with the public in the spirit of Citizen Science. If you want to know the background to this project, and how to join in, see the project details at:

[http://www.botanical-society-scotland.org.uk/Urban\\_Flora\\_of\\_Scotland](http://www.botanical-society-scotland.org.uk/Urban_Flora_of_Scotland).

We have reached a critical point in the project, and now we need help from you, the Botanical Society members. We have a good system of recording species and habitat, using iSpot for beginners (<http://www.ispotnature.org/communities/uk-and-ireland>), which relies on people suggesting and confirming identifications. When using iSpot members of the Botanical Society that contribute can be 'badged' with the BSS logo, which links back to the Botanical Society website <http://www.ispotnature.org/badging>. More confident botanists can also use iRecord (<http://www.brc.ac.uk/irecord/>) to enter data and information. The recording systems work fairly well, and by mid-July 2015 about 2000 records had been entered by individuals and some groups. But now we need far more people to be involved. So please try iSpot and iRecord when you go walking. You do not have to be a botanical genius; even if you only know a few plants, just record those. If you find something, and want to check what it is, take a photo and put it on iSpot and someone will identify it for you.

If you would like to know more about plant identification, what sort of help would you like? We are thinking of running an introduction to plant identification course early next summer, at the start of the field season. Contributors to our Facebook page have suggested organising 'drop in' meetings in public libraries to help people identify problem plants and swap information. Give us your ideas and we will see what we can do. Would you like to help?

We have also been thinking hard about developing a set of illustrated guides. Without these guides, it will be impossible to engage with citizen scientists outside of the Society, especially school children.

We envisage the illustrated guides will develop through a process whereby we gradually build up a set of pages, one page for each species. Each page will need accurate information and high-quality photographs to show each species in sufficient diagnostic detail to

enable accurate identification. By next summer, we will have enough of these pages to assemble guides for specific botanical walks. After just a few years, we will have an entire set, suitable for a pocket-sized book. Later, when we have location records, we will have a comprehensive set of material (pictures, diagnostics and locations), suitable for a full-scale urban flora publication.

In the last few weeks we have put together some of the species pages, and you can see an example, for the Germander Speedwell, *Veronica chamaedrys* on the back cover of this BSS news. We have tried to keep the language very simple, using minimal botanical jargon, but it is hard to write diagnostics without using the names of specific structures like sepals, racemes or stolons. When I tried the text out on a non-botanist, they were intrigued to learn that a leaf can have teeth. Does it bite, she asked?

As you see from the example, we would like to have other, more general information. For some species, there is a lot published (for example, in the British Ecological Society's *Biological Flora* series). But for many of the common species there is rather little out there. Should we include the use of plants by herbalists? For some species there is rather a lot of herbal information. But it is not usually evidence-based and we cannot expose ourselves to the risk that users might poison themselves in a desperate attempt to get rid of gout!

Please let me know if you have any views on the page layout. Or perhaps you would like to volunteer to assemble a page about your favourite species? If so, contact me and I will send you the Powerpoint template.

John Grace  
President of the Botanical Society of Scotland  
(jgrace@ed.ac.uk)

## A BOTANICAL SURVEY OF A LOCAL WALL: AN EXERCISE IN CITIZEN SCIENCE?

Spring came late this year, and then suddenly everything was flowering. By mid-May the wall in our street was ablaze with *Campanula* and *Cymbalaria*, and at our feet *Arabidopsis* the old faithful from the lab had already turned over a generation. The BSS Walls Week was planned, so I thought let's do a neighbourhood wall watch! I invited neighbours from 10 adjoining houses to join us for an evening stroll (and refreshments) to record all the plants growing on walls on both sides of the street. About 18 people turned up, and the first question they asked was "are these not all weeds?"

However, once they got down to observing the wild plants in their familiar urban environment, they became genuinely enthusiastic. Swayed by the beauty of the wall ferns (4 species), the glistening water droplets on *Alchemilla mollis*, the stripy pyjamas of *Holcus lanatus*, the milky sap of *Euphorbia peplus*, they were no longer so keen to call in the Council to "deal with the weeds". Several were glad to recognise herb robert from *Geranium lucidum*, and a few even wanted to key out the *Epilobiums*.

We clocked up 62 species, including mosses, and I circulated the full list to all the participants. I also entered the list on iRecord. One species of moss, thought to be *Bryum caespiticium*, has turned out to be so much of a national rarity, that its identification is currently being verified by a *Bryum* expert in Portugal!

This community exercise was just a bit of fun, but it emphasised the fact that plants in our urban landscape enrich our lives. With re-wilding so much in the news, why not start on our doorsteps. If weeds are 'plants in the wrong place', let us take a look at the plants that have found their rightful place in our ecosystem. Urban wild plants should not be exterminated, scraped off walls, sprayed in pavement cracks. They tell stories of invasions, ancient and modern, and of adaptations to salt, cold and diseases. They indicate pH, pollutants and humidity levels. We have so much to learn from them.

If you would like to run your own 'Neighbourhood Watch' event, and need a botanist to help with the identifications, get in touch, and one or more of us will come along.

Maria Chamberlain (Maria.Chamberlain@ed.ac.uk)

## SOME URBAN FLORA RECORDING EXPERIENCES IN EDINBURGH

With the commencement of the BSS Urban Flora project, we made a start recording in our home town, Edinburgh. With the whole of the city to choose from, we decided to have a look at the coast. Checking out Google Earth, some of the areas around the docks looked interesting, with a combination of derelict land and seashore habitats. We chose the area around the Seafield sewage works (55.971°N, 3.142°W) as a starting point.

The sewage works was constructed on reclaimed land, bounded to the west by the gloriously but inappropriately named 'Marine Esplanade', now landlocked, while the coastal and landward sides of the works have footpaths. At the eastern end, there is a small patch of sandy beach and our route then followed the Seafield Road, finishing beside the Edinburgh Dog and Cat Home (EDCH).

We started visiting the area in early May this year and made several visits, so that we could confirm the identity of plants as they came into flower. The footpath on the coastal side is open ground, with relatively few species and appears to have been sown with a legume-rich seed mix at some time. The soil dries out quickly and wilted plants were observed on several occasions, even during this wet summer. Among the species that we suspected had been sown were *Lotus corniculatus* var. *sativus* (an introduced variety of Bird's foot trefoil), *Melilotus altissimus* (Tall melilot), *Trifolium pratense* (Red clover), and *Primula veris* (Cowslip), but we also found abundant Prickly and Smooth Sow-thistles (*Sonchus asper* and *S. oleraceus*), some *Plantago coronopus* (Buck's-horn plantain), *Plantago maritima* (Sea plantain), *Silene uniflora* (Sea campion) and a single plant of *Ligusticum scoticum* (Scottish lovage). The landward side footpath, beside a railway line, is partly overhung by trees, but open in other areas and has a much wider mix of species, including one patch of *Centaureum erythraea* (Common centaury), many brambles and thistles, *Pilosella praealta* and an abundance of the poisonous *Conium maculatum* (Hemlock). Adjacent land within the sewage works and on the railway line have a substantial population of *Heracleum mantegazzianum* (Giant Hogweed) and the railway line has wonderful stands of blue Lupins (probably *Lupinus x regalis*). The beach area and roadside to the EDCH contain many species characteristic of sand dunes and seashore including *Smyrnium*

*olusatrum* (Alexanders), *Malva sylvestris* (Common Mallow), *Glaux maritima* (Sea milk-wort), *Cakile maritima* (Sea rocket), *Elytrigia juncea* (Sand-couch) and *Leymus arenarius* (Lyme grass).

One of the species that was new to us (although not a new record for Edinburgh) was the giant *Lactuca virosa* (Great lettuce), which grows on the Marine Esplanade and the landward side footpath. We struggled deciding whether it was *L. virosa* or *L. serriola*, but based on the colour of the ripe achenes and using the BSBI Plant Crib on Lactucas settled it.

Overall, we recorded 115 species of flowering plant, and some groups, especially grasses, have probably been under-recorded. We used iRecord to enter our observations. The system is quite flexible and allows you to enter location by Ordnance Survey grid reference, latitude and longitude, or by clicking on a map, with both street and satellite view options. It's possible to enter data to an accuracy of a 10 m square. As we were recording observations related to mostly linear features, it made sense to zoom to the map and click a 10 m square, rather than do it at a coarser scale, but of course we didn't record every observation of common plants. The iRecord system sends 'notifications' when species records are unexpected (based on previous records within the locality) and some of the notifications, for example for *Plantago coronopus* and *Silene uniflora*, surprised us, but they highlight the need for more recording in some areas of the city.

