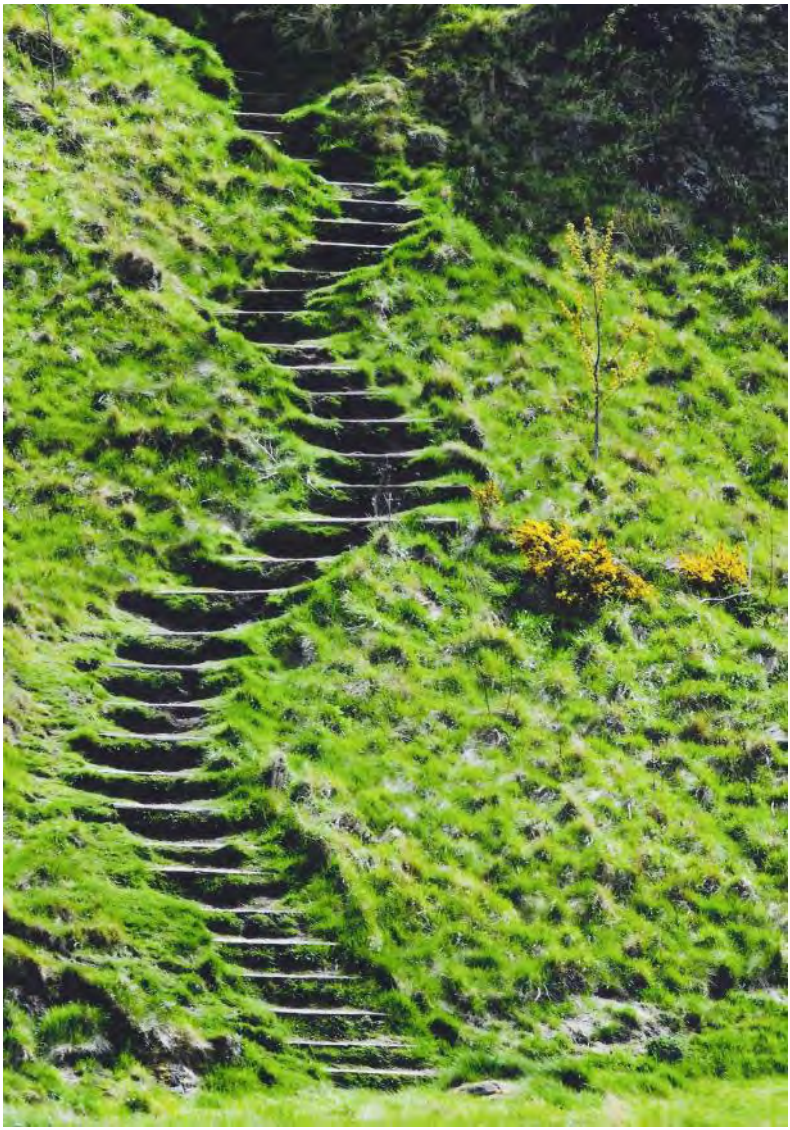
BSBI SCOTTISH NEWSLETTER

Number 36 Spring 2014



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Editorial

The obvious change this year is the inclusion of colour photographs.

That featured on the front cover was chosen for two reasons. It was the winner of the 2013 Photographic Competition as judged by the members attending the Scottish Annual Meeting and represents a symbolic step into colour.

While welcome, it does mean that we will no longer be able to show off the artistic skill of members on the cover. Over the years, the first 20 were drawn by Olga Stewart, then five by Jean Millar, one by Barbara Hogarth and Elspeth Lindsay seven. There have been two black and white photographs.

Once again, I have left it to the contributors as to whether or not they have used the nomenclature from the *New Flora of the British Isles*, Third Edition (Stace 2010), or stuck with the older version.

This year most, but not all contributors, sent articles in our in-house style!

We extend congratulations to Keith Watson on the publication, since our last Newsletter, of his excellent *Flora of Renfrewshire.*

As always, John Hawell has been a diligent proof reader, Jackie Muscott obtained quotations for the colour pages and organised the printing and despatch, with Gwynn Ellis providing the address labels.

My daughter Lorna continues to act as recipient for the submissions, which I like to receive by the end of February.

Lorna.macpherson@ntlworld.com

Peter Macpherson, "Ben Alder", 15 Lubnaig Road, Glasgow G43 2RY

BSBI / BSS Scottish Annual Meeting JANE MACKINTOSH

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

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

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

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

After a break, BSBI Scottish Officer **Jim McIntosh** gave a report of his year's work, including educational workshops and field meetings, producing guidance on leading field meetings, running a stand at the Scottish Bird Fair, joining vice-county recorders in the field and applying for the next grant to fund his post. The 2013 Scottish Recording Week on Islay produced 7,000 records. Next year's recording week will be at Glen Shiel from 29 June to 6 July.

Davie Black from Plantlife Scotland gave an update on the Coronation Meadows project, which will choose a meadow in every county of the UK, to

mark the anniversary of the Queen's coronation, and a second site for restoration using green hay or seed from the meadow. The term 'meadow' is difficult in a Scottish context so was defined as 'flower-rich permanent grassland maintained by traditional practices'. Chosen meadows should be semi-natural, species-rich and characteristic of the area, and must have potential for harvesting. Restoration sites must be a good ecological match to their donor sites. Suggestions for good restoration sites would be welcome.

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

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

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

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

members to get involved in recording and monitoring plants on RSPB reserves.

Afternoon tea was followed by the final presentation of the day, **Rod Corner'**s comprehensively illustrated talk entitled 'A Botanist in North and North East Greenland'. Greenland is part of the continent of North America but the flora of eastern Greenland is more closely related to that of Europe. Rod showed photographs of many British species growing in the Greenland landscape, including Dwarf Birch (*Betula nana*), Bog Blaeberry (*Vaccinium uliginosum*), Arctic Bearberry (*Arctostaphylos alpinus*), Alpine Foxtail *(Alopecurus magellanicus*), Saxifrages (*Saxifraga* spp.) and surprisingly Lady's-smock (*Cardamine pratensis* agg.*)* A major factor influencing the climate is the frigid East Greenland current which is the major outlet from the Arctic Ocean and which carries large quantities of pack ice down southwards. Away from the coast however where Summer conditions are warmer, south facing habitats often irrigated by melt water from long lasting snow drifts can support a herb rich community. These habitats are always worth investigating as they can support some rare more southerly species at the northern limit of their range such as Goldilocks (*Ranunculus auricomus*), the Lady's-mantle (*Alchemilla glomerulans*) and Alpine Cat's-tail (*Phleum alpinum*). Greenland has plenty of wildlife and the botanist must keep a look out for polar bears and the occasional bull musk ox defending its territory.

Draft Minutes of BSBI Scotland AGM 2nd November 2013 at Royal Botanic Garden Edinburgh.

1. Welcome
Chair Martin Robinson welcomed members to the meeting.

2. Apologies
Alan Silverside, Ruth McGuire

3. Minute of the 2012 AGM
This was approved as a true record, proposed by Ian Evans, and seconded by Rod Corner.

4. Business arising – none

5. Chair's report
The death of Richard Pankhurst, while serving on the Committee for Scotland as a co-opted member took place in March. Richard was a very good friend and a valued and active member of the society. He will be greatly

missed.

The Committee for Scotland met four times during the year. It discussed a wide range of topics, including the strategy of the BSBI and biosecurity issues. There is close liaison at meetings with SNH and other NGOs. The Committee also considers the detailed planning of the joint BSBI/BSS Scottish Annual Meeting, the field meeting programme and the work of the VCR network. Recently Jane Houldsworth, new Head of Operations, has consulted on various questions relating to the Society's development strategy and members have given their responses.

The Committee needs an injection of new blood. This is particularly important because three Committee members retire next November, one of whom is the secretary at present.

A year ago at Battleby, a new Outreach Group was formed. It ran two basic Plant Families Workshops early last summer, one in Edinburgh at Holyrood, and one near Glasgow, at West Kittochside. They were attended by 31 people. The intention is to run three Workshops in 2014, this time including one at St Andrews. Faith Anstey drove this project forward and produced the course materials, with help from Ruth McGuire. Jenny Farrar of BSS was also involved and Plantlife is a partner.

BSBI Scotland was present at Birdfair Scotland at Hopetoun House on 11 – 12 May. Jim McIntosh and Ruth McGuire put in all the work for this, the Society's first involvement. In order for this involvement to continue, other volunteer help is required.

The 2014 BSBI AGM is being hosted in Scotland on 4th – 7th June at Birnam. Detailed planning is about to take place. This event will require a commitment by quite a number of volunteers to help with stewarding and many other tasks. It will comprise 1 day of talks and 2 days of field meetings, catering for about 100 people.

Regarding the Vice County recording network, on the retiral of Edna Stewart, Ruth McGuire has become joint Vice County Recorder with Phil Samsum for VC 86. John Holland has resigned from Dumbarton (VC .99) where there is now a vacancy. A VCR is also required for Easterness (VC 96) where Sarah Smythe has resigned. Help is required, too, in W. Sutherland (VC 108).

6. The Scottish Newsletter

Peter Macpherson reported that issue No. 34 was duly distributed earlier in the year. He sincerely thanked Jackie Muscott for arranging the photocopying and distribution. John Hawell continues his role as proof reader, which he carries out meticulously. The intention is to incorporate colour photos in future issues, if costs permit.

All previous Scottish Newsletters have been digitised. Thanks to Jim McIntosh for organising volunteers to help with this.

7. Field Meetings 2013 and 2014

Angus Hannah displayed the very full programme of 2013 field meetings, which included two specialist ones, on willows and dandelions. The week's recording meeting on Islay was regarded as very enjoyable, and the week spent on Lewis, organised by Paul Smith, was very successful. The educational meetings were very helpful, thanks to Jim McIntosh's organisation and input.

Angus displayed the draft programme for 2014. A week in Glen Shiel has been booked, with 16 places available. Mary Dean is joint leader of a meeting planned for Tain. July 18th – 21st is proposed for a meeting in Orkney, and late June for Beinn Dubhchriag. Four educational meetings are in the pipeline. In addition, two days of field meetings will take place during the BSBI AGM to be based at Birnam.

8. Scottish Committee Nominations

It was reported that there have been no nominations in response to the vacancy advertised in BSBI publications. The vacancy has arisen because of the retiral from the Committee after 6 year's service of Chris Miles. Chris was warmly thanked for his service to the Committee, especially the 4 years he spent as Chair. The Committee for Scotland nominated Ian Strachan to replace him. Dot Dahl proposed him and Faith Anstey seconded the proposal. The new Chair of the Committee is to be Robin Payne.

9. AOCB

Ian Evans drew the attention of the meeting to the cost of recording, particularly in the more remote areas. There are fuel and accommodation issues. Lynne Farrell reported that BSBI Records Committee is considering the financial implications of this.

Ro Scott commented that Committee for Scotland meetings have recently been taking place at RBGE, Edinburgh. She recalled that previously meetings took place in member's homes and therefore moved round the country. It was agreed the Committee should look again at the issue of meeting venues. The use of Skype to aid communication was suggested.

Alistair Godfrey pointed out that there is important business to discuss at the AGM but there was little encouragement for delegates to stay and participate in this meeting. It was suggested that a new format might be considered, with perhaps fewer items on the agenda.

The meeting was formally closed at 12.35 p.m.

BSBI Committee for Scotland 2013-14

Mr R. Payne (*Chair*), Mr S. Edwards (*Vice Chair*), Mrs D. Dahl (*Hon.*

Sec.), Dr F. Anstey, Mr L. Gaskell (*Treasurer*), Mr A. Hannah (*Field Meetings Sec.*), Mrs E. Lavery (*Exhibition Sec.*), Miss R. McGuire (*Publicity Officer*), Mr M. C. Robinson , Dr Ian Strachan.

Attending: Ms J. Farrar (*Botanical Society of Scotland*), Dr D. Long (*Plantlife*), Mr L. A. Mackinlay (*National Trust for Scotland*), Mr J.W. McIntosh (*Scottish Officer*), Mr I. Macdonald (*Scottish Natural Heritage*).

Committee for Scotland Call for Nominations for 2014

At the AGM on 1st November 2014, Dot Dahl, Luke Gaskell and Martin Robinson will retire and are ineligible for re-election. Nominations for the Committee, signed by two members of the Society normally resident in, or recorders for, a vice county in Scotland, and with the written consent of the candidate, who must also qualify as above, should reach the under noted at Easter Ballindalloch, Comrie, Crieff, PH6 2LY by 30th September, 2014.

