Botanical Society of Britain & Ireland

SCOTTISH NEWSLETTER

No. 42

Spring 2020

Drosera anglica (long-leaved sundew) Glen Strae (photo P. Wiggins)

Editor's note

In view of the restrictions imposed to combat the Corona virus outbreak, we are unable to print and distribute the Scottish Newsletter in hard-copy form at present. This special edition has been prepared for download from the website.

We apologise to those of you who prefer to receive paper copy, and if circumstances allow it may be possible to issue the edition in that form at a later date.

A significant advantage of the electronic format is that there is no restriction on the use of colour, and in consequence photographs can be embedded at their proper places in the articles to which they relate, and at larger size and in greater numbers than is affordable in print.

This is a particularly difficult time for botanists who look forward to spending time in the field during the season. At the time of writing it is uncertain whether any field meetings will be able to take place this year. The latter parts of some of the usual programmes are included here, but members are advised to check the website or ask vice-county recorders for up-to-date information. This applies also to outreach and any indoor meetings that may have been planned. We simply don't know at present whether it may be possible to hold some meetings later in the year, and a few may be offered at short notice if regulations are relaxed.

Orthilia secunda **(serrated wintergreen)**
Photographed during the Easterness recording week
(report p. 34)

BSBI SCOTTISH NEWSLETTER

Number 42 Spring 2020

Editor: Angus Hannah

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Notes from the Scottish Botanists' Conference
Saturday 2 November 2019
Royal Botanic Garden Edinburgh *Aileen Meek*

[Note: fuller reports can be found by clicking on the hyperlinks]

Welcome — *Simon Milne, RBGE Regius Keeper and Chris Metherell, BSBI President*

Chris Metherell warmly welcomed everyone to the meeting; delighting in another record attendance of over 200 delegates.

Simon noted that there has recently been a rapid growth in interest in biodiversity, and that events and issues such as the climate change crisis have made biodiversity increasingly topical and important. There is recognition that there is a great need for strong partnerships between groups of botanists. A great example of this is the partnership of the BSBI and BSS which goes from strength to strength and is greatly valued by RBGE where leading scientists work on many topical issues. The significance of collaboration, data collection, information gathering, and sharing was highlighted; enabling the provision of an evidence base to inform actions, for example showing plant distributions and investigating genomes of native plants.

The use of the facilities at RBGE was gratefully acknowledged with the venue hailed as the 'home' of Scottish botanists and the perfect venue for the Botanists' Conference. The fantastic RBGE herbarium and library were highly recommended as an important and useful resource.

The Scottish BSBI Year – *Jim McIntosh, BSBI Scottish Officer*

Jim added his appreciation and delight at the great attendance and highlighted some key areas of work in the past year.

With a focus on the current Conference, he advocated viewing the exhibits and attending the talks and workshops, but emphasised that meeting fellow botanists and getting to know each other is one of the most important aspects of any Conference. To this end also, Jim warmly invited folks to the BSBI Christmas Lunch at the Water of Leith on 10th December.

In 2019 two spring recording conferences had been organised for County Recorders for everyone interested in recording. Jim thanked Ian Francis for arranging the Aberdeen meeting and for the use of the RSPB office as a venue noting that having two venues helped to reduce the overall carbon footprint of attendees. Next year, two meetings are planned again, with the same programme repeated.

With respect to the Atlas 2020 recording, Jim lauded the astonishing outcome of having target plant recording level achieved in more than half of the

hectads in Scotland considering the challenging terrain and the comparatively lower number of botanists on the ground.

The work of Ian Francis's Rough Squad in the Cairngorms was appreciated for finding some great species in 18 one-kilometre squares (in grim weather) which had been a former 'records black hole'.

Local groups were also acknowledged with 'Team 77' celebrated as being the most active. Jim advocated joining a local group if possible; further information can be found on the BSBI website.

A beginners' identification workshop was held at Mar Lodge near Braemar with a follow-up Field Meeting at Morrone Birkwoods. Grasses and Sedges identification workshops were held at the University of Stirling and Mugdock Country Park respectively.

The Scottish Officer post is 50% funded by a private donor and 50% from SNH - hopefully to be renewed in March. Funds have also been available to digitise Site Condition Monitoring rare plant data. Jim sincerely thanked SNH, RBGE, BSBI members and Vice County recorders for their support and input.

The Botanical Society of Scotland Report – *Julia Wilson, BSS President*

Julia Wilson described BSS as catering for a wide range of interests and having a broad remit to promote the study of plants. A winter lecture series enjoys free use of RBGE lecture theatre and Julia thanked RBGE for this. Talks can be provided at other venues so anyone interested should ask. Summer meetings provide a varied programme to embrace all interests. The BSS awards student prizes and grants; this year two first prizes were awarded. There are two BSS publications: *BSS News* and *Plant Ecology and Diversity*. The formal objection to the proposed development at Coul Links was a first of the kind for BSS; as yet there is no reported outcome.