For species identification we mostly used the floras of Blamey, Fitter, and Fitter, also Stace, and Poland and Clement. Further details of all of these are listed under the resources tab at [http://www.botanical-society-scotland.org.uk/Urban Flora of Scotland](http://www.botanical-society-scotland.org.uk/Urban_Flora_of_Scotland).

Julia and Chris Jeffree  
([jwi@ceh.ac.uk](mailto:jwi@ceh.ac.uk))

## **THE NEW NATIONAL PLANT MONITORING SCHEME IN 2015**

After a hectic year of field trials, consultations, and many decisions in 2014, the new National Plant Monitoring Scheme (NPMS) was launched in March 2015. This is the culmination of a lot of work between the BSBI, Plantlife, the Centre for Ecology & Hydrology (CEH) and the Joint Nature Conservation Committee (JNCC), over the past few years (e.g. Walker et al. 2010). The key elements of the scheme from a surveyor's perspective are as follows:

- Recording will be based on a stratified random sample of 1km squares, selected so that, on average, surveyed squares will have a higher chance of containing the semi-natural habitat types targeted by the scheme. Squares will be allocated to recorders once they join the scheme.
- Within each square recorders will be asked to record species abundance (i.e. % cover) within 5 small plots (usually 5 x 5 m) in a range of semi-natural habitat types. In order to make the resulting information more valid, surveyors will be provided with a gridded set of up to 25 plots from which to select at least 3 plots for survey, this step will only be required in the first visit to a monad, with the selected plots forming the basis of future monitoring. Linear plots (e.g. for hedgerows or streams) are also included and these also have a simple selection methodology associated with them.
- Surveyors will be able to adopt more than one square if desired, enabling a rotation of visits between years, e.g. if you have two squares you could visit them in alternate years. Gaps between visits are also OK where squares may be remote.
- The fixed plots are intended to be re-locatable (but not permanently marked) by others.
- Within plots, recorders will choose to record all species, or just a subset of c. 400 habitat indicators (roughly 30 indicators per habitat type). The habitat indicators will include a subset of 'easy-to-identify species' to encourage participation. Species and habitat lists are available on the website.
- Much of the administration of the scheme (e.g. provision of squares, method protocols, recording forms, guidance documents, etc.) will also be available online via the dedicated website

(<http://www.npms.org.uk>). The website will also provide a facility for online data entry. Funds have also been provided for training events and for a coordinator (Hayley New, who is based at Plantlife).

If you are interested in taking part in the scheme, please see the website to register, or contact the coordinator at [support@npms.org.uk](mailto:support@npms.org.uk). The website also shows where squares are available, and allows squares to be requested by surveyors.

Oliver Prescott  
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Kevin J. Walker, [kevin.walker@bsbi.org](mailto:kevin.walker@bsbi.org)

#### References:

Walker, K.J., Dines, T., Hutchinson, N. & Freeman, S. 2010. *Designing a new plant surveillance scheme for the UK*. Joint Nature Conservation Committee Report No. 440. JNCC, Peterborough.

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## **BSS FIELD MEETINGS IN DUNDEE: THREE REPORTS FROM SPRING AND SUMMER 2015**

### **Riverside Nature Park Dundee, 20 May 2015, PSNS/BSS**

This was the first joint field meeting between the Perthshire Society of Natural Science (PSNS) and the Botanical Society of Scotland (BSS). It was also the first field meeting in Dundee devoted to the BSS “Urban flora of Scotland” project which aims to be a citizen science endeavour involving people of all levels of expertise (contributions to the project are very welcome – please see the article on page 8 or the BSS website). We were also gathering records for the BSBI.

Nine of us gathered on a pleasant evening and, as well as PSNS and BSS members, we were joined by three individuals from the Friends of the Riverside Nature Park, which provides a lot of active support to the site. The nature park was opened in 2011 on reclaimed land after a long period of delay, because of the need to deal with toxic substances.

Topsoil has been added, which appears to have been rather rich from the plant point of view, and some wildflower seed and trees have been planted. The park includes areas in three different tetrads and lists were made for all three. More than 100 species were recorded in the first tetrad, excluding obviously planted specimens, although no national rarities were found.

Near the car park were considerable quantities of *Alliaria petiolata* (Garlic mustard) and *Lepidium draba* (Hoary cress) was also present. *Veronica serpyllifolia* (Thyme-leaved speedwell) and *Medicago lupulina* (Black medick) were present in quantity. *Dipsacus fullonum* (Wild teasel) grew in the enclosed areas and *Galium album* (Hedge bedstraw) was present in vegetative form. The crane's-bills *Geranium molle*, *G. lucidum* and *G. dissectum* were by the path and *Barbarea intermedia* (Early Wintercress) was present in several places. At the west end of the park *Armoracia rusticana* (Horse-radish) and *Reseda luteola* (Weld) were quite frequent. Les Tucker identified seven species of *Taraxacum* (Dandelion).

*Primula veris* (Cowslip) was sparse in the park but an adjacent meadow contained striking quantities. Some areas in the centre of the park were somewhat overgrown by *Cirsium arvense* (Creeping thistle) and *Ranunculus repens* (Creeping buttercup). However the nature park was thought to be a very useful addition to Dundee's environment.

### **Western Cemetery, 26<sup>th</sup> May, DNS/BSS**

This was the first joint outing of the Dundee Naturalists' with the Botanical Society of Scotland and we were fortunate to have a pleasant dry evening. We met slightly earlier than usual at 6.30 pm because the Western Cemetery has a notice to say that the gate will be locked at 8.30pm, although there are doubts as to whether this actually happens.

This was mainly a botanical recording outing although some birds were also noted, including goldfinch, greenfinch and chaffinch. The cemetery, although not large, includes parts of three 2 x 2km squares (tetrads), which are often used as the basis of biological recording. We were collecting information for the BSS Urban Flora of Scotland project, which is just starting as a citizen science endeavour. Contributions to this are very welcome from all and information is available in the article on page 8, on the BSS website or from me. Information will also be passed on for the Botanical Society of Britain and Ireland's atlas 2020.

Unfortunately the council staff had visited with their grass cutters and weed killers before us, so we were unable to confirm the presence of the locally scarce hoary plantain (*Plantago media*) which has been seen here before.

Thale cress (*Arabidopsis thaliana*) was remarkably common across the site as was groundsel (*Senecio vulgaris*). Speedwells were a prominent feature and we noted germander (*Veronica chamaedrys*), slender (*V. filiformis*), common field (*V. persica*), ivy-leaved (*V. hederifolia*) and wall (*V. arvensis*). Creeping cinquefoil (*Potentilla reptans*) was seen in the grassy areas, although it was not yet in flower.

The walls in the lower part of the site had been cleaned, but higher up there was a fine profusion of ivy-leaved toadflax (*Cymbalaria muralis*). Wall-rue (*Asplenium ruta-muraria*) was also common on the walls and maidenhair spleenwort (*Asplenium trichomanes*) was present. Town walls are important sites for these ferns.

The top part of the cemetery remains relatively wild but there were ominous signs that a clean-up may be on the way with the possible loss of biodiversity. Up here garlic mustard (*Alliaria petiolata*) and herb bennet (*Geum urbanum*) were plentiful as well as various tree seedlings.

Altogether we recorded 45 species in the first square (NO3729), 66 in the second (NO3730) and 32 in the third (NO3829). No doubt visits at other times of year would yield further records.

Members were thanked for all their contributions to the evening's visit.

### **Stannergate, 7<sup>TH</sup> July, DNS/BSS**

This was a joint meeting of the Dundee Naturalists' Society and the Botanical Society of Scotland visiting this area of grassy shore in Dundee. We were recording both for the BSS urban project and the Botanical Society of Britain and Ireland.

Immediately before the meeting what had been a pleasant day turned into a rainy deluge and I was pleased we had agreed to start at 7pm and not 6.30. Some rain continued to fall at times but it was much lighter and I was able to write in my notebook with the aid of an umbrella, which sometimes blew inside out. We walked slowly along the shore examining the grassy areas, the walls and climbing down onto the shore and the rocks.

We saw a fine display of wild flowers and recorded more than 100 species. We focussed particularly on the main eastern part of the site, which appeared to have been less fully recorded in recent years.

A striking feature of this site is the quantity of wild parsnip (*Pastinaca sativa*) and there were also other species in the same umbellifer (Apiaceae) family. There were several plants in the geranium family including a fine display of meadow cranesbill (*Geranium pratense*) and also cut-leaved cranesbill (*Geranium dissectum*) and dovesfoot cranesbill (*Geranium molle*) as well as common storksbill (*Erodium cicutarium*).