Dot Dahl (Sec.) dotdahl@talk21.com

Scottish Annual Meeting 2013 – Exhibit Abstracts

Compiled by Jim McIntosh in approximate Vice-county Order

Two new sites for *Saxifraga hirculus* in NW Yorkshire (VC 65) Linda Robinson

On 3rd August 2012 I met up with Tim and Eileen Laurie for a day's botanising on the moorlands of Stainmore and the head of Arkengarthdale on the northern edge of VC 65. Alongside Mudbeck at the head of Arkengarthdale we spotted a spring mound, a bright green conical hill in the middle of blanket bog.

The vegetation on the mound was dominated by *Carex rostrata* (Bottle Sedge) but when we reached the top of the mound Tim noticed *Saxifraga hirculus* (Marsh Saxifrage) in flower, and upon further investigation 3 small clumps were found in a calcareous flush emanating from a spring at the summit of the mound and extending down the slope in a north-easterly direction for about 8 metres. A further clump 9m to the north of the spring head was also found. Eighty one shoots were counted along with 9 flower spikes for the site. At 370m this is the lowest site for the Saxifrage in Cumbria and NW Yorkshire.

We were very surprised to find another flush with *S. hirculus* whilst tetrad recording on 26th July 2013 above Ravenseat at the head of Swaledale.

We found five patches of the Saxifrage in a calcareous flush below a spring head at Red Mea Well on Ravenseat Fell, covering an area approximately 2 x 1.5m, with 228 shoots but no flowers.
These two new sites are approximately mid-way between the Pennine populations and those on Great Shunner Fell and looking at the geology of the area there may well be further sites with the Saxifrage still to be found. Natural England has been informed.

Hemp-agrimony & Joe Pye-Weed Alison Rutherford assisted by Dave Lang

A meeting with the US native *Eupatorium purpureum* (Joe Pye-weed) in her sister's Devonshire garden reminded one of the authors of a previous encounter with the species on a cliff top in North Ayrshire (VC 75) and encouraged an investigation into other 'wild' records of this garden escape, particularly in west central Scotland. Though there are a number of such records from there and elsewhere around the country, few appear to have persisted. And though it is quite distinct from its UK cousin, it may also have been confused in some places for the native *E. cannabinum* (Hemp-agrimony). However with both the native and non-native *Eupatorium* being available to buy from plant retailers, it is certainly worth being aware of *E. purpureum* as well as keeping an eye open for it while recording.

Frogbit in a Canal Branch, Glasgow Peter Macpherson and Elspeth Lindsay

On 19th July 2013 while recording along the bank of the Port Dundas Branch of the Forth and Clyde Canal, a mass of small round leaves was noted which we identified as *Hydrocharis morsus-ranae* (Frogbit). The grid reference was NS575681 and the site in Lanarkshire (VC 77). The plant had not previously been recorded in the vice-county. (See article on page 34) .

The Vented Flora of Peeblesshire (VC 78) Luke Gaskell

(With apologies to Hayward and Druce.) The unusually warm summer of 2013 has meant that flora has been blossoming. Plants that were hitherto only known further south, or in hothouses, have appeared on river banks and seasonal islands in the Tweed. The origin of these plants is unclear but some appear to be surviving the rigours of human digestion and water treatment and are proudly flowering and even producing fruits, though not

viable seed, so they are failing to establish themselves as yet. Are these the new 'weeds' reminiscent of those that graced our agricultural flora prior to seed cleaning and herbicides? Will sewage survivors, bird seed aliens and garden throw-outs become commonplace?
Plants exhibited: *Chrysalis Peruvian* (Cape Gooseberry), *Echinochloa crus-galli* (Cockspur), *Rubus laciniatus* (Alien blackberry), *Rumex hydrolapathum* (Water Dock) and *Pulmonaria rubra* (Red Lungwort).

A herbicide resistant strain of *Centaurea cyanus* in Berwickshire (VC 81) Michael Braithwaite

In 2012 Iain Cowe reported *Centaurea cyanus* (Cornflower) in a field at Lintlaw, Berwickshire, NT8358, not just one or two plants, but lots. I had just finished researching the botanical notebooks of Dr George Henderson who records an unusual abundance of Cornflower at Lintlaw around 1834. This may not be a coincidence. This year I went to see them for myself. I was greeted by an amazing blue haze of flowers in the very centre of an otherwise weed-free wheat field. So here we have a Berwickshire Cornflower population known to have been established for at least 180 years with clear evidence of herbicide resistance. Stephen Moss, Rothamsted Research, advises that there is only one other report of herbicide resistance in Cornflower worldwide: from Poland in 2010).

Berwickshire BSBI Botanical Site Register Michael Braithwaite

I published a Berwickshire RPR in 2004 but was less than satisfied with the species-by-species presentation. So in 2011 I published a provisional Berwickshire BSBI Botanical Site Register on a site-by-site basis with axiophyte data added. I have now again become dissatisfied with the presentation and am preparing a new edition of the latter to mark the completion of my hectad-by-hectad resurvey of the vice-county. This new edition will have site maps in colour and site descriptions and will be printed as a book of a size that is easily handled, not A4.

Rainbow lists for Midlothian (VC 83) Barbara Sumner

During the preparation of a Rare Plant Register (RPR) for Midlothian, from native and archaeophyte vascular plants, four lists are emerging. The Green, Amber and Red Lists are based on the traffic-light warning system. The Green List contains common taxa, which have been recorded in

more than 10 sites from 1970 to the present date, and which are therefore not eligible to be in the RPR. The Amber and Red Lists contain scarce and rare taxa, respectively (4-10 sites and 1-3 sites from 1970 to date). The Blue List (blue for melancholy) contains taxa which are now extinct in VC 83. It is hoped that this simple, obvious scheme of colour-coded lists will prove to be a handy summary of local rarity status for botanists, conservationists, planners and the general public. The exhibit shows photographs of species selected from the Amber, Red and Blue Lists. The lists themselves, in alphabetical order, are a work in progress, as is the RPR.

Six sites for *Senecio inaequidens* in Midlothian (VC 83) Barbara Sumner

Senecio inaequidens (Narrow-leaved Ragwort) was first recorded in Midlothian in 2010 and has now been found in six sites:
20/08/2010, Haddington Place, Leith Walk, site of demolished Botanic Cottage (recorded by B. & D. Wright, conf. D.R. McKean);
06/11/2010, RBGE nursery, site of stored stones from Botanic Cottage (recorded by H.S. McHaffie, det. D.R. McKean);
09/06/2011, Granton, pavement at foot of wall (recorded by B.E.H. Sumner);
10/10/2012, Ratho, building site (recorded by D. Merrick, det. B.E.H. Sumner);
22/08/2013, Newbridge, disused industrial site (recorded by D.R. McKean);
18/09/2013, Leith Docks, waste ground (recorded by D. Merrick).
In England and Scotland this South African species is usually a casual wool -alien, but in northern France it has become established and is now spreading into south and south-east England (Stace, 2010). These perennial plants are sometimes woody. So far, the Midlothian plants have not persisted or become woody. They appear to be herbaceous casuals in urban and ruderal sites. Photographs are displayed.

Some New or Rare Lothian Plants while recording for TWIC Douglas McKean

West Lothian (VC 84): *Salix* x *meyeriana* (*S. fragilis* x *S. pentandra*) planted as a screen at Kirkliston, det. Jackie Muscott.
Midlothian (VC 83): A large clump of *Pulicaria dysenterica* (Common Fleabane) at Dalmahoy Country Club, a new county record;
On a brown field site, ex Uni Royal at Newbridge, a large patch of *Cala-*

magrostis epigejos (Wood Small-reed) previous 18th C. record only;
Two clumps of *Carex otrubae* (False Fox-sedge), unusually well inland.
The most exciting record was of *Anthoxanthum aristatum* ssp *puelii* (Annual Vernal-grass) which was almost discarded by me as a depauperate *A. odoratum* (Sweet Vernal-grass). It was a rare casual at Leith Docks and Slateford tip in the 1920s and is now apparently very rare or extinct in England and Wales. Perhaps overlooked, after all, this colony has been undiscovered until now and has probably been at 'Uni Royal' since it was closed over a decade ago. It may have spread around the country on the treads of lorries.

Some Weird and Wayout Plants George Ballantyne & Sandy Edwards
recently seen in Fife (VC 85)

Photographs of four taxa are exhibited: *Cuscuta* (Dodder); *Datura* (Thorn-apple); *Nicandra* (Apple-of-Peru) and *Phytolacca* (Pokeweed).

Dune Succession at Tentsmuir, Fife (VC 85) Sandy Edwards

A considerable area of Tentsmuir on the NE coast of Fife has some of the fastest growing land on the Scottish coast. It has the great advantage of being easily accessible and very clearly shows the dune successions which make up the transition from sand to fertile soil. The best feature of Tentsmuir is the extensive dune slacks, an area behind the dunes which retains water and offers a unique habitat to a variety of interesting plants. The poster shows the four main stages of succession: embryo, mobile and fixed dunes, how the slacks are formed and some of the related flora.

Searching for *Hammarbya paludosa* Sarah Longrigg
in West & Mid Perthshire (VC 87/8)

Large and colourful flowers are likely to produce much higher recording rates than small green ones which are hard to find. An attempt was made to try and redress the balance for the *Hammarbya paludosa* (Bog Orchid), by searching for new sites. Searches were undertaken from late July until early September. Between 2010 and 2013 approximately 14 days were spent walking in VCs 87 and 88 in areas where there was the potential for suitable habitat, and 7 sites were found. Two of these were rediscovered old sites, but the remaining five were new. This indicates that *H. paludosa* is not as uncommon as is generally thought, and careful searching in suitable habitat is likely to give rise to further new sites.

Two Unusual Finds in 2013 Liz Lavery

I came across two very unusual plants in 2013: *Chaerophyllum aureum* (Golden Chervil) found beside a rough grassy track near Dollar, Clackmannanshire (VC 87) and *Filipendula camtschatica* (Giant Meadowsweet) on a roadside in Galloway Forest (NX39745 97816). Both stumped me and I appealed for help with their identification. My thanks go to Bill Hay, Jane Jones and Alistair Godfrey. Specimens are on display.

Westerness (VC 97): 2013 highlights Ian Strachan

In July, *Platanthera bifolia* (Lesser Butterfly-orchid) was mapped and counted at Upper Inverroy (Glen Spean). With 669 flowering spikes this is the largest known population in VC 97, spread over 25ha of wet heath with calcareous flushes. *P. chlorantha* (Greater Butterfly-orchid) is also locally frequent but mostly in grassland, with only slight overlap in distribution / habitat.

In August a two-day field meeting was held in Morvern. The 15 participants collected well over 3000 records in 40 monads, including good lists for at least half of these – and helping to fill a 'black hole' for the next Atlas. Highlights include several spikes of *Spiranthes romanzoffiana* (Irish Lady's-tresses) in full flower, and a mystery plant – see below!

In September I helped to monitor the Nationally Rare and Scarce plants on Ben Nevis SSSI for SNH – a daunting task. The data have still to be analysed but findings for most species are encouraging. For example, *Saxifraga cespitosa* (Tufted Saxifrage) was found to have expanded and spread at its precarious locality in the Grey Corries, and *Carex rupestris* (Rock Sedge), first found in 2005 by Gordon Rothero on Beinn na Socaich, was found at a second site nearby. Other notable findings include a large population of *Radiola linoides* (Allseed) on a track in Glengarry Forest (first vice-county record) and the locally rare *Listera ovata* (Common Twayblade) in the Nevis Range car park! (see article on page 32).

Mystery Plant in Morvern, Westerness (VC 97) Jim McIntosh & Markus Rusham

Seldom is an entire BSBI field meeting baffled by the identity of a plant. A specimen was collected, and those shown it at the 2013 BSBI Recorders' Conference in Shrewsbury were similarly baffled, though many speculated it was a *Trichophorum* (Cotton-grass) or *Eleocharis* (Spike-rush) species.

The plant in question was found at NM69674328 near Inninbeg, Artornish

Bay, to the west of Lochaline, Morvern on the 27th August 2013. It was found in damp grassland within a few metres of the edge of a shingle beach in front of Inninbeg House. The tufted stems were rather glaucous, 25 cm tall, round, shortly sheathed but leafless and sterile. Strange, perhaps, vegetative structures emerge on short recurved stalks from the base. The plant comprised of tufts in a 20cm long line, as if shortly rhizomatous. Its rather unremarkable associates included *Juncus articulatus* (Jointed Rush), *J. bufonius* (Toad Rush), *Trifolium repens* (White Clover), *Ranunculus repens* (Creeping Buttercup), *Cynosurus cristatus* (Crested Dog's-tail) and *Holcus lanatus* (Yorkshire Fog).
A sample was prepared and analysed using DNA barcoding techniques and an excellent match was found with *Eleocharis quinquiflora* (Few-flowered Spike-rush). This demonstrates the usefulness of such techniques. Previously they have been used to help Scottish BSBI Recorders determine non-flowering *Pyrola* (Wintergreen) populations and distinguish small *Ophioglossum* (Adder's-tongue) specimens. RBGE would be pleased to help those with similarly intractable id problems.