Urban Flora of Scotland: Notable finds 2015-2019 – *John Grace*

This project has run for 4 years and will run for 10 years, at the end of which results will be published in various ways. A major interest is to see which plants are growing and why these species grow where they do. The term 'crackophytes' has been used to describe many urban plants as cracks in pavements and buildings etc are common places to find them, although they may often be overlooked. The BSS is working with BSBI and Natural History groups to collect information. John encouraged viewing the poster in the exhibition and ponder the intriguing question - are urban sites richer in plants than rural sites? Some areas of particular interest referred to were the rapid spread of Water Bent (*Polypogon viridis*), the study of fleabanes in Edinburgh (see article in BSBI News, Number 135, April 2017), the northerly

spread of Pirri-pirri-burr (*Acaena*) species, and the discovery that 'Mad Clover Disease' is not vivipary but actually an infection.

Atlas 2020 – the final steps – *Pete Stroh, BSBI England Officer*

Dr Peter Stroh expressed grateful thanks for the third Atlas soon to be published and celebrated the remarkable number of records collected in Scotland which sits at 3,386,801 between 2000 and 2019. This compares with 1,374,725 Scottish records between 1987 and 1999. The Centre for Ecology and Hydrology (CEH) are commissioned to help analyse data. Thanks were given to Andy Amphlett for production of maps. In this final year for data collection, the deadline for submitting records is 31 December 2019. The deadline for validation of records is 1 April 2020 with the end of 2020 being the deadline for finalising the Atlas dataset. Peter gave a brief overview of the publication of the 2020 Atlas with the Online Atlas being in the domain of BSBI staff and CEH; the Summary Report undertaken by staff; County Summaries and the published book undertaken by volunteers. A plea was made for writers to draft new captions and update those from the previous Atlas. There will be a variety of map outputs; a summary report with a maximum of 20 pages will target people and organisations who can implement change. The published book should be completed by 2022 and a book of maps will be printed to order.

The Presidents' Prize Award – *Chris Metherell, BSBI President*

The Presidents of the BSBI & The Wild Flower Society jointly acknowledge the most useful contribution to the understanding of the flowering plants and ferns of Britain by making an award. With great delight, Chris Metherell announced that the winner of the 2019 Presidents' Award was Angus Hannah, BSBI County Recorder for the Clyde Islands, for his *Flora of Bute*.

BSBI Scotland Annual General Meeting – *Ian Strachan, Chair BSBI Committee for Scotland*

Minuted separately (See pages 10-11).

Mini-workshops

Eight mini-workshops were organised: Introduction to Duckweeds (*Helena Crouch & Fred Rumsey),* Ferns (*Heather McHaffie*), Firs (*Matt Parratt*), Grasses (*Jay Mackinnon*), the Vegetative Key (*Polly Spencer-Vellacot*), the BSBI Database (*Chris Metherell*) and one looking at tricky species pairs (*Ian Strachan, Douglas McKean & Mary Gibby*) and another demonstrating how to make

your own grapnel (by *Jeff Waddell*). Each workshop was attended by about 20 people and ran twice.

Short Talks

Twinflower Research & Conservation Project – *Diana Gilbert*

Diana gave a short introduction to Twinflower explaining that there are 400 separate known patches in Scotland since 2000; 80% of these patches are a single plant. Diana outlined how this status has come about, describing the population as static. A map of population distribution in Highland showed some plants growing in forestry owned land, some in privately owned land. Nineteen unique clones have been identified by genotype. Richard Marriott has been involved with identifying clones; and Diana reported that flowers differ between clones. All clones are being cultivated to provide new plants and new methods of extending young plants are being tried. To establish new populations, a translocation license is required and of crucial importance is a set of criteria for planting site selection. Diana stressed the high importance of having a mixture of clones for seed to be produced; for example, one site can have 4 to 5 clones. Please contact Diana for further details.

The North Face Survey 2014-16 **–** *Ian Strachan*

Ian introduced his talk on the Ben Nevis North Face Survey by showing a map of Ben Nevis and its environs including a SSSI (Site of Special Scientific Interest) that includes special habitats, geological features and species. The highest cliffs in Britain are present north and east of the scree covered summit plateau and the dramatic landscape also hosts important snow patches. Previously an observatory was present here, later a hotel. Ian described the east ascent as more exciting, well known and favoured by rock and ice climbers and therefore many areas are recognised with names which proved useful in the surveys. Site condition monitoring undertaken in 2002 and 2013 provided a basis for this exciting follow-up recording under the Nevis Landscape Partnership Project which employed 8 climbing guides, geologists and 3 botanists. The results have been published in a book entitled *The North Face Survey: Discovering the hidden side of Ben Nevis* (2019) which is stocked by Summerfield books.

Alpine Blue Sow-thistle (Cicerbita alpina) in Scotland – *Aline Finger, RBGE*

Aline introduced her talk with the fact that Alpine Blue Sow-thistle has four populations in the UK, all in the Cairngorms National Park. It is a species on the brink of extinction in the UK and is therefore a priority species; on the red data list its status is vulnerable. The species is very palatable to grazing animals and where it is accessible this is a major threat. The Sow-thistle is a flagship species for recovery through land management. Sites for the spe-

cies are Corrie Kander, Caenlochan, Corrie Fee and Lochnagar where it favours north facing wet ledges. 500 reproducing individual plants would be required to make a sustainable population. Translocations have been so far been effected in Morrone Birkwood, Mar Estate and Corrie Fee.