The walls proved fruitful and remarkable quantities of pellitory-of-wall (*Parietaria judaica*) were present, as well as wall-rue (*Asplenium ruta-muraria*) and maidenhair spleenwort (*Asplenium trichomanes*), together with sea pearlwort (*Sagina maritima*). On the rocks and the walls were colourful displays of stonecrops, both English (*Sedum anglicum*) and biting (*Sedum acre*).

Near the shore were some interesting sedges including distant sedge (*Carex distans*) and false fox sedge (*Carex otrubae*).

We failed to find the other special plant of this site, shepherd's cress (*Teesdalia nudicalis*) but we may have been too late in the year.

The ragwort (*Senecio jacobaea*) was covered in cinnabar moth caterpillars, but no butterflies were flying in the damp weather.

During our visit David Lampard explained the structure of the important sedimentary rocks here, which unfortunately have been damaged by recent coastal works.

The members of both societies were thanked for their contributions and participation in the survey in spite of the weather. A few hardy souls also went on to view the nearby population of the northern marsh orchid (*Dactylorhiza purpurella*).

Brian Ballinger

## TITAN ARUM

The Titan Arum, *Amorphophallus titanum*, flowered for the first time in the RBGE on 27th June 2015

Tremenjus arum! My!  
I never seen a flower so high,  
and phwoar! just smell the essence  
of that titanic inflorescence;  
an utterly revolting stench  
that would make any person blench.\*  
Your spathe, that's an enormous sheath  
more like a condom than a leaf,  
conceals your spadix, tall, priapic,  
too shocking for a cell phone quick pic.  
In Sumatra, if all's gone well  
the arum's truly awful smell  
has drawn flies in obligation  
to effect its pollination.  
Too soon the spadix starts to droop  
into an unpriapic hoop.  
Let me just find a simile  
for failure of virility...

*This poem's getting very rude.  
We really think you should conclude.  
You're making us feel rather ill.  
Desist at once.*

*Yours,  
Jane and Jill.*

Roger West  
28 June 2015

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\* This is a gross poetic exaggeration. The aroma was actually mild, no doubt in deference to the genteel susceptibilities of visitors from Morningside.

## **A FUTURE FOR THE SCOTTISH UPLANDS – A PERSONAL VIEW**

Much of upland Scotland is degraded ecologically through centuries of deforestation and overgrazing. In any other part of the world, sub-Saharan Africa, Indonesia, the Amazon basin, such landscapes would be regarded as a priority for restoration, but in the UK we simply perpetuate this situation through agricultural subsidies. That is the view of author ecologist and journalist George Monbiot in his book "Feral".

In the book, Monbiot attacks sheep farming as "a slow-burning ecological disaster, which has done more damage to the living systems of this country than either climate change or industrial pollution. Yet scarcely anyone seems to have noticed."

While I would not entirely agree with Monbiot, he has a point. Just this week I was in a forest in Southwest Scotland, looking across the adjacent open hill ground. What is always striking in these situations is the contrast between the forest and the sheep ground. Here, in the forest, stood at least 350 tonnes of utilisable timber per hectare, compared with perhaps one ewe and lamb per hectare on the other side of the valley. In biodiversity terms too there was more variety within the forest than on the open hill where there were a few species of grass and some rushes. My question as always is; as a nation are we making the best use of the land or is a different balance more appropriate?

There is huge potential to expand the area of woodland in upland Scotland and if we truly want to have a one planet solution to human development, as indeed we must, then the production of home grown timber has to be part of the answer.

British forestry or perhaps more specifically Scottish forestry is a success story. Last year between the private and state sectors, the industry delivered over 10 million tonnes of timber to UK timber processors or about 35% of UK timber consumption. The majority of this was spruce from the upland plantations established in the 60s, 70s and 80s. While there are many things that should have been done differently in these old style plantations, they are now showing their worth in timber production. The balance of UK timber consumption last year however was imported, and not all of it would have been be legally felled or sourced from properly managed forests.

Recently SAC carried out a study comparing upland forestry with sheep farming entitled “Eskdalemuir – A comparison of forestry and hill farming; productivity and economic impact”. The main headline findings were:

- Forestry produces three times the economic output of farming before subsidy
- Forestry’s spending in the local economy is double that of farming
- Forestry trades at a significant surplus, farming at a loss, before subsidy
- Forestry supports the same number of jobs as farming
- Farming requires a public subsidy of £22,600 per full time job to survive – Forestry receives a modest contribution (one sixth that of farming) towards the provision of public benefits

The case for further expansion of productive forestry in the uplands of Scotland is, therefore, a powerful one. We need to recognise that the plantation forests established at the end of the last century were intensive in their approach, and to get the balance right we need to be more extensive. In crude terms, we now need about 15% more land to produce the same volume of timber. This is because since around 1988 the forest industry has been gradually diversifying the structure of its woodlands to meet biodiversity objectives. This diversification has been acknowledged, and UK forestry is now a world leader in forest certification. The first edition of the UK Woodland Assurance Standard was produced in 1998 and is now the certification standard for both the FSC and PEFC certification schemes in the UK.

The timber industry absorbs more carbon from the atmosphere than it emits, produces large quantities of quality timber for a wide variety of uses, supports rural employment and development, provides a wide range of recreational uses and also supports a wide variety of wildlife. The question for us all is; what is the right balance of new afforestation against other land uses, such as farming, windfarms and, as George Monbiot would advocate, rewilding parts of the uplands? The inescapable answer however is that we need more trees.

As an industry we have overcome many of the past problems but productive forestry in the UK is now at a crossroads. The decision by the Scottish and UK Governments to fully devolve the powers of the Forestry Commission should be broadly welcomed as the Scottish

Government is recognised as the most actively supportive of forestry in the UK.

The politicians must ensure that state owned forests retain a primary role as a timber producer. Although state owned forests have a particular role in providing recreational and other public benefits, it is the timber they produce that helps to sustain high quality, well paid, year round employment within local communities.

Scotland now has a world class sawmilling and timber processing industry, which has been created in response to the timber coming from both privately owned and state forests. The Scottish Government must play a role in ensuring that this timber supply is sustained. It has been a source of great encouragement across the industry to see the level to which the Scottish Government has recognised the importance of sustainable timber production. However the lack of productive planting in recent years will inevitably lead to a fall in timber production in around 20 years' time if new planting is not undertaken, and the uplands are perfectly suited to this purpose.

There are a number of areas where there is some concern however, and in particular the future of Forest Research and the Northern Research Station next to the Edinburgh University Campus at Bush. Forest Research is generally highly regarded within the industry and at a time when there are increasing threats from introduced pests and diseases there is a significant role for Forest Research to play. Forest Research have also been instrumental over the years in developing and trialling new techniques and ensuring that we have a modern and forward thinking industry. There will be some concern regarding the future role and funding for Forest Research within the Scottish Budget. I would hope that the future of the Forest Research as a vital part of the support for the forest industry can be secured either within Forestry Commission Scotland, independently or, as with SRUC, perhaps within the University itself.

There must also be concern over how port controls, inspections and border bio-security measures are to be co-ordinated among governments north and south of the border in future. While the Scottish Government has taken a lead in this, it is important that high levels of vigilance are maintained. In recent years poor border biosecurity and in particular the import of live plants has contributed to the introduction of several forest pests. We must learn from this and ensure that the

Forestry Commission has sufficient resources to carry out sufficient plant health inspections.

To return to George Monbiot, he is correct that the continuation of large scale upland sheep farming is not an environmentally sustainable or productive use of land and that a better balance has to be found. Part of finding a sustainable balance that also meets human needs has to be an increase in the area devoted to productive forestry. The area required to achieve this, relative to the area available, is small, so there is significant scope to ensure this is done well, and in balance with other land uses.

Stuart Wilkie

Stuart Wilkie graduated from Edinburgh University with a degree in Ecological Science with honours in Forestry in 1983. He is a Fellow of the Institute of Chartered Foresters and works for Scottish Woodlands as their Certification and Environment Manager. His job is to lead for the company on all matters relating to the environment and to run the company's FSC and PEFC forest certification schemes.