***Geranium pyrenaicum* (Hedgerow Crane's-bill) in Dunbarton (VC 99)** Alison Rutherford

This is a scarce plant in western Scotland. A patch was found this summer, west of Glasgow, in Westerton. It grew in a colony of *G. robertianum* (Herb Robert). The heliotrope petals contrasting with the redder Herb Robert's. It is probably a cultivar – not being the typical colour – ten are listed in the Plant Finder. It is relatively easy to root the knobs at the base of a stem. The other crane's-bill was from the nearby Cairnhill Wood, a rich garden dumping area. A stem was struck the same way. The greater robustness is partly the type of geranium (more vigorous) and partly the wood is very dark with poor soil, with good light and rich compost it has made new crowns.

Beware the tetrad map! Clyde Isles (VC 100) Angus Hannah

Living on Bute, I am constrained by cost and difficulty of travel to record mostly on the island. This lets me work in finer detail than most VCRs and has shown me how misleading tetrad maps can be. I have been recording presence in monads systematically and adding an estimate of frequency in each square. This uses just three categories: abundant, scarce, or neither (the default). The method is simple and subjective, but produces interesting results.
Sample maps for *Polystichum aculeatum* (Hard Shield-fern) and *Empetrum nigrum* (Crowberry) demonstrate the extra information gained over the usu-

al tetrad maps in local floras. Similar-looking tetrad maps for two taxa may conceal huge differences in the underlying populations. I show how both 'clumping' and 'abundance' indices for each species can be derived, which may be applied (with suitable caveats) to the interpretation of standard tetrad maps for comparable neighbouring areas. Similar monad survey in just a few selected hectads across the country might allow better national estimates of monad occupancy and abundance for many taxa than current methods achieve, and for relatively modest effort. (see page 39)

Tetrad recording on Mull (VC 103) Lynne Farrell

Since becoming VCR for Mid-Ebudes in 1996, all 332 tetrads on Mull and its associated islands have been recorded. The last three were visited in August 2013 by sailing boat. Many islanders and visitors have contributed to the information, which has been welcomed. Field meetings proved very popular, useful and enjoyable. Encouragement in the field and in the project has been much appreciated. There have been many 'good finds' and some of the more recent are listed and illustrated with specimens and photographs.
There is still much to do and quite a few 'under-recorded' areas to visit, so plenty to keep me occupied for the next few years. The main task now is to write the New Flora of Mull, which will compare the period of recording from 1996- 2013 with that covered by the previous Flora written in 1978 by the Natural History Museum. Their fieldwork was done mainly over five years in the late 1960s. Changes in the habitats and species will be part of the story.

***Utricularia* on the Isle of Eigg, North Ebudes (VC 104)** Sarah Longrigg

A survey of *Utricularia* spp (Bladderworts) was carried out during visits to the Isle of Eigg over the summers of 2010 - 2012. Although the entire island could not be covered, due to its size and occasional poor weather, this survey gives some indication as to the species present and their frequency. 12 out of the 16 tetrads were visited sufficiently to provide a reasonable chance of finding *Utricularia,* and the genus was found in 10 of these, with *U. minor* (Lesser Bladderwort) being found in all 10 tetrads and *U. stygia* (Nordic Bladderwort) in 4 tetrads. Identification was by examination of whole plants and verified by microscopic examination of the quadrifid hairs

within the bladders.
Two new sites for *Hammarbya paludosa* (Bog Orchid) were also found during the survey.

Highlights from West Ross (VC 105) in 2013 Duncan Donald

New vice-county records included *Crocosmia pottsii* (Potts' Montbretia) - first distinguished this year but probably a garden escape hereabouts for 100+ years, lumped with *C.* × *crocosmiflora* (Montbretia); *Trichophorum cespitosum* s.s. (Northern Deer-grass), recorded by Jeremy Roberts below An Teallach; and *Neottia nidus-avis* (Bird's-nest Orchid).
Interesting finds included *Anagallis arvensis* (Scarlet Pimpernel), *Equisetum variegatum* (Variegated Horsetail), *Euphorbia peplus* (Petty Spurge) *and Salix* x *ambigua* (*S. aurita* x *S. repens*); *Phleum bertolonii* (Smaller Cat's-tail) probably comes in with winter feed for livestock. I'm much indebted to visitors: the Evanses recorded *Anagallis minima* (Chaffweed), *Bolboschoenus maritimus* (Sea Club-rush), *Carex canescens* (White Sedge), *Glechoma hederacea* (Ground-ivy), *Koeleria macrantha* (Crested Hair-grass) & *Medicago lupulina* (Black Medick) – all very local in West Ross – near Achiltibuie; the Inverness Botany Group also found *K. macrantha* as well as *Arenaria serpyllifolia* (Thyme-leaved Sandwort), *Cerastium diffusum* (Sea Mouse-ear) & *Sagina nodosa* (Knotted Pearlwort), at Achnahaird; and Stephen Bungard re-found *Bromopsis ramosa* (Hairy Brome), not seen in NG 83 since 1893.
I'm currently working with the Invasive Non-Native Species group from Highland Council to map and analyze *Cotula alpina* – a (wool-shoddy?) alien now well established in north-west Coigach – so that by 2015 efforts can be made to eradicate it before it spreads more widely.
Last winter I digitized all the records from Claridge Druce's Flora of West Ross (1929). It is incredible how much he achieved in a short series of summer holidays: boundless energy! However, the flora of the extreme south of the vice-county has been rather little studied recently, so I am much looking forward to the forthcoming Scottish Recording Week in Glen Shiel Lodge, 29 June to 6 July 2014.

The Lost Square: NH 97, Easter Ross (VC 106) Brian Ballinger

A small area on the Easter Ross coast between Rockfield and Hilton was found to have no botanical or indeed biological records. This 10km square was mainly sea but also included shore, cliffs, arable fields and forestry plantation. 168 vascular plant species were identified including *Orchis mascula* (Early-purple Orchid), *Saxifraga granulata* (Meadow Saxifrage) *Astrag-*

alus danicus (Purple Milk-vetch) and *Asplenium marinum* (Sea Spleenwort). The small blue butterfly was found near *Anthyllis vulneraria* (Kidney-vetch). Do you have an accessible lost square near you?

The Graveyard Flora Brian Ballinger
Of Easter Ross (VC 106)

Twenty graveyards in Easter Ross were visited on two occasions between April and August 2012. Eleven were in towns or villages. 174 species were identified and the most frequently recorded were: *Bellis perennis* (Daisy), *Poa annua* (Annual Meadow-grass), *Rumex acetosa* (Common Sorrel), *Urtica dioica* (Nettle), *Taraxacum,* (Dandelion), *Trifolium repens* (White Clover), *Cerastium fontanum* (Common Mouse-ear), *Sambucus nigra* (Elder), *Veronica chamaedrys* (Germander Speedwell) and *Galium aparine* (Cleavers).
There were remnants of coastal grassland with *Saxifraga granulata* (Meadow Saxifrage) and *Ranunculus bulbosus* (Bulbous Buttercup) and patches of former woodland with species such as *Conopodium majus* (Pignut) and *Stellaria holostea* (Greater Stitchwort). However, in general, frequent grass cutting and the application of weedkiller may have reduced the biodiversity of these sites.

West Sutherland: 2013 (VC 108) Pat and Ian Evans

Interesting finds this year were products of the usual mix of tetrad recording and chance:
A visit to bogs near Laxford Bridge to see *Lycopodiella inundata* (Marsh Clubmoss) yielded an overlooked population of *Rhynchospora fusca* (Brown Beak-sedge).
Roadside populations of *Leontodon saxatilis* (Lesser Hawkbit) have proved to be even more widespread than we had suspected.
Both sub-species of *Puccinellia distans* (Reflexed Saltmarsh-grass) were encountered on roadsides some way from the coast.
Ophioglossum azoricum (Small Adder's-tongue) was found in coastal shingle more than 14km east of its local strongholds in Assynt (cliff-tops on the Stoer Peninsula).
Attention to less glamorous habitats, such as roadsides, also yielded new hectad records of four of the less common lowland *Sagina* spp. (Pearlworts), including *S. maritima* (Sea Pearlwort) in several places (as well as on the coast) and *S. apetala* (Annual Pearwort), new to us, at Cape Wrath.

***Potamogeton epihydrus* in the Outer Hebrides (VC 110)** Paul A. Smith & Claudia Ferguson-Smyth

Potamogeton epihydrus (American Pondweed) is a rare species, restricted as a native to the Outer Hebrides, where it has been known from a few lochs in South Uist. It is much more widespread in North America, and is one of the few species in the North American element of the British flora. We summarise the history of its discovery, and review recent finds and the conditions in which it is found, including some pictures from localities discovered in 2013. (see article on page 43)

Discovering Mountain Flowers Katherine White

As a keen botanist, I have regularly attended field excursions across central Scotland in the last few years to improve my botanical field identification skills. However, this hasn't included the exploration of higher altitudes, so with the provision of a small training grant from BSBI, I was able to attend the 'Discovering Mountain Flowers' course at Kindrogan Field Studies Centre for 3 days in July 2013. This was an excellent introduction to a wide range of Arctic-alpine species and upland habitat mosaics. The course involved field excursions to Ben Vrackie, Corrie Fee and Glen Shee. At each site, Theo Loizou led us through the identification of different species and their diagnostic features, as well as looking at the surrounding plant communities. It was extremely rewarding, consolidating previous botanical knowledge and introducing me to many new species and communities.
I would like to present a course summary, species list and a collection of botanical photographs as a thank you to BSBI for their support. This illustrates the variety of species identified during the course which includes a number of mountain rarities.

Plant Identification: A Modern Hobby Ewan Cole

My exhibit is a look at plant identification as a modern hobby that both young and old can enjoy. I only recently became interested in it and it has since become a great passion, not content with merely identifying the plants I devised ways of presenting my findings that are fun, stylish and useful.
The exhibit will feature the catalogue of identified plant species and the website I constructed to present them. My herbarium scrapbook will also be on display, showcasing a colourful and fun way of presenting plants. There will be specimens and identification books available for you to try your hand at some identification yourself as well as information on how your knowledge can be put to good use.

Plant Families Workshops Faith Anstey

The BSBI, in conjunction with Plantlife, held two workshops for beginners/ improvers this Spring, in Holyrood Park and at the Museum of Rural Life near East Kilbride.
We spent the morning in the classroom, looking at the plant kingdom, plant structure, and the specially designed *Flowchart to Families* and *Guide to Common Families.* The latter describes typical characters of twenty families, with pictorial examples and simple diagrams. Four group tutors used these to home in on the families of fresh specimens, before progressing to formal keys to species. In the afternoon we went out in the field, tackling identification of common plants (of which there were precious few in April!) by finding the family first, before trying to pin down the species.
The workshops were very popular and successful, with 31 attending, and the feedback was overwhelmingly positive; the approach through families went down very well, and the informal, hands-on and friendly atmosphere created by the tutors was also much appreciated.
We followed up with four half-day/evening field meetings, also well-attended by workshop participants and others. Next year we plan to run three workshops: at Holyrood, at St Andrews Botanic Garden and at Glasgow Botanic Gardens.