Question & Answer session – a chance to have your say!

Q1. Referring to **Alpine Blue Sow-thistle**, why do slugs cause problems at lower and not higher altitudes?

A. Small populations of plants are damaged by presence of high numbers of slugs. Senecio is also damaged by slugs.

Q2. Referring to Alpine Blue Sow-thistle, are there concerns about outbreeding depression? If ABST is growing at edge of natural range, is the effort well placed?

A. Outbreeding depression has been shown to be unlikely for crossed plants when habitats are similar and populations are geographically close, as is the case for *Cicerbita*. It's always good practice though to test potential outbreeding depression in a controlled nursery environment before planting crossed plants into the wild.

Q3. Regarding Alpine Blue Sow-thistle, if the main threat is grazing, how much is being done to protect it from being grazed?

A. It would be interesting to fence and protect an area to see what effect this would have, but it is not always easy to have co-operation from landowners on a wider scale.

Q4. Have drones been used to record plants in inaccessible places?

A. Drones have been used but not often. Currently a drone would not pick up on very small plants or populations; drones have been used for used for seal monitoring, so larger plants such as willow populations or where there are few species to monitor, they may be helpful.

[**Comment:** Excited to hear that Alpine Blue Sow-thistle has been translocated into Morrone Birkwood This was suggested some time ago but was not acceptable then, so glad that this is happening now.]

Q5. If **twinflower** does not set seed here what is the mechanism to it being here?

A. It does set seed but only fourteen seeds were produced from a single clone. Bringing seeds from other populations might help to widen the seed bank.

Q6. Regarding the **North Face Survey**, the importance of botanical gardens has been shown in propagating e.g. Twinflower, did any collection take place of rare plant samples for propagation purposes?

A. The aim was to record. Perhaps collection could be done but preferable emphasis may be on protecting and conserving habitats rather than growing on plants. Agreement added on caring for habitats and preventing habitat loss. This diminishing of habitat is being experienced now, it is recognised as a risk and is a frightening prospect.

Q7 **2020 Atlas** - how many people look at their New Atlas book and why publish on paper?

A. Lots of Vice County recorders - and others - want a book on the bookshelf. As a pre-order only publication, copies will be printed 'on-demand'. The main output will be online as more information can be included.

Q8. Will the new Atlas include synonyms?

A. Yes, they can be included, especially online.

Q9. How can I record species not in *Mapmate*'s species dictionary for Atlas 2020?

A. The update of the species dictionary needs a 'Patch'. Send a list of species to be added to the dictionary to Tom Humphrey, so that the next 'Patch' can be made, for example, Zostera.

Q10. Will the maps in the new Atlas include escaped Irish and Atlantic Ivies?

A. It is expected so.

[**Comment**: Munsary Peatland Reserve asked for help to survey *Saxifraga hirculus*. Any offers of help, please contact Jim to pass to Plantlife's Alistair Whyte.]

Main Talk - Plants at the Margin in a changing climate – *Prof Robert Crawford*

BSBI Photographic Competition Results – *Natalie Harmsworth*

The winner in the Native category entitled "Marsh Cinquefoil (*Comarum palustris*) Millport" was by Heather Kelly. And the winner in the Alien category, entitled "Borage (*Borago officinalis*), Colyton", was by Boots Hackman. The prizes are book tokens very kindly supplied by BSBI / Summerfield Books.

Thanks – *Jim McIntosh, BSBI Scottish Officer*

Jim thanked all the speakers, workshop facilitators, organisers and indeed everyone who participated for making the day such a success, and wished those who were not staying for the Conference Dinner a safe journey home!

Note

The talks are available to view on the Scottish Botanists' Conference page online, along with a virtual exhibition – which you may find useful if you didn't have enough time to look at all the posters and exhibits!

The exhibition abstracts are printed here on pages 14 ff.

Minutes of the BSBI Scotland Annual General Meeting

Saturday 2 November 2019 Royal Botanic Garden Edinburgh

Chaired by Ian Strachan, Chair BSBI Committee for Scotland (CfS)

1. Welcome

Ian Strachan stated that everyone is welcome to attend the BSBI AGM and commenced the meeting by thanking all for their attendance.

2. Minutes of the BSBI Scottish AGM 2018

Minutes of the BSBI Scottish AGM 2018 required correction to the meeting date. Approval was then proposed by Steven Bungard and seconded by Ian Evans.

3. Committee for Scotland

Ron Youngman was proposed as a new member of the CfS by Martin Robinson; seconded by Liz Lavery.

Ian Strachan is due to retire as Chair as he has now been in post for 6 years. Lindsay McKinlay was proposed as the new Chair. Lindsay previously worked for National Trust for Scotland (NTS) and represented that organisation on the Committee for Scotland (CfS) before joining the committee as an ordinary member. Ian Strachan nominated, seconded by Liz Kungu.