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## **CORN BUTTERCUPS IN FIFE**

Following the exceptionally long and hot summer of 2006, I routinely visited the local Kirkcaldy harbour area to see what might be flourishing, as observations had produced a number of unusual aliens, imported over the years. In the most likely area, I came across a clump of leaves to which I could not put a name so I uprooted a small amount and came home; after some unproductive hours perusing illustrations in various books, I potted the clump, placed it in in our herb garden, and waited. By April 2007 it had grown considerably and a few small yellow blooms began to appear; this time it did not take long to ascertain it was small-flowered buttercup, *Ranunculus parviflorus*. Mentioned in the Floras as "not occurring in Scotland", it is usually found in arable ground, including in parts of England. There are five unconfirmed records in VC85, including from Charlestown in 1871 (Young, 1936); if correct, presumably having come in with ship's ballast.

During April 2008 blooms again began to show, both in our garden and at the original harbour site, prompting me to decide to write up the plant's occurrence and send a (not very good) picture to this magazine (see Ballantyne (2008)). In April 2009 and the spring of subsequent

years, neither site had any hint of the buttercup. So my surprise can be imagined when, during an inspection of our ‘tattie patch’ in May 2014 to ascertain if either Thornapple or Apple of Peru had come up again, I realised there were a few clumps of vaguely familiar leaves; I was well away from the original point of introduction, but having carefully cordoned off the favoured spots, a few days later tiny yellow petals became visible! Fortunately Sandy Edwards then came down on a chance visit with his camera and was pleased both to see a rarity and to take good photos of it [see inside front cover].

A not too dissimilar sibling is Corn Buttercup, *R. arvensis*, the occurrence of which in Fife was summed up in the 19th century as “one of the occasional cornfield weeds frequently found among fields of wheat, etc. (Howie, 1872).; there are about half-a -dozen localised records, most in the 1870s, none in Kinross. This appears to be the case elsewhere in Scotland, perhaps even rarer in some parts, e.g. in the west it was considered to have been “a very rare plant in Scotland” while by 1887 “it had disappeared entirely from the Glasgow area” (Dickson et al, 2000).

As with *R. parviflorus*, Corn Buttercup (or Corn Crowfoot) turned up in Fife as a grain import, again at Kirkcaldy harbour, this time in 1963, not long after I’d discovered it to be a good source for unusual plants; I’d become friendly with E.P. (Betty) Beattie and she determined the identity. This weed of grain crops gained a fearsome reputation in England during the 19th century on account of its large, hooked achenes; “a nasty weed of cornfields” comments Grigson (1958), who goes on to list its numerous colloquial names , amongst them Hellweed, Devil’s claws, Devil’s currycomb. Cogweed; these are also discussed by Blackmore (1985). Owing to its scarcity in Scotland, I’ve traced no such comparable local appellations north of the border.

George Ballantyne, Kirkcaldy

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## ILLUSTRATIONS OF NON-NATIVE INVADERS

*Impatiens glandulifera* Royle. (synonym *I. roylei* Walp.)



Usually called **Indian Balsam** or **Himalayan Balsam**, it also known as Jumping Jack, Policeman's Helmet, Glandular Balsam, Indian Touch-me-not, Kiss-me-on-the-mountain, Bee-bums, Stinky-pops, Ornamental Jewelweed, Pink Peril and Poor Man's Orchid. This diploid species ( $2n=2x=18$ ) is native in wet forests up to 4000m in the Himalayas of Pakistan, India and Nepal. Genus *Impatiens* is in the Balsaminaceae; recent molecular phylogenetic studies have resulted in this family being transferred from the Geraniales to the Ericales.

*Impatiens glandulifera* was first introduced to Britain in 1839 by Dr. Royle, as a garden plant using seed from Kashmir. It was illustrated, as *Impatiens glanduligera*, by W. Fitch in Curtis' Botanical Magazine in 1843. Because of its attractive flowers, *I. glandulifera* gained popularity in Victorian gardens where it quickly established itself in moist habitats. It was first described growing in the wild in Britain in 1855 and has now spread throughout Britain, from Isles of Scilly to Shetland. It does not

grow above an altitude of about 200m (although it grows at higher altitudes in continental Europe) and thus is absent from much of Scotland. From Britain, it was introduced to Europe as an ornamental and has subsequently spread widely. It now occurs from Finland (where it was not recorded in the wild until 1947) to Spain, and from UK to Croatia. It is also naturalised in North America, New Zealand and Japan. It has been identified as a threat in many countries; three states in the USA describe it as a 'noxious weed'.

*Impatiens glandulifera* is a large, succulent, rapidly-growing herbaceous plant and, at a height of up to 3m, is the tallest annual plant growing wild in Europe. The root system is shallow, within the top 15cm of soil; additional adventitious roots may arise from any stem nodes that are in contact with the ground. The hollow stem is succulent with swollen nodes, up to 5cm in diameter, jointed and ridged, pale green with pink markings. It sometimes branches in the upper part. The simple stalked lanceolate leaves are opposite or in whorls of three, with stipules. The midrib is often red-tinged and the leaf margins are serrated with red-tipped teeth, which become glandular near the leaf bases. There are also conspicuous thick glandular hairs on the stipules. The glands are perhaps the source of the musty 'cat-pee' smell when the leaves are crushed.

From June-October, the pendulous flowers arise in racemes from the leaf whorls. The zygomorphic bisexual flowers have three sepals, the large lowest (posterior) sepal is slipper-shaped and narrowing to form a nectar-producing spur. There are five petals, a large apical one and two pairs of fused laterals form a lip. The flowers are rose-pink to dark purple, occasionally white, and have been described as having a smell of peaches. The five stamens are fused distally around the five-celled ovary, with a single fused style and five separate minute stigmas. The flower structure, with a spurred lower sepal, fused lateral petals and distally fused stamens, is unique to the family. The flowers produce copious nectar (up to 0.5mg per flower per hour), which attracts bumble bees, honey bees, moths and wasps, although some flowers are cleistogamous, self-pollinating without opening.

Ripe fruits are bright green fleshy capsules up to 5cm long hanging on red stalks. When ripe, the five-celled capsule is explosive and sensitive to the slightest touch, scattering 2-16 seeds up to 7 metres from the plant. Each plant can produce up to 4,000 seeds; each square metre of a dense population produces up to 32,000 seeds. The seeds

are black, ridged and about 3mm long. They float, so are spread along waterways, can germinate under water, and remain viable for at least 3 years. They need chilling to induce germination. Germination to flowering takes about 3 months; the young plants are vulnerable to slug damage. Mature plants are in flower for about 3 months.

*Impatiens glandulifera* is found in a wide range of soils, pH 4.5-7.7, particularly in disturbed semi-shaded sites along ditches and river banks (especially nutrient-rich waterways polluted by agricultural run-off) and in wet meadows and damp waste ground. The plants are killed by frost in late spring and early autumn, which might explain their absence from higher altitudes. It spreads by seed and, once established, forms dense stands that outcompete the native flora, displacing for example *I. noli-tangere*, the only native *Impatiens* species. The creation by *I. glandulifera* of dense shade in the summer prevents growth of other smaller species and the dense accumulation of dead stems persisting through the winter can suppress the seedlings of potential competitors in the spring. This may result in bare river banks that are vulnerable to erosion when the river is in flood, and which provide opportunities for colonisation by other aggressive invaders such as *Fallopia japonica*.

*Impatiens glandulifera* has become an important nectar source for bumble bees, and honey bee keepers welcome it as a source of nectar for good honey production. However, it is also thought that insects visit *Impatiens* flowers in preference to other species in the vicinity that as a result set less seed, again giving *Impatiens* a competitive advantage over the native flora. This species has no known uses other than as a nectar source and as a constituent of Dr Bach's Flower Remedies (produced by Bach Flower Remedies, Wimbledon). Although *Impatiens glandulifera*, and 37 other different herbs are advertised as Flower Remedies for a variety of conditions, the results of strictly controlled medical tests do not support their effectiveness.