Polyploidy of *Campanula rotundifolia*: Julia Wilson
new results from samples collected by volunteers in 2013

Previous studies have shown that *C. rotundifolia* (Harebell) in England, Wales and Scotland is predominantly tetraploid, while populations in Ireland, Cornwall, S Wales, Cheddar Gorge and some western and northern parts of Scotland, are hexaploid. However the coverage of records in many areas is poor.
Following posters and requests for samples at BSBI meetings last year, many samples were received and tested by flow cytometry. Samples from Ireland and four previously unrecorded Scottish islands (Iona, Arran, South Uist and Eriskay) were hexaploid, while Skye yielded one hexaploid and one tetraploid. An extensive collection of nearly 300 samples from the north Pennines and northern parts of the Yorkshire Dales revealed three distinct patches of hexaploids; in Teesdale, Nent Valley, and Wensleydale, each surrounded by tetraploids, with occasional pentaploids at the contacts. The two latter populations were previously unknown.
These data greatly extend knowledge of hexaploid distribution and provide the first occurrence of a Hebridean tetraploid. The Pennine hexaploids are much more extensive than previously thought. Please email if you can help fill in the gaps in under-recorded areas. (jwi@ceh.ac.uk)

DNA C-Values for *Salix* Taxonomy Leslie Tucker & Ben Zonneveld

Previous collaborations investigated various herbaceous species, collected in Scotland, using flow cytometric expertise in the Netherlands; but woody specimens proved intractable. In March, Ben offered to analyse leafless shoots of *Salix* (Willow) on new apparatus. Reliably consistent chromosome mass (C-) values were obtained in picogrammes (pg), providing useful adjuncts to traditional morphology. Thus, some species were well differentiated, and ploidy and simple hybrid compositions could also be inferred.
One putative *S. caprea* (Goat Willow, typical C-value 0.94 pg, ploidy 2x) analysed as its hybrid *S.* x *reichardtii* (1.35, 3x) with *S. cinerea* (Grey Willow, 1.76, 4x).
An unusual plant in Glen Shee was confirmed as a hybrid (0.86, 2x) between *S. viminalis* (Osier, 0.80, 2x) and *S. lapponum*, (Downy Willow, 0.92, 2x); not previously recorded in Britain, but known in Scandinavia as *S.* x *kjellmarkii*.
Some species reported to be generally tetraploid in England are considered diploid in *Flora Nordica*; Scottish populations may be either, e.g. *S. aurita* (Eared Willow, 0.80 and 1.72). Probably diploids are reduced forms favoured in montane habitats, *cf.* species like *S. arbuscula* (Mountain Willow, 0.88); perhaps facilitating hybrid combinations.
Searching for just such a hybrid, *S.* x *luiensis* (calc. 0.84, 2x), revealed *S.* x *saxetana* (2.01, 5x) instead. Apparently, stunted allopolyploids combining *S. myrsinifolia* (Dark-leaved Willow, 2.46, 6x) are easily mis-identified as rarer taxa!

Computational Photography Raymond Parks

Focus Stacking: Taking a series of photos at different focus distances, software masks out the unsharp areas and merges the sharp areas to give vastly increased depth of field.
3D Viewing: A FUJI camera with lenticular screen enables one user to see stereo without spectacles. Associated FREE software enables picture pairs to be picked up from any source and accurately aligned.

Information and Displays:

Botanical Society of Scotland:	Barbra Harvie
Botanical Society of the British Isles:	Jim McIntosh
British Pteridological Society:	Mary Gibby
FSC & RBGE courses:	Heather McHaffie
Plantlife Scotland:	Davie Black
RSPB:	Doug Gilbert
Scottish Natural Heritage:	Iain Macdonald

Book: by Robert Crawford

Tundra-Taiga Biology – Human, Plant and Animal survival in the Arctic

Query Table

D McKean

The main provider of material for the queries table was Alison Rutherford, as usual. This time she excelled herself with several NEW VC RECORDS for Dunbartonshire, VC 99 and they were: *Agrostis scabra*, *Diplotaxis tenuifolia*, conf. Dr A. Copping (Norfolk); *Geranium pyrenaicum*, *Rorippa* x *armoracioides*, *Senecio inaequidens*, *Geranium macrorhizum* all det. D. McKean. Angus Hannah had a strange looking Crucifer which I took to be a sick *Barbarea intermedia,* but Tim Rich corrected this to *Rorippa islandica*, NEW to Arran. He mentioned that a characteristic of this species was its poor fecundity and hence the mass of peduncles without fruits. Luke Gaskell from Melrose brought an unidentified *Lamium* which I later named as *L. orvala* which appears new to the UK! Isla Browning from Edinburgh brought a supposed *Carduus acanthoides* which was corrected as *C. crispus* by Messers McKean & Muscott. Dr Ian Strachan, Roy Bridge had a possible *Spiraea* (sterile) but it had stipules! and was consigned to *Neillia thibetica*, a Himalayan shrub. David Welch from Banchory brought a 'mallow' from Haddo House which I named as *Sidalcea candida.* Someone else brought a fleabane which was *Conyza* cf. *canadensis*. Another specimen which was anonymous was a sterile very large leaved *Campanula latifolia*, (leaves to 15cm.). A *Viburnum lantana* was confirmed for someone else.

[a very worthwhile contribution. Ed]

Scottish Officer Report for 2013-14

Supporting Scottish Recorders

During last year's field season I enjoyed time in the field with Recorders from Argyll, Westerness, Easterness, Banff, Moray, Stirling, West Perthshire, Mid-Perthshire, Selkirk & Roxburgh, South Aberdeenshire, Angus and Orkney. More recently I've held very useful one-to-one support meetings with six Recorders – often spending much time looking at their MapMate set-ups.

We now have 2013 Annual Reports covering 39 of the 41 Scottish Vice-counties - thank you! It has been a great pleasure reading and responding to them. The great diversity of botanical endeavour by Scottish BSBI Recorders is truly amazing, and the voluntary effort contributed is, to be quite

frank, humbling. The accompanying questionnaire explored what help was required by Recorders to achieve full coverage for Atlas 2020. I'll summarise the responses in the next BSBI News but suffice to say the responses will direct my Recorder support work over the next few years.

Vascular Plant Site Condition Monitoring

Five SSSIs were surveyed by the BSBI volunteers and the Scottish Officer in Scotland in 2013. These were Cove, Dalcroy Promontory, Sands of Forvie, Selkirk Racecourse and Spey Bay. It was particularly pleasing to see the Pillwort (*Pilulifera globulifera*) thriving at Dalcroy after several years of poor population counts. Morven & Mullachdubh was also planned but has been deferred because of an outbreak of *Phyophora* affecting its Juniper population. The Scottish Officer also helped SNH Area staff find and identify populations of Marsh Saxifrage *(Saxifraga hirculus)* at Craigengar SSSI.

We have agreed a similar programme of survey work in 2014. I will lead on Arthur's Seat Volcano, whilst Martin Robinson will lead on Craighall and Milton Wood, Ian Strachan will survey Glen Strathfarrar and David Hawker will help Alan Silverside undertake a baseline survey of Derskelpin Moss in Wigtonshire – all with the help of fieldwork volunteers. Most sites have been previously surveyed in previous SCM cycles, but Derskelpin Moss (another Pillwort site) wasn't and so should be particularly interesting – and challenging!

The work is important for the BSBI and for securing the SNH grant which helps fund the BSBI Scottish Officer Project (and which is due to run out in November 2014). It was gratifying to hear SNH say recently that they regard BSBI reports as the Rolls Royce of SCM reports. Thanks are due indeed to the many volunteers involved.

Threatened Plant Project (TPP)

Mopping up work continued in a number of vice-counties in Scotland in 2013, after the 'official' final year in 2012. In total, 41 TPP forms were completed for BSBI selected populations (and several for other populations) in five vice-counties by recorders and volunteers. Eric & Aileen Meek and Peter Wortham deserve special thanks for their significant contributions. Digitisation work has been completed and the original forms are being scanned and archived in the RBGE Library Archive.

Rare Plant Registers

Five Scottish RPRs were variously published or updated in 2013: Cairngorm National Park, East Ross, East Perthshire, Mid & North Ebudes – all of which are available on the BSBI website. The Scottish Officer has just seen an excellent draft RPR for Midlothian, which will be published very shortly. Chris Metherell continues to help Scottish Recorders develop and

publish their RPRs under contract. Currently he is working with Chris Miles in Dumfries-shire and Dave Lang in Ayrshire.

BSBI MapMate support
During 2013, Martin Rand completed his excellent BSBI MapMate Handbook and more recently Martin Harvey made it available on the BSBI MapMate Support website along with several new training videos. I recommend all BSBI MapMate users take a close look: http://mapmate.bsbi.org.uk/ Martin Harvey also successfully resolved two Scottish Recorders' long-standing intractable MapMate problems under the same contract. I mention these projects here as they have been kindly supported by SNH, through the grant.

Memory Map
We have supplied five new recorders in the four VCs Stirling, Angus, Easterness and Dunbarton with electronic 1:25,000 OS maps of their vice-counties in Memory Map form. Vice-county (and in some cases SSSI) boundaries were also supplied. It is a tremendously useful piece of software, as it allows users to search for place names or grid references, print maps and plot tracks and data points.

Data
Various projects relating to the digitisation, validation and supply of data to BSBI Recorders and ultimately the BSBI Distributional Database were undertaken during the year. Perhaps, most notably, 50,000 1km records relating to Lanarkshire were digitised under an SNH-funded contract by Angus Hannah.

Training & Education in 2013
In April, I organised and lead a workshop at RBGE for leaders of field meetings – particularly educational ones. Ten folk participated enthusiastically and helped me draft a comprehensive guidance note, which has been used to update official BSBI guidance on field meetings.
A group of enthusiastic BSBI volunteers working to the Scottish Committee organised and lead two very successful Plant Families Identification Workshops – one in Glasgow and one in Edinburgh. The thirty one participants were invited to a series of short day or evening follow-up field meetings over the summer to put their new found skills into practice.
In 2013 I variously ran three beginners' field meetings (in addition to two run by members) and organised two more advanced workshops on Dandelions & Lowland Willows.
Full reports for these meetings can be read in the 2014 Yearbook.

Training & Education in 2014
A great range of training field meetings is on offer this year including:
3 Plant Families Workshops for beginners (thanks to BSBI volunteers)
2 Field meetings aimed at beginners lead by the Scottish Officer
3 "Introduction to" days (to Sedges, Grasses & Ferns) lead by the Scottish Officer
2 Field meetings aimed at improvers (thanks to BSBI volunteers)
A more advanced weekend meeting on grass id lead by Arthur Copping, the referee.
Full details are in the Yearbook and can be viewed online: www.bsbiscotland.org.uk Book up now!

Scottish Recording Week
Angus Hannah organised a most enjoyable Scottish Recording Week in June 2013 on Islay. Twelve BSBI members – six recorders and six ordinary members helped Malcolm Ogilvie record his extensive vice-county for Atlas 2020. Among us we collected 6,200 records across Islay and good coverage was achieved in 36 of its 180 tetrads. Again a full report can be read in the 2014 Yearbook.
So many folk tried to book on this year's Scottish Recording Week at Glen Shiel Lodge, Wester Ross at the end of June we have had to mark it as "fully booked" on the website and organise another to satisfy demand! Angus Hannah has kindly organised a second recording week to run concurrently on the Isle of Arran – details are available on the BSBI website.
This has given me the idea that we should organise two separate Scottish Recording Weeks every year – from now until the last year of Atlas 2020 fieldwork. These weeks are great for helping improve recording coverage in remote areas of Scotland.

Scottish Birdfair
The BSBI made a rare appearance in public in May - sandwiched between the Orkney Brewery and the Partnership against Wildlife Crime stands at Scottish Birdfair at Hopetoun House, near Edinburgh. We organised a simple wildflower ID quiz using ten spring flowering species and some 50 people participated – with 30 actually entering the competition by completing a form. Another public outing is planned at this year's Scottish Birdfair (10 & 11th May 2014). Drop in and see us!

Supporting the Scottish Committee
The Scottish Officer continues to support and report to the Scottish Committee. Much organisational help is provided with the Scottish Annual Meeting and, notably in 2014, the arrangements for the BSBI Annual Summer Meeting in Birnam.

Networking by the Scottish Officer

Here's a selection of highlights from my diary over the past twelve months:
Participated in Tayside Recorder's Day at Perth Museum in April.
Attended the State of Nature Report Launch at the Museum of Scotland in May.
Helped train 16 NTS Rangers with Wildflower ID training on Mull & Iona in June.
Met up with Forest Enterprise Ecologist, Jeff Waddell, for a day in the field in August.
Met up with Deborah Long, Plantlife, to discuss matters of mutual interest in August.
Participated in the Scottish Biodiversity Strategy Conference in RBGE in September.
Reported in person to Records Committee, in London in October.
Met with Plant Link Scotland in Battleby in November.
Attended Scottish Environmental Links' Festive reception in Edinburgh in December.
Participated in the BSBI Atlas 2020 Planning Meet at the NHM, London in January.
To conclude; another productive and enjoyable year for the BSBI in Scotland, thanks to the many recorders, members and partners who contribute to the society's work, and to SNH and RBGE for their continuing support of the BSBI Scottish Officer Project.