4. Chair's report

- In his Chair's Report, Ian Strachan stated that a key role for the Committee is to support the Scottish Officer. Ian stated how lucky the BSBI in Scotland are to have Jim in post who has worked as hard as ever;

- See Ian's slides regarding the consultation on Scottish Forestry Strategy, and how data should be used to protect sites and species;
- Coul Links SSSI – BSBI did not participate but did support other organisations in objecting to the proposed development;
- With respect to projects following the 2020 Atlas, ideas are forthcoming, Ian Strachan and Liz Lavery are key information gatherers;
- Habitat map of Scotland – strongly recommended to scrutinise poster for BSBI input;
- Regarding outreach, it was acknowledged that Faith Anstey has made a great contribution;
- Regarding the quest for a Young Peoples' Representative - see poster – please speak to Ian or a committee member;
- Regarding VC Recorder vacancies, please speak to Jim;

5. Field meetings

The 2020 Annual Summer Meeting will take place in Melrose in July – more details to follow.

Please pass on any information regarding Field Meetings in 2020 to Aileen Meek for entry to the Yearbook.

6. Scottish Newsletter

Regarding the Scottish newsletter, thanks are due again to Angus Hannah. He would welcome further contributions to the next edition.

7. Date of the next AGM

On the day of the next Scottish Botanist Conference – date to be announced.

8. Any other business

Many thanks were due to Jim for organising the Conference; to the CfS, and to the members for contributing.

Aileen Meek, Secretary CfS

Climate change and montane species in Kirkcudbrightshire VC73

During survey work for a potential windfarm in the NW corner of the VC in 1992-4 and post-construction monitoring in 1996-8, I recorded large patches of least willow *Salix herbacea* at altitudes of around 580 metres asl on exposed tops of hills around Windy Standard (NS6101). These areas had a high percentage of bare soil and stony ground within the low vegetation cover of grass and dwarf shrub.

In 2019 for Atlas 2020, three of us (me, Valerie Heppel, Ross Andrew) managed to gain vehicle access to this isolated site in mid-October, specifically to search for and record several montane species in what is a somewhat restricted habitat in the VC. Despite the late season we were able to re-find large colonies of cloudberry *Rubus chamaemorus* in its only tetrad for this VC and to relocate a population of stiff sedge *Carex bigelowii,* as well as scattered stag's-horn clubmoss *Lycopodium clavatum*, fir clubmoss *Huperzia selago* and alpine clubmoss *Diphasiastrum alpinum*. However, we were unable to re-find S. herbacea at any of the exposed hilltop sites where previously seen. Instead these areas were covered by dense mats of tall mosses, dominated by *Hylocomium splendens* and *Rhytidiadelphus squarrosus*, interspersed with scattered sheep's fescue *Festuca ovina*, viviparous fescue *F. vivipara* and wavy hairgrass *Deschampsia flexuosa*. And a few shoots of crowberry *Vaccinium vitis-idaea* and cowberry *Empetrum nigrum* but very few forbs.

By chance, we met the local farmer rounding up sheep from the adjoining fenced area and during conversation mentioned this puzzling change in the vegetation on the windfarm and sheep-free side of the stock fencing. He stated that, over the past few years, snow cover on these hill tops had declined significantly and rarely lay more than a few days. He suggested that the lack of snow cover was responsible for the change in vegetation and for the way in which he now managed his sheep flock on the hill compared to earlier decades. Perhaps least willow had to compete with the vigorous moss and herb growth now possible due to lack of snow cover, and had been overwhelmed to the point of extinction.

Due to the lateness of our visit, we were unable to re-locate the two saxifrages – starry *S. stellaris* and mossy *S. hypnoides* nor alpine scurvy-grass *Cochlearia pyrenaica*, all species with significant VC73 populations here. A repeat visit is foreseen in 2020 at a more appropriate time.

David Hawker

A new fern taxon from Arran

A new fern taxon from Arran has been published in the Fern Gazette (Church *et al* 2019). The plant was first recognised as distinctive by Tony Church at Kingscross on the Isle of Arran in 2014. A crown was grown on in cultivation and observed over several years. In macro-morphology the plant resembled *Dryopteris cambrensis* subsp. *cambrensis*, but spore and stomata size suggested it was probably diploid (*cambrensis* is triploid) and this was confirmed by flow cytometry on two separate plants by R. Viane at Ghent and from chromosome count (2n=82) by Alison Evans. Morphologically, The plant is distinct from *D. affinis* subsp. *affinis* (the only other known British diploid in the complex, apart from the related *D. oreades*) in having a long, lobed and stalked lowest basiscopic pinnule, a more spreading dark spot and the rachis partially covered by the basiscopic pinnule auricles.

While the taxonomy and nomenclature of the complex remain in flux, the authors have taken a pragmatic approach, following Stace 3, and the new taxon is named *Dryopteris affinis* subsp. *cluthensis*. They anticipate that it may be raised to species status in future. The name refers to the proximity of the type location and all other currently known sites to the Firth of Clyde coast.