*Impatiens glandulifera* is listed with certain other non-natives in Schedule 9 Part 2 of *The Wildlife and Countryside Act 1981* which in Section 14 (1) makes it illegal to "plant or otherwise cause to grow in the wild" those plants on the list. It was added to the original list by *The Wildlife and Countryside Act 1981 (Variation of Schedule 9) (England and Wales) Order 2010*. Offences are punishable with fines, imprisonment or both, according to the circumstances. It is not listed among the species for which sale is prohibited by *The Wildlife and Countryside Act 1981 (prohibition on Sale etc. of Invasive Non-native*

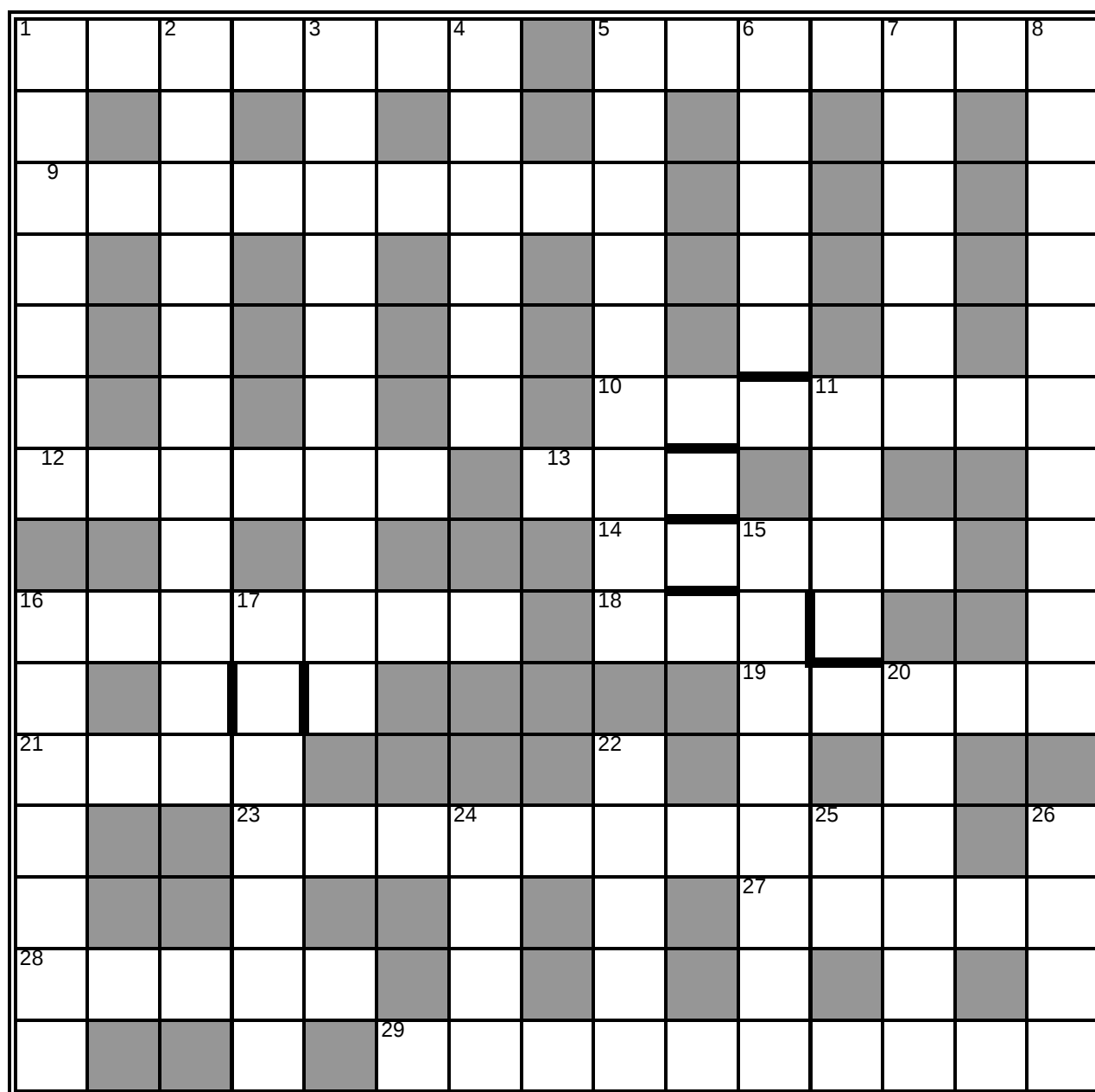
*Plants*) (*England*) *Order 2014* and it is still offered for sale (for example by Plant World Seeds of Newton Abbot, Devon). For Scotland, *The Wildlife and Natural Environment (Scotland) Act 2011* also adds amendments to the 1981 Act and it is now an offence to introduce it into the wild by a 'reckless' act as well as intentionally. However, seed is still intentionally introduced to the wild by members of the public, who are unaware of the regulations. It is easily spread, not only by the explosive dehiscence of the capsules, but also by seed dispersal over long distances by rodents and flowing water, and unintentionally by human activities such as the transport of top soil, river gravel and building rubbish, 'fly-tipping' of garden rubbish, carried on shoes and perhaps when carrying picked flowers. Several seedlings appeared in our front garden after Janet brought material home to draw.

Control on a national scale is impossible and it has been estimated that to eliminate it from the UK would cost up to £300 million. Control within a restricted area may be more successful, but along rivers and streams management must start in the upper reaches to avoid re-colonisation by seed brought down by the current. Selective weedkillers such as 2,4-D and triclopyr, and non-selective agents like glyphosate are effective, but likely to have a detrimental effect on the habitat. Because *I. glandulifera* is annual and often localised within discrete populations, mechanical or manual removal before seed-set is successful, but it is costly, time-consuming and requires annual repetition until the seed bank is exhausted. Cattle will eat it but only three insect herbivores have been observed feeding on the leaves: *Aphis fabae*, *Impatiens balsamines*, and the Elephant Hawk Moth caterpillar. Of several potential biological control agents, one *Puccinia* fungus rust species is undergoing host specificity trials, but further research is required.

Adrian and Janet Dyer

## PHYTOLEXICON CRUCIFORMIS B.S.SCOT EX WORD

**XWord 14.** The solutions to clues are mostly botanical names of families, genera or species and including some cryptogams. There are also words from botanical glossaries and some non-botanical English words, marked (English). Two-letter chemical elements are given as clues where they happen to occur. Solutions do not enter grey squares or cross thick lines. Further guidance is to be found at <http://www.botanical-society-scotland.org.uk/xwordhelp>



## ACROSS

- 1 and 5a Study of structural geology, excluding carbon but including a very big tree. (7, 7)
- 5 See 1a.
- 9 US its goal, but is native of Europe and Asia (Asteraceae). (9)
- 10 See 2d.
- 12 Subject for artist (not botanical). (6)
- 13 Is American as apple pie? (3)
- 14 Not in element 53, but add element 16 and it will climb. (Icacinaceae) (5)
- 16 Freezing school bedroom taken over by rodents. (7)
- 18 Found in all animals and plants, forwards and backwards. (3)
- 19 Geometrical solids found on trees. (5)
- 20 *Humulus lupulus* found here, in toastie. (4)
- 23 Singe perhaps, disturbing pH0 Scottish river in which a clade of algae are found. They originated in the late Triassic, and have for several hundred million years been major producers of  $\text{CaCO}_3$  deposits in freshwater lakes. They are widely (but not universally) thought to be the ancestors of all land plants. (10)
- 27 Found afterwards in lanceolate radical leaves, but not botanical. (5)
- 28 Cultivate or hoe this flower. (5)
- 29 Lichen flaunts pert arias and element 92. This lichen genus has thick zoned thalli with coarse 'warts' containing soredia or apothecia. It grows on strongly calcareous microsites on bark or on limestone rocks. Some species were formerly used for dyeing. (Pertusariaceae). (10)

## DOWN

- 1 Pollen found in these. (7)
- 2 and 10a. Tom is a canny Tory pest (Y not) to cultivate a fern on wet mountain rocks in Scotland. (11, 7)
- 3 I clog more, I make short-chain peptides. (9)
- 4 Order artists and beer; aristocrats order food for duck. (6)
- 5 Moon pulverised in geoid containing palms. (Arecaceae) (9)
- 6 Sacs contain element 92 and spores. (4)
- 7 Not lentils from an Indian restaurant (Iowa) but a genus of Compositae (6)
- 8 Cars seem up to crunching Dhobi's nut. (Anacardiaceae) (10)
- 11 A component of many lacklustre ecosystems. (4)
- 15 Cat slid on yttrium seeking poultry on foot (Poaceae). (8)
- 16 Red *Rosa* changes and eats insects. (7)

- 17 Plant agrees with description in flora, perhaps, and may cause fire. (7)
  - 20 Ten are tidier in scene at Erica's house. (6)
  - 22 Spring into growth in Spring? (5)
  - 24 Flower in 16d. (4)
  - 25 Element 73 thanks you, colloquially, for being a tease? (2)
  - 26 Epiphytic, tropical orchid genus in slipper I admire? Yes, but not Cypripedium. (4)
- 

## **UK FUNGUS DAY, 11 October 2015**

The British Mycological Society has launched a website for its flagship outreach activity, UK Fungus Day: <http://www.ukfungusday.co.uk/>.

The website will provide a platform for discourse between individuals who have a common interest in fungi and fungal science, encouraging them to participate in UK Fungus Day outreach events and enhancing public knowledge of the fungal kingdom.