Jim McIntosh, BSBI Scottish Officer, March 2014

Extinction Rate in VC 91

DAVID WELCH

Extinction rates of higher plants in vice-counties have recently been much discussed, with arguments about their severity and how they should be measured. A UK league table produced by Plantlife (2012) placed five Scottish counties in the top 40 for which rates had been estimated. But two of the recorders for these Scottish vice-counties then argued that their rates had been miscalculated (Amphlett 2013; Braithwaite 2013).

There are major problems in assessing extinction rates particularly deciding the set of plants to consider and handling the ups and downs of recording effort, and their timing. Plantlife used clear rules, omitting casuals, hybrids, micro-species and neophytes, but controversially including archaeophytes. Weed species are a valued part of our flora, but deciding their status in a vice-county, whether archaeophyte or neophyte, may be difficult, hence some researchers e.g. Walker (2003) omitted both these groups from extinction calculations. There are similar problems in deciding on whether species are native on the fringes of their range, or how casual they have to be to count as casuals, and it could be argued that assessments are best

made locally rather than by national compilers of league tables.

I therefore believe that it is useful to actually list the species considered to be extinct in a vice-county with dates for the last definite occurrence, then future assessors will not have to decide if errors in calculation or different interpretations of the rules are the cause of different estimates of county extinction rates. So I present below a post-1900 extinction list for my own vice-county, Kincardineshire. I have previously listed extinctions of UK-scarce species in the vice-county (Welch 1996), which allows an appraisal of how a period of more-intense recording can reduce the apparent extinction rate.

A total of 31 native and archaeophyte species I judge to have become extinct in Kincardineshire from 1900 onwards; I have taken 1986 as the last year allowed for presence, fitting the Plantlife cut-off point of that year under its rule of at least 25 years elapsing without sightings to be sure of extinction. Only five of the 31 extinct species are classed as archaeophytes, but I have allowed into the list as natives two species, *Euonymus europaeus* and *Plantago media*, that are considered neophytes in NE Scotland in the broad-brush maps of the 2002 *Atlas*; my decision was based on the situations where they occurred in the county.
* A date of 1915 has been assigned to species recorded as present by Prof J.W.H. Trail in a manuscript published after his 1919 death; due to the 1914-18 War and staff shortage then in the Aberdeen Department of Botany I consider that Trail would have done very little recording after 1915.

For comparison to the league table, the 31 extinctions are considered to have happened over 112 years applying the Plantlife methodology, hence the extinction rate is 0.28 species per decade. No extinction rate for Kincardineshire was given in the Plantlife table, but the county was grouped with Angus in the text, with a comment "both counties have experienced extensive plant losses"; the rate estimated for Angus in the table was 0.31 species per decade. So my calculations broadly confirm the Plantlife treatment of Kincardineshire, rating it outside the top division that has experienced the severest extinction rates.

Kincardineshire has a small total number of plant species, reflecting its small extent and northern position. This small number restricts the extinction rate, but means that even this intermediate extinction rate is keenly felt in reducing the already-deficient biodiversity. So I consider that the vice-county has suffered serious losses, which would be shown more clearly if a proportionate extinction rate per unit time had been calculated for vice-counties.

The species lost since 1900 in VC 91 are from three main habitats - arable land, semi-natural grassland and wetlands. For the first the cause has been the intensive management of crops, practised just as much in the lowlands of NE Scotland as in other UK lowlands. But some grasslands have suffered from minimal usage, as at the site of *Pseudorchis albida* lost since 1970 due to a dense stand of Gorse (*Ulex europaea*) developing. For wetlands there is the possibility that the difficulty of searching has led to species being considered extinct when still present e.g. *Lobelia dortmannia* and *Utricularia intermedia.* But the loch that held the former has been encroached by development, and other water bodies have been drained or are intensively managed.

I consider that refinds are possible of six species of the 31 listed as extinct. Eight of the 28 UK-scarce species I listed in 1996 as having no post-1970 records in Kincardineshire have since been refound, which is a substantial proportion given that others of the 28 are long extinct, never seen after 1900. The rediscoveries are however balanced by other species not now having any known site in Kincardineshire, e.g. *Antennaria dioica* (Mountain Everlasting)*, Dactylorchis incarnata* (Early Marsh-orchid), *Vulpia myuros* (Rat`s-tail Fescue). I conclude that the moderately high league table ranking of VC 91 has not been affected by the extra recent recording effort.

References

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Having a critical time!

GEORGE BALLANTYNE

For a number of reasons, notably either the weather being too wet or too hot plus on-going poor health, I had a very quiet summer, hardly doing any fieldwork either of a ‘normal’ recording kind or do with the various critical groups; and then during the winter months when things are usually low key, there came a deluge of stuff.

Species	English name	Date when last recorded*
Aethusa cynapium	Fool`s Parsley	1968
Agrostemma githago	Corncockle	1915*
Alisma plantago-aquatica	Water-plantain	1950-69
Anthriscus caucalis	Bur Chervil	1930-69
Botrychium lunaria	Moonwort	1950-69
Carex extensa	Long-bracted Sedge	1962
Carex vesicaria	Bladder Sedge	1915*
Centaurium littorale	Seaside Centaury	1915*
Chaerophyllum temulum	Rough Chervil	1950-59
Coeloglossum viride	Frog Orchid	1967
Deschampsia setacea	Bog Hair-grass	1915*
Drosera anglica	Great Sundew	1915*
Epilobium roseum	Pale Willowherb	1957
Eriophorum latifolium	Broad-leaved Cottongrass	1950
Euonymus europaeus	Spindle	1915*
Glyceria notata	Plicate Sweet-grass	1950-59
Juncus filiformis	Thread Rush	1980
Lobelia dortmannii	Water Lobelia	1983
Lycopus europaeus	Gypsywort	1970-86
Orthilia secunda	Serrated Wintergreen	1963
Osmunda regalis	Royal Fern	1915*
Papaver argemone	Prickly Poppy	1950-59
Pilularia globulifera	Pillwort	1903
Plantago media	Hoary Plantain	1948
Pseudorchis albida	Small-white Orchid	1970
Scandix pecten-veneris	Shepherd`s Needle	1915*
Sedum villosum	Hairy Stonecrop	1950-69
Smyrnium olusatrum	Alexanders	1950-69
Sparganium emersum	Unbranched Bur-reed	1915*
Utricularia intermedia	Intermediate Bladderwort	1957
Veronica polita	Grey Field Speedwell	1915*

It started, probably not unexpectedly as I am *Rubus* referee for Scotland, with brambles. After dealing with verifying the uncommon species in Midlothian (VC 83) in connection with a draft Rare Plant Register for that vice-county, David (Dr DE) Allen sent me a note about a couple of specimens he'd recently unearthed. One was a new record for Scotland, *R. hibernicus* that he'd gathered in Arran back in the 1980s but hadn't

realised its identity then, while the other concerned a specimen of mine collected at Onich near Fort William in 1992 that he was sure was *R. furvicolor.* On fishing out my own sheet, I soon concurred with that name, but I also came across another specimen that I'd failed to realise at first was *R.hebridensis.* This prompted me to look through my notes of an earlier visit to Westerness (VC 97) and to find I'd noted two localities for a "robust red Corylifolian" species that I now realised were that bramble - so I'd added three stations for *R. hebridensis* without going into the field. This was followed by identifying/ confirming a batch received from Paul Smith from the Outer Hebrides (VC 110), including a nice surprise in *R. incurvatus* that I'd seen only once before.

The latest *New Journal of Botany* (NJB) arrived by post. Normally I glance at the contents list to ascertain if there is any article worth reading but as most are either too scientific or otherwise incomprehensible to the amateur the journal is put to one side. But for once there was something worthy of attention: David McCosh's "Six new species of Brtish *Hieracium*" looked to be interesting - and so it proved, and how!
Of the half dozen new descriptions, no fewer than two were of Fife & Kinross (VC 85) plants, viz. *H. kinkellense* from near St Andrews and *H. kinrossense* from the Cleish Hills, a low range to the west of Loch Leven (McCosh, 2013). Coincidentally, it came to light that a plant I'd gathered years ago in the Ochil foothills and just within the Kinrossshire boundary had been determined as *H. orcadense.* As there are several other uncommon hawkweeds known in the little county, a case may be made for ensuring that when VC 85 is mentioned, it should be referred to as Fife [no 'shire'] and Kinross - the official line demands that the suffix be ignored.

Hard on the heels of the NJB an email arrived from Tim Rich, closely pursued by one from Martin Robertson, both of whom had been involved with the [Scottish] *Taraxacum* Workshop at Kindrogan in summer 2013. Unbeknown to me, a visit had been made to the sandy shores at Shell Bay/ Kincraig near Elie on the Fife coast, resulting in 36 records being made - of which no fewer than ten were new to the VC. This was not surprising, given the paucity of dandelion investigation there has been locally. A brief foray into *Taraxacum* about 1970 was sufficient to put me off the genus and apart from an occasional record sent in by the late Richard Pankhurst (bless him!), nothing has been done.

That excitement (if that's a suitable word) over, I wondered if it would be the end of critical groups for the time being, but no, in came the latest BSBI News. Somewhat idly, I read through the first article, on *Salix* x *doniana* (Smith, 2014) - the Sefton dunes in Lancashire seemed a long way

off, but there in the middle of page 2 was a reference to VC 85 (Fife), more specifically to the occurrence of this hybrid willow at Tentsmuir NNR in the north-east corner of the county. The report was by Les Tucker, who had accompanied a small party there in 2008 and had mentioned to me that he thought the taxon grew there as both parents (*S. repens* and *S. purpurea*) were in residence; however it was still to be confirmed, which it obviously now has been.

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2013 Field meeting report 26TH - 27TH August Morvern, Westerness (VC 97)

IAN STRACHAN & IAN BONNER

Morvern is well known to botanists for the two basalt peaks of Beinn Iadain and Beinn na h'Uamha, but the aim of this meeting, based at Lochaline, was to gather records from other parts of this fascinating corner of Westerness. The 15 participants (some of whom stayed longer) managed to collect well over 3000 records in 40 monads, including good lists for at least half of these – and helped to fill a 'black hole' for the next Atlas.

On the first day we focused on Ardtornish Estate, to the east of Loch Aline. One group went inland to explore Loch Tearnait. The water level was low and *Subularia aquatica* (Awlwort) was flowering abundantly in shallow water and on exposed sand. Nearby there are rich flushes and basin mires, and here we recorded a large stand of *Carex aquatilis* (Water Sedge) (scarce in the west Highlands) as well as *C. lasiocarpa* (Slender Sedge) and *C. limosa* (Mud Sedge), before the midges defeated us.

The rest of the group explored the fine coastal ashwoods around Loch Aline and Inninmore Bay, which have a rich flora due to the underlying basalt. Notable finds included *Melica uniflora* (Wood Melick), *Bromopsis ramosa* (Hairy Brome) and *Elymus caninus* (Bearded Couch). Other interesting

(re-)finds were *Neottia nidus-avis* (Bird's-nest Orchid), *Equisetum telmateia* (Great Horsetail), *Polypodium interjectum* (Intermediate Polypody), *Carex riparia* (Greater Pond-sedge) and *Potentilla anglica* (Trailing Tormentil), the last two species being particularly rare in the vice-county.

In the evening we gathered in Ardtornish House to examine our specimens, thanks to Faith Raven, whose husband John (author of *Mountain Flowers*) botanised in Morvern for many years. We all puzzled over a mystery plant found at Inninbeg; its identity was only later revealed by DNA barcoding at RBGE as a peculiar growth form of *Eleocharis quinqueflora* (Few-flowered Spike-rush).
Following a local tip-off we started the second day with a rather damp search for a single *Spiranthes romanzoffiana* (Irish Lady's-tresses) which had been spotted on a path behind the village. We were rewarded with a handful of spikes in full flower at scattered locations in the adjacent field, thanks to many pairs of eyes! We then divided up to explore the western part of Morvern. One group surveyed a field at Savary, managed as a hay-meadow by the Forestry Commission, and the adjacent coast. A long species list included *Schedonorus giganteus* (Giant Fescue) and *Carex laevigata* (Smooth-stalked Sedge) in wet woodland. Most worrying was *Acaena ovalifolia* (Two-spined Acaena) found along a track. Contractors busy removing rhododendron nearby were probably inadvertently spreading this much smaller invader.

Others headed up into the misty forest to explore the basalt crags of Aoineadh Beag and Beinn Bhàn. These are herb-rich, with much *Oxyria digyna* (Mountain Sorrel), *Saxifraga hypnoides* (Mossy Saxifrage), *S. oppositifolia* (Purple Saxifrage) and *Sedum rosea* (Roseroot). A good find here was *Orthilia secunda* (Serrated Wintergreen), though *Poa glauca,* previously recorded by John Raven, proved elusive.