Specimens have been identified at several moist, sheltered sites on the east coast of Arran, in swampy alder woodland near the sea and beside rivulets running down to the shore. There are about 30 plants growing with *D. cambrensis* at the original site near Kingscross. So far it has not been found outwith Arran, but should be looked for in suitable locations, where one might expect it to be accompanied by *D. aemula* (hay-scented buckler-fern) and *Hymenophyllum* spp. (filmy ferns).

Reference: Church, A.R., Evans, A.J., Golding, R., Rumsey, F.J., Viane, R.L.L., 2019: *Dryopteris affinis* subsp. *cluthensis*, A new taxon in the *Dryopteris affinis* complex, *Fern Gaz*. 21 (2) pp.87-97.

Angus Hannah

Scottish Botanists' Conference 2019 – Abstracts of Exhibits

Botanical Highlights from Dumfriesshire in 2019 (v.c.72) Chris Miles

The Dumfries Botany Group continued with 10 meetings in the county in 2019 including a training day on identifying grasses and a joint meeting with the Botanical Society of Scotland (BSS) Urban team over 4 days. Accounts of all of these meetings can be seen on the blog https://bsbi.org/dumfriesshire

Botanical highlights from Dumfriesshire Group meetings included *Cicuta virosa* (Cowbane) and *Carex aquatilis* (Water Sedge) on the Dalswinton Estate; refinding *Botrychium lunaria* (Moonwort) at Wanlockhead; seeing the first *Glaucium flavum* (Yellow Horned-poppy) recorded for over a 100 years at Powfoot; the 11th site for *Apium inundatum* (Lesser Marshwort) at Drumlanrigg: *Scrophularia auriculata* (Water Figwort) at its 10th site near Loch Ettrick.

Highlights from the joint Urban weekend with BSS in Dumfries were *Lamium amplexicaule* (Henbit Dead-nettle) on the edge of the pavement, the first record in Dumfries for over 100 years. In Annan *Lamium confertum* (Northern Dead-nettle) had only 5 previous records in the County. The first record for *Valerianella locusta* (Common Cornsalad) was made for Upper Nithsdale.

The rest of the season has been focused on filling gaps for Atlas 2020. Some good finds include the refinding of *Blysmus compressus* (Flat-sedge) in a hectad after more than 100 years; the first refind of *Pseudorchis albida* (Small-white Orchid) since 1988; a new apparently natural site for *Potentilla argentea* (Hoary Cinquefoil).

Peeblesshire (v.c.78) plants 2019 Luke Gaskell

Juncus filiformis (Thread Rush) - One patch was found on peaty silt in the upper draw-down zone of Fruid reservoir, a typical habitat for this species. It is approximately 80km from the nearest populations in Cumbria and a similar distance from a 1980s record in Ayrshire so it fills a gap in the distribution. Presumably it is moved about by birds.

Fumaria densiflora (Dense-flowered Fumitory) - A declining arable weed with a distinctly eastern distribution in Scotland so this Peeblesshire record is a bit of an outlier. While most of the county is currently sown to grass some forage crops are still grown and the Fumitory was in a field split between fodder Beet and Turnips with a buffer of Barley around the edge. There were no weeds in the Barley.

Viola x scabra (*V. hirta x odorata*) - This hybrid seems to be relatively uncommon and there are no records in the current date class in Scotland though I expect that the population at Carham station in Roxburghshire is still extant. I have no idea as to why it appeared in Innerleithen, *Viola hirta* (Hairy Violet) has never been recorded in VC78 and *Viola odorata* (Sweet Violet) was last seen in 1969.

Symphyotrichum novi-belgii, (Confused Michaelmas-daisy), *Symphyotrichum x salignum* (Common Michaelmas-daisy) and *Symphyotrichum x versicolor* (Late

Michaelmas-daisy) are displayed. As the name implies now's the time to see Asters and I am showing plants that I have found in the Borders. All comments and alternative determinations welcome.

***Vicia sepium* (Bush Vetch) forming vegetative mats (v.c.80)**
Michael Braithwaite

The small wildflower meadow at my house had been cropped for hay for 30 years, but had had no grazing or fertiliser application. This lead to a dramatic loss of floral diversity. Large swathes were reduced to a very species-poor sward co-dominated by *Anthoxanthum odoratum* (Sweet Vernal-grass) and the moss *Rhytidiadelphus squarrosus*. Following the application of a modest dressing of garden lime, *Vicia sepium* (Bush Vetch) has formed a remarkable patch 6m in diameter in the meadow, extending vegetatively from a patch 1m in diameter in a single season by taking advantage of the vegetation gaps only occupied by *Rhytidiadelphus squarrosus*. This phenomenon is discussed and illustrated.