The aim is to create a 'communication' network between experts working in fungal research at universities, institutes and within the UK business sector; and schools, colleges, museums, enthusiasts and the wider audience. The platform will enable the translation of cutting edge research data into accessible knowledge that can be used by teachers and educators in schools and colleges, putting fungal science firmly within the grasp of the national curriculum, whilst providing the impetus for academics to fulfil their public engagement objectives. The platform will encourage interdisciplinary involvement, with science and the arts working in synergy.

UK Fungus Day initiates the Society of Biology's Biology Week activities in October. UK Fungus Day will support public events nationwide around the weekend of 10 & 11 October 2015, covering topics such as fungal science, fungal fun for families, fungal walks and conservation, fungal foods and fungal art and literature.

There will be a Fungi Drop-in Day at Edinburgh Botanic Garden all day Sunday 11<sup>th</sup> October.

## THE POSIE

The watercolour of “The Posie”, shown on the inside front cover, is part of a series of plant and animal illustrations by Peggy Edwards, a freelance botanical and natural science illustrator based in California. David Sibbald, a Burns speaker and writer, has written an analysis of the poem and Peggy Edwards has added descriptions of each flower. You can see some of her other images at <http://www.sierranatureprints.com>.

### The Poem

In his poem, “The Posie,” Robert Burns mentions all the flowers depicted in the watercolour painting and weaves them into one posie. Burns’ words combine tenderness with truth to nature. Here you will find poetry combined with passion and an exquisite expression. In the poem, each flower is given an attribute, such as the Daisy for simplicity and the Violet for modesty.

Although the lover could never form the flowers and wildlings all in the one month, Burns can “pu’ a posie” in spite of the seasons. Within the poem he also mingles the hours of the day as well as the seasons of the year. The rosebud bathed in the dew of the early morning and the woodbine dropping diamonds reflected from the evening star are superb analogies. To weave this together - into one posie - creates a space of time from morn till dewy eve that is but a moment in love’s young dream.

The words to the poem were suggested to Burns by a doggerel ballad which his wife, Jean, used to sing to him. Burns was particularly struck with the beauty of the tune and wrote new lyrics that were forwarded to Johnson for inclusion in the Scots Musical Museum.

The watercolour stays true to Burns’ words by depicting the flowers Burns chose to include in the song all of which are native to the Scottish countryside: the primrose, pink, rose, hyacinth, lily, daisy, hawthorn, woodbine, and violet. Also included are the “diamond draps o’ dew” and the “silken band o’ luve” as these represent the recipient’s “een sae clear” and the lover’s constancy.

David Sibbald

### **The Posie by Robert Burns**

O luve will venture in where it daurna weel be seen  
O luve will venture in where wisdom ance has been  
But I will down yon river rove, amang the woods sae green  
And a' to pu' a posie to my ain dear May.

The primrose I will pu', the firstling o' the year  
And I will pu' the pink, the emblem o' my dear  
For she is the pink o' womankind, and blooms without a peer  
And a' to be a posie to my ain dear May.

I'll pu' the budding rose, when Phoebus peeps in view  
For it's like a baumy kiss o' her sweet, bonie mou'  
The hyacinth's for constancy wi' its unchanging blue  
And a' to be a posie to my ain dear May.

The lily it is pure, and the lily it is fair,  
And in her lovely bosom I'll place the lily there  
The daisy's for simplicity and unaffected air  
And a' to be a posie to my ain dear May.

The hawthorn I will pu', wi' its locks o' siller grey  
Where, like an aged man, it stands at break o' day  
But the songster's nest within the bush I winna tak away  
And a' to be a posie to my ain dear May.

The woodbine I will pu' when the e'enning star is near  
And the diamond draps o' dew shall be her een sae clear  
The violet's for modesty, which weel she fa's to wear  
And a' to be a posie to m

I'll tie the posie round wi' the silken band o' luve  
I'll place it in her breast, and I'll swear by a' above  
That to my latest draught o' life the band shall ne'er remove  
And this will be a posie to my ain dear May.

### **The Flowers**

The Common Primrose, *Primula vulgaris*, is a perennial plant with a basal rosette of leaves and pale yellow flowers borne on single stems. The centre of each flower is usually deep yellow. Primroses are unusual in that they have two types of flowers, pin flowers with the female style

prominent; and thrum flowers with the male stamens prominent. Fertilization can only happen between a pin flower and a thrum flower. Primroses bloom in early spring; in fact the name primrose comes from the Latin *prima rosa* meaning first rose.

Maiden Pink, *Dianthus deltoides*, is a perennial plant native to Europe and Asia. Its toothed flowers, favorites for butterflies and moths, are about 15 to 20mm wide and are usually pink with white spots although occasionally white flowers may be found. Pinks prefer calcareous and rocky soil and, therefore, make an excellent addition to a rock garden.

Dog rose, *Rosa canina*, is native to Europe and Western Asia. It is present in hedges and woods, and on riverbanks. It may be found on the margins of fields, especially in the shelter of dykes. Its five-petaled flowers are usually soft pink, but can vary from white to deep pink. Stems of the dog rose are covered with prickles, needle-like extensions of the plant's cortex and epidermis, which allow the shrub to climb into trees. In the autumn the dog roses bare branches are graced with bright red rose hips high in vitamin C.

Wild Hyacinth or Bluebells, *Hyacinthoides non-scripta*, are the typical bluebells of the bluebell woods found throughout Britain. *Hyacinthoides* means "hyacinth-like" and *non-scripta* means "unmarked." The bluebell's pleasant scented bell-shaped flowers are usually a deep lavender-blue and hang from one side of the plant's stem. To the Scots the English Bluebell is called the Wild Hyacinth; to the English the Bluebells of Scotland are the Harebell, *Campanula rotundifolia*, which has light blue flowers and a more open bell shape.

Lily of the Valley, *Convallaria majalis*, is a highly poisonous member of the family *Asparagaceae*. Blooming in late spring, this shade-loving perennial spreads by rhizomes into extensive cloning colonies. The plant's flowering stems have two leaves and five to fifteen white, bell-shaped, sweet-scented flowers on a raceme. Red-orange berries appear after flowering.

Common Daisy, *Bellis perennis*, is to many people the quintessential daisy. It is native to Europe but has spread throughout North and South America as well. As with most other members of the family *Asteraceae*, each daisy "flower" head is actually a miniature bouquet containing a center of petal-free "disk" flowers and a circle of "ray" flowers each with one petal. The Common Daisy has white ray

flowers frequently tipped in red, and yellow disk flowers that are borne on leafless stems. Sometimes called the Lawn Daisy it spreads with rhizomes and is considered by some to be a pest, although others welcome its sunny appearance.

Hawthorns, *Crataegus monogyna*, are large shrubs or small trees with dull brown bark having vertical orange cracks. Young stems are covered with sharp thorns. Hawthorn flowers have five white petals that are produced in corymbs of 5 to 25 flowers that bloom in late spring. In the autumn the dark red haws appear each containing a single seed. These are an important food source for many birds such as waxwings and thrushes that spread the seeds throughout the countryside in their droppings.

In Scotland hawthorns, also known as *may-trees* are the commonest tree planted in hedgerows, providing habitat for numerous species such as hawthorn shield bugs, yellowhammers, wood mice and slow worms.

Woodbine or Honeysuckle, *Lonicera periclymenum*, is a clockwise-twining climber found growing in hedgerows and woodlands. It has creamy-white flowers that are trumpet-shaped and extremely fragrant and open in the evening to greet pollinating hawk moths. Flowering is followed by the development of bright red berries.

Dog Violet, *Viola riviniana*, so called because it is not the sweet scented garden violet, is a lovely little violet found in woodlands on all types of soil. The dog violet has hairless, ovate, heart-shaped leaves with rounded teeth. Blooming in early spring, the deep to pale “violet” flowers have five overlapping petals and a backward-pointing notched “spur.”

Peggy Edwards

# **THE BOTANICAL SOCIETY OF SCOTLAND SCIO ANNUAL REPORT AND FINANCIAL STATEMENTS FOR THE YEAR TO 30 APRIL 2015**

**Registered charity no. SC 016283**

## **Report of Council**

The Council has pleasure in presenting its report for the year to 30 April 2015.

## **Constitution**

The Botanical Society of Scotland was established on 14 April 1836 as the National Botanical Society of Scotland. It became the Botanical Society of Edinburgh and its constitution was revised in June 1984, with a further change of name to the Botanical Society of Scotland in 1991. The management of the Society is in the hands of an elected Council. The Society was incorporated as an SCIO on 15 April 2014.