On the following day a smaller group stayed on to continue recording further along the coast towards Drimnin. At Caisteal nan Con finds included *B. ramosa, C. laevigata, M. uniflora* and *Petasites japonicus* (Giant Butterbur), a new vice-county record. Others stayed all week and contributed many useful records, including several sites for *Carex caryophyllea* (Spring Sedge) and *Alchemilla xanthochlora* (Intermediate Lady's-mantle), the latter being distinctly coastal in Westerness.

Leaders: Ian Strachan, Ian Bonner & Jim McIntosh

***Rumex thyrsiflorus* ssp. *thyrsiflorus* (Pyramidal Sorrel) in Lanarkshire (VC 77)** PETER MACPHERSON & DOUGLAS McKEAN

While recording along a lane in the Kelvinside district of Glasgow (NS5667) in August 2013, an unusual plant was noted (PM). Superficially it was like *Rumex acetosa* (Common Sorrel), but larger and more branched. A specimen therefrom has been identified (DR McK) as *Rumex thyrsiflorus* ssp. *thyrsiflorus* and constitutes the first confirmed record for the species in the British Isles. There is an unconfirmed record from the Channel Isles (Clement & Foster 1994).

The plant is to be found in various habitats in Central and N Europe, Asia Minor and Siberia and is established in NE France.

The lane in which the plant was seen is bounded on one side by a high continuous wall. On the other there is a fence, beyond which there is an allotment. This raises the possibility that the plant had been introduced accidentally to the allotment and subsequently spread to the lane. It is not a plant which would have been grown intentionally for its vegetable/floristic properties!

A visit will be paid later in 2014 to ascertain as to whether or not it has persisted.

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Frogbit in a Canal Branch, Glasgow

PETER MACPHERSON & ELSPETH LINDSAY

On 19th July 2013 while recording along the bank of the Port Dundas Branch of the Forth and Clyde Canal, a mass of small round leaves was noted which we identified as being Frogbit (*Hydrocharis morsus-ranae*). The grid reference was NS575681 and the site in Lanarkshire (VC 77). The plant had not previously been recorded in the vice-county.

There are no Scottish records in the Atlas *of the British Flora* (Perring & Walters 1962), but four in the *New Atlas of the British and Irish Flora* (Preston *et al* 2002). Three of these are in Stirlingshire (VC 86), presumably in the Forth and Clyde Canal and the other in West Lothian (VC 84). With regard to the latter, Smith *et al* (2002) reported that 'it appeared in the Union Canal in 1999, perhaps transferred from the Forth-Clyde Canal'.

As first seen the Lanarkshire site was adjacent to the bank and measured approximately 3 ½ x 1½ metres. There was no evidence of flowering. A re-

turn visit was paid on 2nd August when it proved possible to penetrate the undergrowth for about 20 metres in each direction with, now and then, places where one could again access the actual canal bank. At all of these, adjacent to the bank, there was almost complete water cover by Frogbit leaves. There were little colonies of Duckweed (*Lemna minor*) and a few specimens of Hemlock Water-dropwort (*Oenanthe crocata*) and Fool's Water-cress (*Apium nodiflorum*). In the whole stretch only one opened flower was noted projecting up on its stalk, plus a half withered prostrate one, but no buds. The flower was too far out to get a reasonable photograph, so with a surrounding chunk of plants it was pulled in with our shepherd's crook. Being now detached, it was put into the vasculum and in order to form the background for further photographs to be obtained at home, a further chunk was taken, consisting of about 40 leaves.

All were put into a plastic container (dimensions 24cm x 15cm and 7cm deep) and left in order to ascertain if further flowers would develop. About a week later we noticed a 'stalk with a bud' under the water. In the hope of giving it a better chance to flower it was gently eased up and put across a leaf above the water level. After another week the stalk atrophied just below the 'bud' and it was obvious that the latter was not going to open. Accordingly, it was cut off plus a leaf as a voucher herbarium specimen.

A few days later two further 'buds were' noted. One growing up adjacent to the side of the container and the other extended along under the water. Again, the stalk and bud of the latter was eased on to a leaf to bring it just out of the water. In less than a week the erect stalk atrophied just below the bud which fell off. At that time a fourth stalk and bud were seen, totally submerged. Five days later the stalk lying along a leaf atrophied, as had the first, immediately below the bud, with gradual proximal extension.

A return visit was paid to the canal bank on 1st September in the confident expectation of seeing and photographing flowers in their natural surroundings. Neither bud nor flower was detected despite diligent searching!

Our first thought had been that the protuberances at the end of stalks were flower buds. Then just possibly fruits. Lastly, having done a literature research, turions at the end of stolons, which in nature would break off, sink and form new plants next year.

Literature research:
Reproduction is primarily a vegetative process. Offspring plants are produced at the end of stolons which become detached. In autumn turions are produced which sink to the bottom and in spring float to the surface, producing a new plant. Viable seed is occasionally set, but seedlings are very rare.

(turion- dictionary definition: an underground bud, growing upwards into a new stem).
Stace (2010): Plants are usually floating, the roots hanging in water. The main stems are floating stolons, forming over wintering terminal buds in autumn. Fruits are rarely formed.
Preston & Croft (1997): Ripe seed is rarely produced in Britain, but fruiting plants are easily overlooked as the pedicle elongates and bends down after fertilization and the fruit matures under water. Seedlings have not been reported in Britain. Plants multiply by vegetative reproduction, new rosettes developing on the end of stolons in late summer and autumn and germinate in spring.

At our Scottish Annual Meeting in November 2013 the stalks with 'buds' (protuberances) were pointed out to nine members who were seen examining the exhibit. None of them was prepared to give an opinion as to their relevance. It is obvious, therefore, that they are not a well-known feature. Hence part of the reason for this article.
Copies of the photographs were sent to Chris Preston, who confirmed that the 'buds' were indeed turions at the end of stolons.
It is also worth reporting that the plant has become established well beyond the northern limit of its native distribution.

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Re-discovery of Mountain Sorrel (*Oxyria digyna*) in Kirkcudbrightshire (VC 73)

DAVID HAWKER

In 1935, J E Raven reported that Mountain Sorrel (*Oxyria digyna*) had been found for the first time in Kirkcudbrightshire (VC 73), on cliffs near the summit of Merrick (NX4285), the highest point of the Southern Uplands at 843 metres. Since then there has been no further record apart from an unconfirmed one from the nearby range of hills to the east, around Corserine

(814 metres). However on the 7th September 2007, as part of the Galloway Forest Park montane scrub surveys, Rob Soutar (FCS) discovered two plants in separate locations on Merrick in monad NX4185 at around 571 metres. This *Oxyria* record is at a considerably lower altitude than that recorded by Raven and it is possible that further plants may exist on the numerous cliffs and ledges present around the wider area; one promising area (NX4385) with mudstones and pillow lava remains un-surveyed.

The accompanying photograph (back cover) taken by Ian Murgatroyd shows one of the plants between wet rocks with the accompanying species Alpine Meadow-rue (*Thalictrum alpinum*), among grasses *Festuca* spp. Details of the surrounding vegetation are taken from the 2010 report of the survey as follows:-

The geology creates a series of very steep gutters, rocky ridges and cliffs running more or less directly downhill, interrupted in places by ledges. Some of the gutters are very wet and flushed and others rather drier in character. The rich flora of the flushes varies with relative wetness: Crudely: a) the wetter ledges normally inaccessible to sheep - with Meadowsweet (*Filipendula ulmaria*), Marsh-marigold (*Caltha palustris*), Alpine Meadow-rue (*Thalictrum alpinum*), Stone Bramble (*Rubus saxatilis*), Thrift (*Armeria maritima*), Mossy saxifrage (*Saxifraga hypnoides*), Water Avens (*Geum rivale*), Marsh Violet (*Viola palustris*) .
b) the drier flushed ledges, some marginally accessible to sheep with Smooth Lady's-mantle (*Alchemilla glabra*), Alpine Saw-wort (*Saussurea alpine*), Wild Angelica (*Angelica sylvestris*), Globeflower (*Trollius europaeus*), Meadow Buttercup (*Ranunculus acris*), Devil's-bit Scabious (*Succisa pratensis*), Mountain Sorrel (*Oxyria digyna*), Downy Willow (*Salix lapponum*).

From the species list, it appears that these herb-rich ledge communities belong respectively to:

- NVC U17 *Luzula sylvatica-Geum rivale* tall-herb community, of either the *Alchemilla glabra-Bryum pseudotriquetrum* or *the Geranium sylvaticum* sub-community.
- NVC W20 *Salix lapponum-Luzula sylvatica* scrub community.

The W20 community is found almost exclusively in the Scottish Highlands, although two outliers were recognised, in the Moffat Hills and around Helvellyn in the Lake District (Rodwell *et al*. 1991). The current survey results now confirm the third outlier, in the Merrick range of the Southern Uplands. *S. lapponum* is shown in all three of these outlying areas in the *New Atlas of the British & Irish Flora* (Preston *et al* 2002).

The only record, in 1959, of *Persicaria vivipara* is from this area; according

to Rodwell this species may occur in NVC U17. Further investigation of these ledge communities could reveal the continued existence of *P. vivipara* as it has for *Oxyria digyna.* Similarly *Saxifraga oppositifolia* is recorded from the Merrick cliffs and is known to occur in U17 communities (Rodwell et al 1992). Incidentally, the Galloway Forest Park surveys recorded several new sites for a number of montane species which are rare or scarce in VC 73, namely *Saussurea alpina, Saxifraga hypnoides* and *Salix lapponum*, all characteristic of both U17 and W20. These scrub surveys have recorded larger numbers of *S. lapponum* than previously thought in the Merrick Hills.

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VC 84 in 2013

JACKIE MUSCOTT

With back trouble setting in just as the summer really got going this year, my botanising was limited. I did manage to complete my survey of the Union Canal in VC 84 (W Lothian) for the local Record Centre (and of course the BSBI). It was interesting to be back on the canal after last year which was pretty well the wettest since records began. Last year I identified Unbranched Bur-reed (*Sparganium emersum*) from a leaf I managed to get hold of, for none of it flowered (though there were plenty of leaves streaming out on the water despite the traffic). This year it flowered abundantly, and I was pleased to see I'd got it right!

Another noticeable difference was in the amount of Duckweed. Last year Common Duckweed (*Lemna minor*) was widespread but not common, and Ivy-leaved Duckweed (*L. trisulca*) was present here and there but scarce. This year Common Duckweed had spread right across the canal in places, and Ivy-leaved Duckweed was much more widespread. However I did not see any Fat Duckweed (*L. gibba*) which was once common in places. It was interesting to note in 'Aquatic Plants in Huddersfield Canals' (*BSBI News*, No124, P7) that Fat Duckweed had also disappeared from the Narrow Canal after re-opening. What is it that the plant can't cope with? Disturbance probably comes into it, but it used to grow quite happily in the Edinburgh section of the canal where the rowing clubs practise. Maybe dredging has affected water quality.

Some new plants were identified along the towpath, the one that interested me most being Filbert or Kentish Cob (*Corylus maxima*). I had passed it several times without recognising it, but this summer it produced large nuts which were clearly not the product of an ordinary Hazel. (I come from Leicester and the local football team plays at Filbert Street so now I know what a Filbert looks like.) Close by were two willows *Salix acutifolia* (identified by Douglas McKean) and *S. elaeagnos.* I was also delighted to find another plant of Tufted Loosetrife (*Lysimachia thyrsiflora*) beside rather than in the canal, so that's two survivors of what used to be a much larger population.

Another unusual willow turned up on an old railway line, now cycle path, where it enters Kirkliston – a small grove of *Salix* x *meyeriana* (*S. pentandra* x *S. fragilis*). Further along the line Douglas McKean identified 'giant *Caltha*' leaves as *Darmera peltata* (Indian Rhubarb), and discovered Hemp Agrimony (*Eupatorium cannabinum*) nearby but very shaded. There was more Hemp Agrimony and some Purple Loosetrife (*Lythrum salicaria*) in a wet spot near the Queensferry end of the line and a surprising amount of Agrimony (*Agrimonia eupatoria*) in between.

Wood Small Reed (*Calamagrostis epigejos*) continues its spread. Douglas McKean found some on the Midlothian side of the River Almond, and a patch turned up on a strip of waste land near the canal basin in Edinburgh.
Not such a bad year despite limited activity.