Some finds, re-finds and losses in Midlothian (v.c.83) Barbara Sumner

Finds illustrated include a first for Scotland, *Eryngium agavifolium* (Agave-leaved Sea-holly), discovered by David Merrick in an Edinburgh car park in 2009, reported in 2019. He also found a new Iris variety for Scotland, *Iris pseudacorus* var. *bastardii*, beside Harlaw Road, Balerno, in 2018, reported in 2019. *Trifolium incarnatum* subsp. *incarnatum* (Crimson Clover) was a new VC record in 2013, when found by Richard Milne at Inch Park, Edinburgh. In 2019 Sue Jury reported another Edinburgh site for the species, Fountainbridge. *Silene viscaria* (Sticky Catchfly), long-established on Arthur's Seat, was spotted by Stuart Maxwell at a new site in 2019, the edge of Monktonhall Bing, near Millerhill. *Viola cornuta* (Horned Pansy), recorded in 1963 and 1992 near the railway at Tynehead, was re-found there by the VC recorder in 2019, and a new site was spotted. *Ruscus hypoglossum* (Spineless Butcher's-broom), recorded in 1978 in a wooded quarry at Craigmillar Castle Park, was re-found there by Richard Milne in 2009, reported in 2019.

Losses concern plants and habitats. Commercial peat-cutting on Auchencorth Moss is in the area where *Drosera anglica* (Great Sundew) and *Andromeda polifolia* (Bog Rosemary) were previously recorded. *Anacamptis pyramidalis* (Pyramidal Orchid) was first recorded by Richard Milne in 2007, at the edge of Monktonhall Bing, but obliterated by railway construction works before 2014. Agricultural land is currently being lost to building developments.

Bits and Bobs from West Perthshire (v.c.87) Liz Lavery & Jane Jones

PSNS (Perthshire Society of Natural Science) Botanical Section:

A poster describing the PSNS is displayed and programmes of Summer Excursions in 2019 and Winter Talks for 2019-20 http://www.psns.org.uk

Jane has prepared 3 displays: *Osmunda regalis* (Royal Fern) in Strathard, nr Aberfoyle; identifying a puzzling *Persicaria* species from an article in BSBI News; and finding *Hymenophyllum wilsonii* (Wilson's Filmy-fern) 10 years after Rhododendron clearance on Loch Ard.

Liz and Jane found a very unusual looking grass in Laighills Park, Dunblane which flummoxed several botanists. Liz sent it to Tom Cope at Kew, BSBI Poaceae referee. This is his surprising reply.

'Dear Liz, Thank you for your letter of 1 July. The specimen you enclosed was easy enough to identify, rather harder to account for. It was *Ventenata dubia* (North Africa grass or Wiregrass), a species known from Europe to Ukraine and Turkey but only rarely found as a casual in the UK. It belongs in tribe Aveneae and is very close to *Trisetum*. Its main distinguishing feature is the persistent lower floret, but it also has distinctively ribbed glumes and dimorphic florets not unlike those of *Arrhenatherum*. It is hard to explain its presence in Perthshire unless grasses have been sown there recently from imported stock. Best wishes, Tom.'

Neither *Persicaria runcinata* nor *Ventenata dubia* are in Stace 4. There are no records on the BSBI Ddb for North Africa-grass, is this a first?

How does *Pyrola media* (Intermediate Wintergreen) respond to muirburn, Angus (v.c.90) Some observations **John Edgington**

Pyrola media is a scarce and declining plant in Angus (v.c.90), as elsewhere. Recent records all come from an area of sub-montane *Calluna-vulgaris-Arctostaphylos uva-ursi* heath extending over about 1 km^2 in Glen Esk, which I have monitored for the last ten years. Part of the Invermark estate, this is intensively managed for grouse. Most of the hill has been burnt at least once during this time, but without obvious effect on the population of *P. media* whose numbers I estimate to remain in the hundreds, maybe thousands. This year, seasonal muirburn bordered a hill track which I regularly walk, and I noticed large numbers of fresh rosettes on newly-burnt ground, greatly exceeding numbers in adjacent unburnt parts. Ratcliffe, in *Scarce Plants in Britain* (1994) stated "it has evident powers of recovery after moorland fires". My observations, though *ad hoc* and only semi-quantitative, support Ratclffe's comment. I suggest that its clonal nature and status as a partial saprophyte contribute to the plant's resilience.

Westerness (v.c.97) in 2019 **Ian Strachan and Ian Bonner**

Several notable finds were made in calcareous montane habitats. The Nationally Scarce *Phleum alpinum* (Alpine Cat's-tail) was refound on Geal Charn (Ardverikie) after 47 years. *Galium sterneri* (Limestone bedstraw), a very local plant of upland limestone grasslands with only one recent record in Westerness was refound in Coire an t-Seilich, Glen Roy, after 44 years. *Dryas octopetala* (Mountain Avens) and *Sibbaldia procumbens* (Sibbaldia) were also found on the nearby Beinn Laruinn, new to hectad NN28.

On the coast two new sites for *Atriplex praecox* (Early Orache) were recorded, by Liz MacDonald at Port Min (Ardnamurchan) and by IS near Arisaig. Material collected by Liz also included specimens determined by Ivor Rees to be probable hybrids with *A. glabriuscula* (Babington's Orache), our commonest species. Ivor's superb photos of bracteoles will be shown.

Najas flexilis (Slender Naiad) grows in Loch a' Bhada Dharaich, 2km east of Morar, where it was last recorded in 2001. This is the only mainland site north of the Great Glen for this internationally threatened species. In 2019 it was refound there, washed up, but also found for the first time in the adjacent water body, Lochan a' Mheadhoin.