## **Objectives**

The objectives of the charity are to advance the study of plants and to spread botanical knowledge.

## **Principal activities**

1. Arrangement of botanical lectures in the main cities of Scotland
2. Arrangement of excursions for the study of plants in the field
3. Publication of a Journal reporting on botanical research
4. Publication of Newsletters which include less academic reports, news of other societies, coming activities and reports of field meetings
5. Periodic conferences are arranged on topics of special interest.

Activities 1-4 have been advanced in 2014/15.

## **Council members**

The Council members during the year are listed above.

## **Council**

1. The BSS is Scottish Charitable Incorporated Organisation No. 016283 and is governed by a Constitution. Members of the Society appoint people to serve on the Board and take decisions on changes to the Constitution. The Board controls the activities of the Society and is responsible for monitoring and controlling the financial position of the Society. The BSS is not affiliated to any other body.
2. Trustees are elected by the Members at the AGM. At each AGM all Trustees shall retire from office but are re-eligible for election. Those who have served on Council for a period of 3 years shall automatically vacate office on expiry of that 3 year period but shall then be eligible for re-election. No external bodies are entitled to appoint trustees.

### **Financial information**

The operating surplus for the year is £1,563.34. Cash assets at 30 April 2015 stood at £66,140.34. The general unrestricted funds of £56,620.28 were available to the Society on that date. Expenditure on behalf of the Urban Flora Project was £2658, including start-up and web-site development costs. It should be noted that the promotion of the Society's Journal and the Printing of the Newsletter are now treated as falling within the stated activities of the Society and associated costs are therefore legitimately expenditures in pursuance of its charitable aims. The Treasurer will make adjustments to the account when it is deemed that there is sufficient stability in the financial markets to increase the revenue earned.

### **Council's responsibilities**

The Council is responsible for keeping proper accounting records which disclose with reasonable accuracy at any time the financial position of the society and to ensure that the financial statements comply with the statutory requirements. They are also responsible for safeguarding the assets of the Society and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

### **Risk management**

The Council has examined the major strategic, business and operational risks which the Society faces and confirms that adequate systems are in place to identify and mitigate those risks.

### **Reserves policy**

The Society maintains its unrestricted funds, which are free reserves of the Society at a level to provide sufficient funds to cover management and administration costs.

### **Membership**

The number of members of the Society remained by and large the same during the year.

### **Taxation**

The Society is a charity and is recognised as such by the Inland Revenue for taxation purposes. As a result there is no liability to taxation on any of its income.

Dr. D.F. Chamberlain, Treasurer, May 2015

**The Botanical Society of Scotland SCIO**  
**Financial Statements for the Year to 30 April 2015**

| <b>Statement of Receipts and Payments</b>               | <b>Accruals</b>         | <b>Accruals</b>         |
|---------------------------------------------------------|-------------------------|-------------------------|
| <b>Year</b>                                             | <b>2015</b>             | <b>2014</b>             |
| <b>Incoming resources:</b>                              | <b>£</b>                | <b>£</b>                |
| <b>Voluntary income:</b>                                |                         |                         |
| Subscriptions                                           | 5,305.89                | 5,731.52                |
| Donations                                               | 119.00                  | 54.00                   |
| Donation – Restricted Fund                              | -                       | 5,000.00                |
| <b>Total</b>                                            | <b><u>5,424.89</u></b>  | <b><u>10,785.52</u></b> |
| <b>Incoming resources from charitable activities:</b>   |                         |                         |
| Journals and publications sold                          | -                       | 8.43                    |
| Editorial Subvention                                    | 3,329.00                | 3,312.00                |
| Royalties,- Journal (Taylor & Francis)                  | 3,191.49                | 6,795.59                |
| Royalties - Publications (EUP)                          | 60.00                   | -                       |
| Miscellaneous (incl. excursion donation)                | 35.00                   | 215.00                  |
| <b>Total</b>                                            | <b><u>6,615.49</u></b>  | <b><u>10,331.02</u></b> |
| <b>Interest &amp; Stock Redemption (£99.74+£216.92)</b> | <b><u>316.66</u></b>    | <b><u>212.41</u></b>    |
| <b>Bank Compensation</b>                                | <b><u>500.00</u></b>    |                         |
| <b>Total receipts</b>                                   | <b><u>12,857.04</u></b> | <b><u>21,328.95</u></b> |

**The Botanical Society of Scotland SCIO**  
**Financial Statements for the Year to 30 April 2015**

|                                                         | <b>2015</b>            | <b>2014</b>            |
|---------------------------------------------------------|------------------------|------------------------|
|                                                         | <b>£</b>               | <b>£</b>               |
| <b>Payments:</b>                                        |                        |                        |
| <b>Costs of generating funds:</b>                       |                        |                        |
| Printing Members' Copies of Journal                     | <b><u>5,576.00</u></b> | <b><u>4,192.00</u></b> |
| <br><b>Charitable activities:</b>                       |                        |                        |
| <i>Directly allocated to activities:</i>                |                        |                        |
| Lecture Expenses                                        | 578.84                 | 411.10                 |
| Excursion costs                                         | 50.00                  | -                      |
| Printing Newsletter                                     | 684.51                 | 1,026.92               |
| Journal Editor Remuneration                             | -                      | 3,640.00               |
| Student Essay Prize                                     | 150.00                 | 200.00                 |
| Student Grants                                          | 600.00                 | 100.00                 |
| Urban Flora Project (data-base development, etc.)       | 2,658.00               | -                      |
| <b>Total</b>                                            | <b><u>4,721.35</u></b> | <b><u>5,078.02</u></b> |
| <i>Support costs:</i>                                   |                        |                        |
| Stationery & Postage                                    | -                      | 1,832.99               |
| Printing                                                | 165.00                 | 165.00                 |
| Insurance                                               | 140.38                 | 140.38                 |
| Web page                                                | 84.00                  | 96.60                  |
| <b>Total</b>                                            | <b><u>389.38</u></b>   | <b><u>2,234.97</u></b> |
| <b>Grand total</b>                                      | <b><u>5,110.73</u></b> | <b><u>7,312.99</u></b> |
| <br><b>Governance costs:</b>                            |                        |                        |
| Subscription Rebate                                     | 20.00                  | -                      |
| Accounting Fees                                         | 170.00                 | 140.00                 |
| Annual Meeting Costs                                    | -                      | 235.00                 |
| Secretary's Expenses (Printer)                          | 177.98                 | -                      |
| Membership Secretary's Expenses                         | 238.99                 | -                      |
| <b>Total</b>                                            | <b><u>606.97</u></b>   | <b><u>375.00</u></b>   |
| <b>Total resources expended</b>                         | <b>11,293.70</b>       | <b>11,879.99</b>       |
| <b>Gross Surplus for the year</b>                       | <b>1,563.34</b>        | <b>9,448.96</b>        |
| <br>Closing cash balance at 30 April 2015               | 16,032.24              |                        |
| Less: opening cash balance                              | 14,685.82              |                        |
| Account surplus                                         | 1,346.42               |                        |
| <b>Gross Surplus (incl. deposit – interest £216.92)</b> | <b>1,563.34</b>        |                        |

**The Botanical Society of Scotland SCIO  
Financial Statements for the Year to 30 April 2015**

**Statement of Balances**

| <b>Year</b>                        | <b>2015</b>             | <b>2014</b>             |
|------------------------------------|-------------------------|-------------------------|
|                                    | <b>£</b>                | <b>£</b>                |
| <b>Bank and cash in hand</b>       |                         |                         |
| Opening balances                   | 14,685.82               |                         |
| Surplus for the year               | 1,563.34                |                         |
| <br>Closing balance                |                         |                         |
| Cash at Bank                       | 16,032.24               | 14,685.82               |
| Cash at Paypal                     | 160.69                  | 116.09                  |
| Cash in CCLA reserve fund          | 49,947.41               | 49,730.49               |
| <br><b>Net Assets (see Note 4)</b> | <b>66,140.34</b>        | <b>64,532.40</b>        |
| <br><b>Reserves</b>                |                         |                         |
| <b>Designated funds</b>            |                         |                         |
| Symington Grieve Trust Fund        | 500.00                  | 500.00                  |
| Sir W. W. Smith Lectureship Fund   | 300.00                  | 300.00                  |
| Urban Flora Project                | 2,342.00                | 5,000.00                |
| Botany of the Lothians Fund        | 2,258.06                | 2,258.06                |
| <b>Total</b>                       | <b><u>5,400.06</u></b>  | <b><u>8,058.06</u></b>  |
| <br><b>General funds</b>           | <b><u>60,740.28</u></b> | <b><u>56,474.34</u></b> |
| <b>Total Funds</b>                 | <b><u>66,140.34</u></b> | <b><u>64,532.40</u></b> |

The notes below form part of these financial statements.