Beware the tetrad map! ANGUS HANNAH

"These tetrad frequencies and tetrad estimates are a major step towards establishing the relative abundance of species, though they would need to be combined with studies at yet finer scale before the ideal of measuring the abundance of a species across Britain could be fully realised."
(Braithwaite *et al*, 2006)
The tetrad maps which have become standard in recent Floras represent a huge advance on hectad maps, and the effort involved in producing them is greatly to be commended. But a word of caution may still be in order, as the interpretation of these maps is not straightforward. For instance, a generous sprinkling of dots may give the impression of a species frequent across the survey area, while in fact this may or (more likely) may not be the case. I aim to show that a suitably critical approach can help us to a more accurate interpretation of these maps.

Having a small vice county, and being constrained by cost and difficulty of

travel to its other islands, has given me the opportunity to record the distribution of plants on my home island of Bute in more detail than is possible for most recorders. Bute extends to about 1.2 hectads in area (though it shares in seven 10km squares) and along with the small adjacent island of Inchmarnock includes 161 whole or part 1km squares. This is a manageable number for more thorough recording than is commonly possible, and I believe that the results may have some relevance in larger areas, even where complete tetrad recording is impracticable.

I have long felt that it was important to distinguish dots which indicate the presence of a single plant or tiny population from those which signify that a plant is common in the square. Taking this one stage further, I have also recorded a middle category of frequency for plants neither scarce nor common, thus arriving at a four-point scale of 0 (absent), 1 (scarce), 2 (occasional/ fairly frequent) and 3 (present in a sizeable population). This lets me create nuanced distribution maps for each species, which can be correlated with similar maps showing the distribution of habitats according to their extent in each square. The work is still in progress, and at least two more seasons will be needed to complete the fieldwork for all species across the island.

In the meantime, my species maps already reveal some striking variations behind apparently similar tetrad maps. There is a statistical relationship which predicts the number of monads where a plant will be present, given the number of tetrads it occupies, provided its distribution at monad scale is random. But of course plants are not randomly distributed; they are often more clumped than a random distribution would predict, and sometimes more dispersed. The more clumped a species is at monad scale, the more monads it will occupy relative to its tetrad frequency, and vice-versa if it is more scattered. But scale is important, clumping at tetrad scale does not always mean a clumped monad distribution; this depends on the frequency of the species. A scarce plant may occur in only one monad in most of its tetrads, whereas a commoner one may occur in nearly every monad in the tetrads where it is present, and so retain a clumped distribution at both scales.
By way of example, I exhibited at SAM both tetrad and monad maps for *Polystichum aculeatum* (Hard Shield-fern) and *Empetrum nigrum* (Crowberry). The tetrad maps (Fig.1) are very similar, but the monad maps (Fig.2) are quite different, and even more so when abundance is taken into consideration. *Polystichum aculeatum* is found in 29 tetrads (out of 52) but only 31 monads (out of 161). Moreover, it is scarce in almost all of them, and abundant in none. This is a typical distribution pattern for a plant occupying a specific niche habitat which is of widespread but very local occurrence (in this case exposures of base-rich rock in a generally acidic landscape). This fern is much less abundant on Bute than a tetrad survey alone would suggest, and the same is true of a number of species whose populations are small and iso-

lated as a result of being restricted to specific habitat niches scattered relatively sparsely across the survey area.

Empetrum nigrum is found in two fewer tetrads than *P. aculeatum*, but occurs in more than twice the number of monads (66 in all). Significantly, it is abundant in about a dozen squares and scarce in only a few. This pattern is typical of a species whose habitat is extensive but patchy, with a clumped distribution at monad scale. Crowberry is very much more abundant on Bute than the fern, many thousands of times in terms of coverage, but this is not evident from a map of its tetrad presence. Of course, all recorders are aware of such anomalies, and will read the tetrad maps accordingly, but when it comes to data analysis there is no room for personal observation or anecdotal information. What cannot be expressed numerically is liable to be lost.

Bute probably serves as an exemplar for much of west-central Scotland, and I believe that my results may help to interpret tetrad maps in other parts of that area, since what is true of a species in one part of the region will remain applicable in neighbouring districts. My suggestion is that a small number of similar surveys (perhaps of one hectad), spread across the country, would provide a general key to tetrad maps, making it possible to assess more accurately the extent of the underlying populations they portray, and so help to achieve the ambitious ideal mentioned in the quotation at the head of this article.

Reference

Braithwaite *et al*, 2006, *Change in the British Flora 1987-2004* p.iv

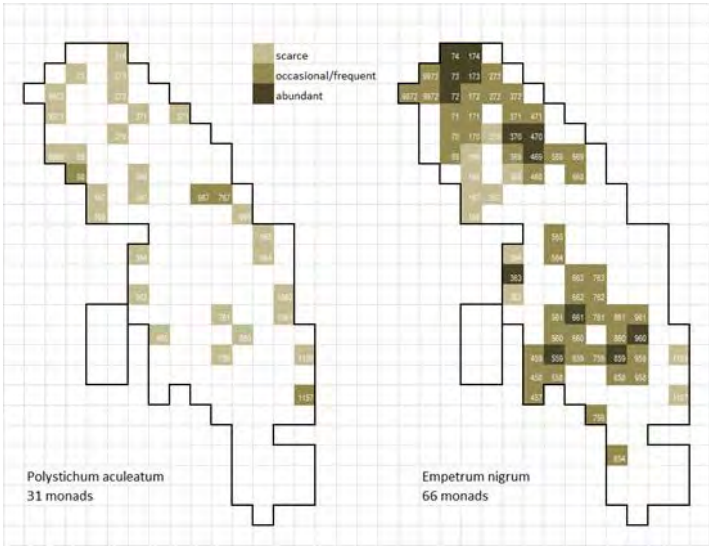

Fig.1 Tetrad maps showing presence in Bute of *Polystichum aculeatum* and *Empetrum nigrum.*

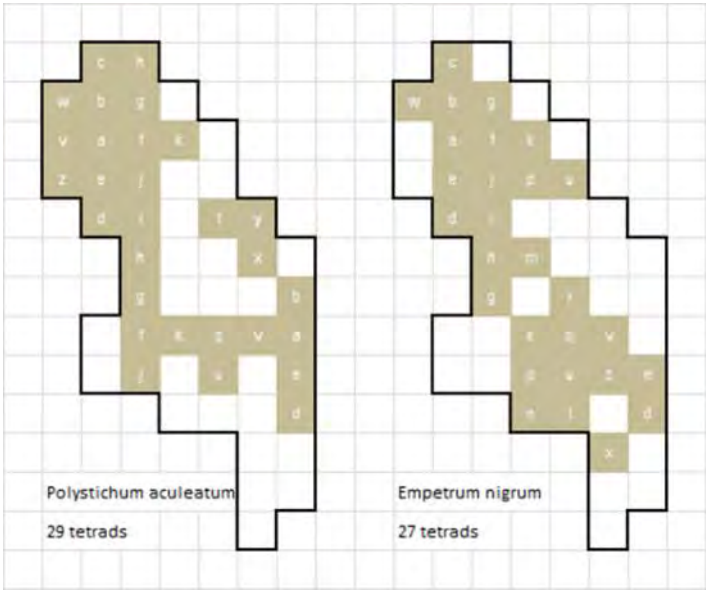

Fig.2 Monad maps showing presence and abundance of *P. aculeatum* and *E. nigrum* in Bute.

Potamogeton epihydrus in South Uist, VC 110

PAUL A. SMITH &
CLAUDIA FERGUSON-SMYTH

Abstract
Potamogeton epihydrus is a rare aquatic species, restricted as a British native to the Outer Hebrides, where it has been known from a few lochs in South Uist since the 1940s. It is much more widespread in North America, and is one of the few species in the North American element of the British flora. We summarise the history of its discovery, and review recent finds and the conditions in which it is found, including some pictures from new localities discovered in 2013.

History
Potamogeton epihydrus was discovered new to the British flora by J. W. Heslop-Harrison in 1943 (Heslop-Harrison 1950), and has been known in a few lochs near Loch Eynort in South Uist since that time. It is one of only a few species in the British Flora with North American affinities - it is widespread in North America, but in Europe occurs only in Scotland as a native. There are two varieties in North America – the type and var. *ramosus*, with narrower linear leaves – with the South Uist plants belonging to the latter.

There have been several waves of records as different botanists have visited and recorded pondweeds in VC 110, often making specific efforts to look for *P. epihydrus*. J.W. Heslop-Harrison and W.A. Clark made collections from 1943 to 1950. G. Taylor made a visit and several collections in 1951, and U.K. Duncan collected it in 1960.

There was a lull until the British Museum of Natural History started fieldwork for the Flora of the Outer Hebrides (Pankhurst & Mullin 1994) in the 1980s and then a series of records from rare plant surveys from the late 1980s and 1990s, together with some incidental records, which extended the known range to lochs near Dalabrog (Daliburgh), 10km to the south of the first sites. By 2000, *P. epihydrus* was known from several lochs and lochans in three tetrads near Loch Eynort, and two lochs in one tetrad at Dalabrog.

Recent finds
Tetrad recording for a new flora has been underway in VC 110 since around 2004. One of its side effects has been to encourage botanising in underworked areas, and this resulted in a new find in Loch nan Caorach (NF763256) on 19 June 2005, in a new tetrad between the known stations. Here it was washed up round the loch margin as a thick layer of leaf fragments, with stem pieces very sparse.

During further tetrad recording in 2013, it was found in lochs in two further tetrads, near the southern records at Dalabrog, and refound in a previously

known site at Loch a' Clachain. These finds were again of numerous leaf fragments washed up on loch shores (Fig. 1), with only occasional stem pieces. Although *P. epihydrus* has both rounded floating and linear submerged leaves, it was generally only the linear ones which were seen washed up. Careful examination of the loch surface failed to show any evidence of where the pondweed was actually growing, and annotations on other records suggests similar reports for other records. Preston (1995) and Preston & Croft (1997) say that similar washed up leaves have been found on Skye, though the presence of rooted plants has not been confirmed.

Morphology

Apart from possible confusion with *Potamogeton polygonifolius*, *P. epihydrus* is an easy pondweed to identify. *P. epihydrus* and *P. polygonifolius* are both found as slender to robust plants and for the most part are unbranched; the stem of *P. epihydrus* is usually oval in cross-section, whereas the stem of *P. polygonifolius* is terete. Both species produce floating and submerged leaves but from our observations, it would appear that *P. epihydrus* grows principally under the water and only produces floating leaves from a few stems.

The submerged leaves of *P. epihydrus* have a remarkable appearance. In common with all pondweeds the leaves are alternate, but the submerged leaves, on the vegetative shoots, are arranged distichously in two vertical rows on opposite sides of the stem, causing the plant to appear flattened. The submerged leaves of both *P. epihydrus* and *P. polygonifolius* are delicate and translucent. The colour can vary from pale brown, pale green, olive-green to pink in *P. epihydrus* with a very similar range of colours in *P. polygonifolius*. The submerged leaves of *P. epihydrus* are sessile while those of *P. polygonifolius* have petioles of 14-80 (-165) mm.

A most interesting character of the submerged leaves of *P. epihydrus* is the laminar surface at the base of the leaves which is totally flat, with a transition upwards to a rippled and undulating margin giving the leaves the appearance of gossamer ribbons, hence the common North American name of Ribbonleaf Pondweed. (Fig. 2).

The midrib of the submerged *P. epihydrus* leaves is bordered on both sides by a broad band of lacunae while the midrib of *P. polygonifolius* is bordered by a narrow band of lacunae. There are 2-4 lateral veins on each side of the midrib in *P. epihydrus* while there can be as many a 7 lateral veins on each side of the midrib in *P. polygonifolius*.

The floating leaves of both *P. epihydrus* and *P. polygonifolius* can be described as opaque, coriaceous and pinkish brown when young and dark olive brown when mature. Both are elliptical to oblong-elliptical. The lateral veins are opaque in living plants of *P. epihydrus* but darker in living

plants of *P. polygonifolius*.

Underwater leaf

We returned to Loch Crocabhat, one of the newly recorded sites, armed with snorkels and wetsuits to see what lay in wait beneath the surface. We were amazed – *P. epihydrus* was there as large plants waving gently in the water, in some places forming quite dense beds. There was a wonderful reddish colour in the leaves. In a few places the floating leaves could be seen from below, but many plants did not reach the surface and floating leaves were generally sparse. They were invisible from the loch shore. (Fig. 3).

We estimate that one plant in ten was flowering, with the flowers consistently forming about 20cm below the surface. A number of pieces were collected for the RBGE's DNA barcoding project and the Millennium Seedbank at Kew.