Old and new finds in Bute (v.c.100) **Angus Hannah**

1. Apple trees: Recently published research (Worrell, Ruhsam *et al Scottish Forestry* 2019) led me to reconsider some very old apple trees on Bute not noted by these authors. Photos are exhibited of two trees in a fragment of ancient woodland never enclosed from the surrounding marshy grazing and including very old oaks and alders (NS0863). The apples grow 150m apart on two olivine-dolerite dykes, close to the Highland Boundary Fault. They are about 12m tall, spread c.15m, with characteristic '2-storeyed' crowns, and bear abundant round yellow/green fruits up to 30-35mm diameter. The older-seeming tree has 12 living trunks arising from a stool extending 3m down a rocky slope. The other has recently lost a major trunk, but continues to prosper. Although not identical to each other, leaf morphology suggests both are close to *M. sylvestris s.s*.

2. Photos of a bramble new to Scotland: *Rubus echinatus* (conf. Rob Randall). Several bushes found growing in neglected ground along Argyle Terrace Rothesay (NS0865) in September 2019.

3. A specimen of *Elytrigia x drucei* (*E. repens* x *E. atherica*) from the Bute shore near Mountstuart (NS1160) determined by Mike Wilcox. Most northerly British record to date, and first in Clyde area since 1942 when found near Troon by R. Mackechnie.

4. A specimen of the grass *Echinichloa crus-galli* (Cockspur) new to the vc., from a vigorous patch growing near a continuously warm vent in Rothesay (NS0864), probably from birdseed.

Discovery of *Koenigia islandica* (Iceland-purslane) on Mull, 1956 (v.c.103)
R.W.M. Corner (v.c.79, 80)

The author made the second British record of this Circumpolar Arctic-montane annual during the Edinburgh University Biological Society visit to Mull in 1956 as a young first year medical student. It was not recognised at the time of collection but while looking through the Norwegian "Fjell-Flora" in a Bergen bookshop a few weeks later I recognised the little Mull plant as *Koenigia*. Plants were sent to the Royal Botanic Garden Edinburgh where Dr Harold Fletcher confirmed the identification and I received letters from Dr Max Walters from Cambridge and

E.C. (Ted) Wallace congratulating me on its discovery. A short note was published in The Transactions of the Botanical Society of Edinburgh (1957 Vol 37) with the help of Dr Peter Green. The "Fjell-Flora" and copies of the letters and notes are exhibited together with the herbarium sheets of this first collection of *Koenigia islandica* from Mull. In addition, a sheet of a High Arctic population from North East Greenland with photographs is shown. Attempts to name these small Arctic plants as a separate species have not been substantiated. It has a bipolar distribution occurring in Tierra del Fuego at the southern tip of South America and its remarkable ability to thrive as an annual plant in hostile arctic-alpine environments is commented on. It is of note that the first British collection from The Storr in Skye made in 1934 lay in the herbarium at Kew for 15 years misidentified as *Lythrum portula* (Water Purslane) until Dr B.L. Burt correctly identified it in 1950. (Mountain Flowers by Raven and Walters, 1956).

The Spread of Aliens in Skye, Raasay and the Small Isles (v.c.104)
Stephen Bungard

In order to assess the spread of alien plants, periodic distribution maps may not be sufficient. Changes in recorder, recording methodology and recording strategy need to be taken into account. Population sizes and, for perennials, population age distributions can be helpful.

VC 104 distribution data for *Epilobium brunnescens* (New Zealand Willowherb) are compared with those for the native *Succisa pratensis* (Devil's-bit Scabious) and recent increases in records for *Cortaderia richardii* (Early Pampas-grass) and *Crocosmia pottsii* (Pott's Montbretia) are explained.

February is the Cruellest Month – Monthly records from 4 sites (v.c.106)
Brian Ballinger

Four linear sites of approximately 100m in Easter Ross were visited monthly for 12 months by the same observer and all identifiable wild plants noted. Some identification was vegetative. Sites were walked once in each direction. The locations were woodland, parkland, coastal path and disused railway siding.

Of the 211 species recorded the maximum number was in July and the minimum in February. The monthly totals were: January 102, February 74, March 84, April 104, May 144, June 172, July 192, August 187, September 189, October 153, November 126 and December 96. 27 species were recorded every month and 38 only once. Some may have been overlooked or obscured by other vegetation. 22 taxa were only recorded in April - June, 45 only in July -September, 8 only in October - December and 1 only in January to February.

This was a limited study carried out by one observer and others may not produce the same findings. It is suggested that repeated visits to sites are worthwhile. Recording can take place all year round and the autumn is quite productive, but winter less so.

West Sutherland (v.c.108) in 2019 **Ian Evans and Gwen Richards**

Our final year's recording for Atlas 2020 was, again, focused on eastern parts of the vice-county, from a self-catering cottage at Tongue. We are grateful to the Blodwen Lloyd Binns Bequest Fund (Glasgow NHS) and the Finnis Scott Foundation (BSBI) for substantial help towards expenses.