The financial statements have been approved by Council.

Dr. D.F. Chamberlain, Treasurer  
May 2015

## **Notes to the Statements of Receipts & Payments**

### **Note 1 Accounting Policies**

#### **Receipts and Payments**

The accounts are presented on the basis of receipts and payments.

#### **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 Liability**

In view of the time elapsed, the liability to the Tenth International Botanical Congress (held in 1964) has been written off. There is therefore a discrepancy between the 2013-14 and the 2014-15 sets of Accounts with regard to the presentation of this liability.

### **Note 5 Commitments and contingent liabilities**

There are no contingent liabilities at the year end (2014 £nil).

## **Independent examiner's report to the council members of Botanical Society of Scotland**

### **Respective responsibilities of trustees and examiner**

The charity's trustees are responsible for the preparation of the accounts in accordance with the terms of the Charities and Trustee Investment (Scotland) 2005 Act and the Charities Accounts (Scotland) Regulations 2006. The charity trustees consider that the audit requirement of Regulation 10(1) (d) of the Accounts Regulations does not apply. It is my responsibility to examine the accounts as required under section 44(1) (c) of the Act and to state whether particular matters have come to my attention.

### **Basis of independent examiner's statement**

My examination is carried out in accordance with Regulation 11 of the Charities Accounts (Scotland) Regulations 2006. An examination includes a review of the accounting records kept by the charity and a comparison of the accounts presented with those records. It also includes consideration of any unusual items or disclosures in the accounts and seeks explanations from the trustees concerning any such matters. The procedures undertaken do not provide all the evidence that would be required in an audit and, consequently, I do not express an audit opinion on the accounts.

### **Independent examiner's statement**

In the course of my examination, no matter has come to my attention

1. which gives me reasonable cause to believe that in any material respect the requirements:

- to keep accounting records in accordance with section 44(1) (a) of the 2005 Act and Regulation 4 of the 2006 Accounts Regulations, and
  - to prepare accounts which accord with the accounting records and comply with Regulation 9 of the 2006 Accounts Regulations
- have not been met, or

2. to which, in my opinion, attention should be drawn in order to enable a proper understanding of the accounts to be reached.

*D. Millar, Edinburgh 2015*

## **BSS NEWS – INFORMATION AND GUIDELINES FOR CONTRIBUTORS**

The Newsletter of the Botanical Society of Scotland  
ISSN 0967-5922

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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. 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](http://www.botanical-society-scotland.org.uk)) and the following list, but please don't feel constrained by it. New ideas are welcome. Regular contributions include the following items:

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

- Botanical notes, news items, announcements of future events, reports of meetings attended, correspondence, small ads., etc.
- Book reviews.
- Crosswords and quizzes.
- Illustrations, including paintings, photographs and line drawings. 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 A4 pages in MS Word 2010 using Arial font (size 15 for major text, 18 for main headings and 14 for references). And acknowledgements. 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. You can submit articles in this format using the template on the BSS website.

#### ***Illustrations***

The cover is the display area for colour pictures. Please include the name of the photographer or artist with all images. Line drawings, maps or graphs within the text must be in black and white or greyscale.

#### ***Submission***

Please send your contributions to the Receiving Editor by:

- post at the address above,
- email to [jill.thompson99@gmail.com](mailto:jill.thompson99@gmail.com),
- or through the BSS website at <http://www.botanical-society-scotland.org.uk/content/bss-news-newsletter-botanical-society-scotland>.

When sending something by post please phone 0131 258 2358 or email [jill.thompson99@gmail.com](mailto:jill.thompson99@gmail.com) to let Jill know something has been posted.

**The LAST deadline for the next issue will be 15<sup>th</sup> January 2016. Earlier submission would be appreciated.**

## Back cover pictures

### Outside

An example of a species description developed for the Urban Flora: *Veronica chamaedrys*, Germander Speedwell. Image by John Grace. Map data from BSBI / NBN. See Page 8.

### Inside

*Top:* The stages of the painting of “The Posie” by Peggy Edwards. See page 31.

*Left:* The final watercolour illustration of “The Posie” by Peggy Edwards. See page 31.

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## SOLUTION TO PHYTOLEXICON CRUCIFORMIS NO. 14

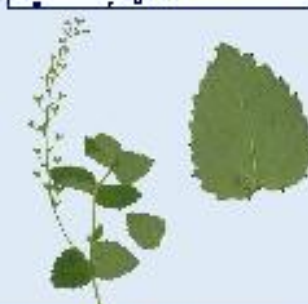
|    |   |   |   |    |   |    |   |    |    |    |    |    |    |   |   |   |    |   |
|----|---|---|---|----|---|----|---|----|----|----|----|----|----|---|---|---|----|---|
| 1  | T | E | C | T  | O | N  | A |    | 5  | G  | R  | A  | N  | D | I | S |    |   |
|    | E |   | Y |    | L |    | R |    | E  |    | S  |    | A  |   |   | E |    |   |
| 9  | T | U | S | S  | I | L  | A | G  | O  |    | C  |    | H  |   |   | M |    |   |
|    | R |   | T |    | G |    | L |    | N  |    | U  |    | L  |   |   | E |    |   |
|    | A |   | O |    | O |    | E |    | O  |    | S  |    | I  |   |   | C |    |   |
|    | D |   | P |    | M |    | S |    | 10 | M  | O  | N  | 11 | T | A | N | A  |   |
| 12 | S | I | T | T  | E | R  |   | 13 | M  | O  | M  |    | R  |   |   |   | R  |   |
|    |   |   | E |    | R |    |   |    | 14 | I  | O  | 15 | D  | E | S |   | P  |   |
| 16 | D | O | R | 17 | M | I  | C | E  |    | 18 | D  | N  | A  | E |   |   | U  |   |
|    | R |   | I | A  | C |    |   |    |    |    | 19 | C  | O  | N | E | S |    |   |
| 21 | O | A | S | T  |   |    |   |    | 22 | S  |    | T  |    | E |   |   |    |   |
|    | S |   |   | 23 | C | H  | A | 24 | R  | O  | P  | H  | 25 | Y | T | A | 26 | E |
|    | E |   |   |    | H |    |   | O  |    | U  |    | 27 | L  | A | T | E | R  |   |
| 28 | R | H | O | E  | O |    | S |    | R  |    | I  |    | E  |   |   | I |    |   |
|    | A |   |   | S  |   | 29 | P | E  | R  | T  | U  | S  | A  | R | I | A |    |   |

# The Posie



Peggy Edwards

**Family:**  
**Plantaginaceae**



**Germander Speedwell**  
*Veronica chamaedrys*



**General description**

A sprawling and rather hairy herbaceous plant, 20-40 cm tall, with bright blue flowers, 8-12 mm, from April to July. Leaves in *opposite pairs*, *no stalks*. There is a white 'eye' in the centre of the flowers. Flowers are in *loose spikes coming from leaf-axils*. There are several common Speedwells, but only this one has two opposite rows of long hairs on the stem.

**Similar species**

Flowers solitary:

Common Field Speedwell (*Veronica persica*) leaves alternate and with stalks; Grey Field Speedwell (*Veronica arvensis*) Very small plant with tiny flowers; Ivy-leaved Speedwell (*Veronica hederifolia*) Leaves stalked with few large teeth.

Flowers in racemes or spikes:

Heath Speedwell (*Veronica officinalis*) Lilac flowers, leaves only shallowly-toothed, and oval not pointed; Wood Speedwell (*Veronica montana*) Very like Germander but stems hairy all round, leaves larger (2-3 cm long), opposite and stalked; flowers pale lilac-blue. Thyme-leaved Speedwell (*Veronica serpyllifolia*). Leaves are untoothed, flowers very pale blue.

**Notes**

Found in many types of grassland, even in grazed situations. Often seen at the base of walls. Tolerates a wide range of soil types.

Food plant for some species of butterfly.

Used in former times: to cure jaundice, in Jersey to cure indigestion.

|                              |   |  |
|------------------------------|---|--|
| Agricultural                 |   |  |
| Walls and rocks              | ✓ |  |
| Craggs and quarries          |   |  |
| Waste ground                 |   |  |
| Gardens, parks and ground    |   |  |
| Grasslands                   | ✓ |  |
| Inland water, wetlands       |   |  |
| Marine and coastal           |   |  |
| Roads, paths and pavement    |   |  |
| Woodland, scrub, hedge banks | ✓ |  |