The loch, in common with many of the smaller lochs in VC 110, had a stony margin, but with a more or less flat peaty-silty bottom at a depth of 1.5m. A number of other aquatics were growing sporadically as associated species. These included *Juncus bulbosus*, *Isoetes echinospora*, *Isoetes* x *hickeyi*, *Lobelia dortmanna*, *Myriophyllum alterniflorum* and *Utricularia vulgaris* agg. This suggests that the NVC community is A13 (*Potamogeton – Myriophyllum alterniflorum* community), with *P. epihydrus* replacing the more usual *Potamogeton perfoliatus*.

The habitat is unexceptional, the only sign of any enrichment being a few plants of *Baldellia ranunculoides* at one end of Loch Crocabhat. This, together with the localised abundance, suggests that *P. epihydrus* has been spreading from a single colonisation event. If it had contracted from an earlier wider range, it would surely be less localised given the wide availability of suitable habitat in VC 110. There is also the possibility that it is more widespread and that it has just been overlooked. We suspect that more snorkelling will produce more records.

Acknowledgement

Paul's snorkel and goggles were provided by the BSBI Scottish Officer program – and are being put to good use! Russell Parry took the above-water photos and acted as life guard. Nick Stewart and Fred Rumsey confirmed our determinations.

References

Heslop-Harrison, J.W. (1950) A pondweed, new to the European flora, from the Scottish Western Isles, with some remarks on the phytogeography of the

island group. Phyton Annales Rei Botanicae 2 104-109.
Preston, C.D. (1995) *Pondweeds of Great Britain and Ireland*. BSBI Handbook No. 8. BSBI, London.
Preston, C.D. & Croft, J.M. (1997) *Aquatic plants in Britain and Ireland*. Harley Books, Colchester.

Scottish Field Meetings 2014

Full details of the following meetings will be found in the Year Book

June 4 – 7: Highland Perthshire, Various leaders
June 14: Kippenrait Glen, W Perthshire, L Lavery & J McIntosh
June 15: Arthur's Seat, Midlothian (Sedges), M Porter & J McIntosh
June 22: Arthur's Seat, Midlothian (Grasses), J McIntosh
June 28: Beinn Dubhchraig (VCs 88/87), J Holland
June 29-Jy 6: Shiel Bridge, Kintail (VC 105), J McIntosh, D Donald & I Strachan
July 5 – 6: Dornoch Firth- Tain & Ardgay, B Ballinger & M Dean
July 12 – 13: St Boswells, Melrose (Grasses), A Copping & J McIntosh
July 18 – 21: Orkney Isles, J Crossley & E Meek
Aug 2: Ardtalnaig, Mid- Perthshire, J McIntosh
Aug 23: Kittyfield, near Melrose, L Gaskell
Aug 30: Campsie Glen, near Lennoxtown, R McGuire & A Hannah
Sept 14: Lochindorb, Moray, I Green

Kirkudbrightshire Botany Group

David Hawker is in the process of setting up a local group as above with the aim of meeting once per month from March to October. (His usual E-mail address for contact and programme). There are also field meetings arranged by the Dumfries and Galloway Environmental Records Centre which may be of interest (http:// www.dgerc.org.uk/

PLANTLIFE SCOTLAND EVENTS 2014

BSBI members are very welcome at any Plantlife walks and workshops. The events listed below are free of charge (donations welcome), and are open to participants with any level of experience. All events must be booked in advance - for more details or to book a place, contact scotland@plantlife.org.uk or (01786) 478509.

Sat 1 March, 12.00 – 3.00pm
Drummond Wood, Perthshire
Lichen Identification workshop
Learn the basics of lichen identification in dramatic Drummond Wood. Led by lichenologist John Douglass.

Sat 15 March
National Juniper Day
We would be grateful for any juniper records from BSBI members for our new Scotland juniper survey. Downloadable form is available from www.plantlife.org.uk/scotland**.**

Sun 16 March, 2.30 – 4.30pm
Scottish Seabird Centre, North Berwick, E Lothian
Legends of the laws – Special storytelling event
Traprain and North Berwick Law dominate the local landscape and are important sites for wild flowers and lichens. They are also steeped in history with buried treasure, ancient rock carvings and a rich folklore of plants. Join us for an afternoon of tales of Celtic warriors, druids and saints, fairies and herbal healers, inspired by these iconic sites. With storyteller Alasdair Taylor. Suitable for families.

Sat 24 May, 11am – 2.30pm
Duchess Wood, Helensburgh
Spring walk
Join us for a spring walk in Duchess Wood. Part of the festival to celebrate the opening of the John Muir Way (details at www.snh.gov.uk). Bring your own lunch for a picnic in the woods. Joint event with the Friends of Duchess Wood.

Sun 25 May, 11am – 4pm
Wooplaw community woodland, nr Lauder, Scottish Borders
Wildflowers Count survey day
Come along to help survey the wildflowers of Wooplaw. A chance to explore this inspiring site, improve your wildflower identification and learn some folklore of the plants we find.

Sat 7 June, 11am - 4pm
Crathes Castle, nr Banchory, Aberdeenshire
Getting the most out of Wildflowers Count
A practical workshop, full of ideas and tips on what to look for while enjoying a walk through the countryside, and finding out more about our national plant survey.

Thurs 12 June, 10am - 4pm
Falkirk Wheel, Falkirk
Learn how to identify wildflowers
This event is for people who would like to find out how to use wildflower keys and build up their expertise on Scottish wild flowers. Led by Dr Heather McHaffie.

Mon 16 June, 11am - 3pm
Inchnadamph, Assynt, Sutherland
Guided wildflower walk
An opportunity to see a rich assembly of limestone wildflowers, in this fascinating area of the North Highlands. This 5km walk will follow the valley of the Traligill and visit the Allt na Glaic Mòire tributary which has the best flora. Walk is off-path in places so requires a reasonable level of fitness and good footwear. Led by Highland Council Assynt rangers.

Wed 25 June, 11am - 4pm
Lochwinnoch, Renfrewshire
Getting the most out of Wildflowers Count
For details see 7th June event.

Sat 28 June, 10.30am - 3pm
Langlands Park, Jedburgh, Scottish Borders
Wildflower meadow walk
A demonstration of how flower-rich fields can be created and managed from seed. Part of Plantlife's Coronation Meadows project; meet a landowner who created her own Peoples' Meadow, and take a walk though this now colourful part of the Borders.

Wed 9 July, 10.30am - 4pm
Almondell and Calderwood Country Park
Wildflower Identification and Folklore
Take a closer look at plants, learn some top tips on how to identify them and learn the many ways people have used them for food, medicines and craft. With Plantlife and the Central Scotland Forest Trust.

Sat 19 July, 11am - 2pm
Caerlaverock, Dumfries
Guided saltmarsh walk
Find out about the ecology and wild plants of the saltmarshes at the Caerlaverock National Nature Reserve starting from the Wildfowl and Wetland Trust's Caerlaverock Wetlands Centre. Led by Chris Miles. There is a coffee shop and a wide selection of natural history books at the WWT centre.

Sat 23rd August – 11am - 3pm
Aberfeldy, Perthshire
Scottish Clan Plants & Cultural Plants – Botanical & Cultural Walk
Many clans had a badge plant or battle emblem which may have been used for identification. There are also many other plants which are part of Scottish cultural and literary history. Join us for a walk to find out more about some of these plants and their connections with the peoples of Scotland. Led by Dr Seona Anderson, Plantlife European Projects Co-ordinator.

Sun 24 August, 10am - 1pm
Elie, Fife
Guided seashore walk
Find out more about seaweeds and seashore ecology. The walk will explore different areas of the shore at picturesque Elie on the East Neuk of Fife, where a good range of seaweeds can be seen. Led by Professor Martin Wilkinson of the Centre for Marine Biodiversity & Biotechnology, Heriot-Watt University.

British Pteridological Society Scottish Group Meetings Programme 2014

All Welcome!

Date	Location
Saturday, 31 May	**Arthur's Seat, Edinburgh** *Ophioglossum*: Leader Mary Gibby
Saturday, 27 & 28 June	**Logan Botanic Garden, Rhins of Galloway** Bioblitz: Leader Heather McHaffie
Saturday, 12 July	**Mennock Pass & Southerness, Dumfriesshire** *Cryptogramma crispa* & *Thelypteris palustris* Leaders Adrian Dyer and Bridget Laue
Sunday, 27 July	**Cramond, Edinburgh** Introduction to ferns: Joint meeting with BSBI
Saturday, 9 August	**Geilston Gardens, Cardross, Dumbarton** Fern ID tour: Leader Frank McGavigan
Saturday, 30 August	**Stob Coire Sgriodain, West of Cairngorms** Clubmosses: Leader Roger Golding
Saturday, 27 September	**Lenzie, Glasgow** Autumn Indoor Meeting: Host Frank McGavigan

BSBI members are very welcome. If you plan to attend any of the BPS outings, please contact the organisers a few weeks before the date of the meeting, when further details should be available.

Bridget Laue bridgetlaue@blueyonder.co.uk 0131 2589592
Mary Gibby M.Gibby@rbge.org.uk
Frank McGavigan fmcgav@gmail.com

2013 BSBI Scottish Photographic Competition

Entries were invited in three classes to the 2013 BSBI Scottish Photographic Competition:
Clamber the Cliffs
Fabulous Ferns
If you go down to the Woods…

They were displayed throughout the day at last year's BSBI / BSS Scottish Annual Meeting at RBGE and those attending had the opportunity to view them and vote for their favourites. Nine photographers contributed a total of 23 images in the three classes and a total of 70 voting forms were returned. The winners were announced after dinner.
The overall winner was Derek Christie with his delightful photograph entitled "Steps in Holyrood Park" in the *Clamber the Cliffs* class.

Derek also won best photo in the *If you go down to the woods* class with his "Death Cap".

The winner of the third category, *Fabulous ferns*, was Sandy Edwards' "Ostrich Ferns in Garden".

Amazingly all three winning photographs just beat very close runners-up such was the quality of the entries. Thanks are due to all competitors and voters and especially to Ruth McGuire, the BSBI Volunteer Publicity Officer for arranging the competition.

2014 BSBI Photographic Competition
Claudia Ferguson-Smyth has very kindly agreed to organise this year's competition. There will be just two classes 1) Plants – including higher plants, ferns, lichens, mosses and fungi 2) People – well, with some botanical connection. This should allow you to submit your very best images without too many restrictions. In order to encourage entries and standardise print quality and size, we are asking for entries in electronic format **only** this year. Please email your images directly to Claudia at claudia@ferguson-smyth.co.uk before Monday the 13th of October – to allow her plenty of time to get them printed and mounted before the 2014 Scottish Annual Meeting on Saturday the 1st of November. There is a maximum of three entries per person per class. Please submit the largest possible files sizes. Contact Claudia if you would like to use Dropbox and, or if you have any technical questions. The winner will be decided by a vote by those attending the Annual Meeting, and the winning photographs will be published on the BSBI website and BSBI Scottish Newsletter.

Jim McIntosh, BSBI Scottish Officer

BSBI Journals back numbers: free offer

Dr Lewis N. Derrick, 27 Swanston Grove, Edinburgh EH10 7BN, has the following available for anyone prepared to collect them from his Edinburgh address, on a first come basis.

He requests that any interested party contact him initially by E-mail

He has *Watsonia* complete with indexes from 1977 to its last issue, plus *BSBI News* for the same period complete with indexes too. There are also annual reports, membership lists and year books for the same 36-year period and 10 years of *Scottish Newsletters* from 2003. Plus a couple of years of the *NJB*.

Anyone interested should make initial contact via this email address:
lewisderrick27@virginmedia.com

Inside back cover:

Figure relating to Rediscovery of Mountain Sorrel (*Oxyria digyna*) in Kirkcudbrightshire VC 73, David Hawker.

Back cover:

Figures relating to *Potamogeton epihydrus* in South Uist, VC 110, Paul A Smith and C. Claudia Ferguson-Smyth

Fig. 1: A nearly intact stem of *P.epihydrus* washed up in the edge of Loch Fada, showing submerged and floating leaves.
Fig. 2: Submerged leaf detail showing venation and central lacunae. Note the pleats and folds at the edges of the dried specimen which represent the undulations and ripples in the fresh leaf surface.
Fig. 3: *P. epihydrus* growing in the silty bed of Loch Crocabhat. Stems arise in lines from rhizomes so there is the possibility that many of the plants may represent a single clone?
See our YouTube video http://www.youtube.com/watch?v=huJ5LNrBuBk.
Fig 4: Botanising Loch Crocabhat. Is there a snorkel in *your* recording gear?