Three weeks' fieldwork generated some 3300 records from 30 monads. Areas nearer home and contributions by visiting botanists added a further 1700 records.

Noteworthy records included:

Logfia minima (Small Cudweed), a NVCR: This annual species of thin soils had not previously been recorded from West Sutherland. On 16th June we found it in abundance on a track associated with the Strathy North Windfarm (NC8259) in the valley of the River Strathy. It later turned up on a track beside Loch Beag, Melvich (NC8863).

Eupatorium cannabinum (Hemp-agrimony) was rediscovered at the edge of a small area of woodland on the east bank of the River Naver, south of Bettyhill Pier (NC7061) on 19th July. The only previous record of this tall perennial in West Sutherland was made by H.C. Watson at Bettyhill in 1833.

The Inchnadamph 'Zoo': At some time in the mid-20th century, a variety of 'alien' species, mainly montane, were introduced by persons unknown to two remote limestone ridges east of Inchnadamph (NC2720). This assemblage was re-discovered by local botanists in the 1990s and last surveyed in 2008. On 7th July members of the Assynt and Lochbroom Field Clubs re-visited the site and found the 'zoo' to be flourishing. 'Zoo' species include *Phyteuma* scheuchzeri (Oxford Rampion), *Silene alpestris* (Alpine Campion), *Campanula cochleariifolia* (Fairy's-thimble), *Erinus alpinus* (Fairy Foxglove) and *Gentiana verna* (Spring Gentian).

Also memorable were boat trips to Eilean nan Ron and Neave Island off Skerray (NC6465 and 6664) and a remote area south of Whiten Head (NC4865). Accounts of these will be published in *The Highland Naturalist*.

Thanks to Gordon Rothero and Ro Scott for help with fieldwork, to other BSBI members for their contributions, to Wildland Ltd. for transport to remote areas and to Avril Haines and Andy Amphlett for computerising the records.

Shelterbelt trials in the Outer Hebrides (v.c.110) after 50 years

Paul A. Smith

Shelterbelt trials were established in North Uist and Lewis in the Outer Hebrides in 1963 as part of a programme to evaluate the suitability of a wide range of species to grow in extremely exposed conditions. The sites were revisited during 2016-18 and the survival and condition of the species were evaluated. A surprising range of species survived (and some thrived) under the dense com-

petition of the plots, and some further species had self-seeded in the sheltered conditions.

Precocious & Serotinous Taraxacology (Early & Late Flowering Dandelion Studies) Les Tucker

Plant Crib advises: "only examine well-grown individuals just before and during early flowering … 'summer' leaves are usually larger and not of typical shape". Correspondingly, BSBI DDb shows records predominantly mid-April - May. However, some species flower earlier and later, importantly providing pollen for insects and nectar during 'hungry gaps'. Then, heterophylly (differing leaf shapes) within helically expanding rosettes requires diagnostic analysis.

Most *Ruderalia* (Weeds) section, disreputably, soon become overblown and indistinguishably leafy. However, Handbook diagnoses *Taraxacum ekmanii* (Ekman's Dandelion) by "later leaves gross, very variable, …" [with] large terminal lobe"; extensive records supporting. Recently, characteristic flowers indicate younger, inner, leaves recapitulating 'juvenile', more-simplified, spathulate forms.

Contrastingly, though *Erythrosperma* (Red-seeded) section are typically laciniate, early *T. oxoniense* (Oxford D.) retain similarly spathulate 'juvenile' leaves; but by then displaced to older, outer, positions. Section *Hamata* (Hook-lobed) appear mostly homophyllous: *T. pseudohamatum* (False Hook-lobed D.), "earliest-flowering … characteristic of roadsides", robustly so. Cautionarily, another such, phenotypically 'juvenile', was named *T. hibernicum* (Irish D.); but, subsequently revised as *T. marklundii* (Marklund's Hook-lobed D.), lectotypically more refined. Lately, after mowing ceased, local park colonies re-leaved and flowered identifiably.

Typically, late *T. duplidentifrons* (Double-toothed D.), "possibly our commonest … north and west", like many section *Celtica* (sub-Atlantic) section, shows diagnostically different heterophylly: lobes laciniating and terminally contracting intrarosularly.

***Zizania latifolia* (Manchurian Wildrice) found near Hawick (vc80) Douglas McKean**

An inadequate vegetative specimen of this Asiatic grass from South Scotland was wrongly identified by me but is only found naturalised in SE England and Co. Wexford. A very recent visit to the Scottish site showed no evidence of this large broad-leaved grass. The nearest look-alike is *Sparganium erectum* (Branched Bur-reed).

Some Scottish Sedges Fred Rumsey

Some Scottish Sedges seen while collecting for the Millennium Seed Bank are displayed. A sedge test: Can you guess which species is missing? Attendees are asked to name the species, say what links them and identify the missing one. The

main prize for correct answers will be smug self-satisfaction but Sedge smart-arse certificates may also be awarded on request.

A visual-flora of the British Isles **Lyn Jones**

I will demonstrate an e-flora for identification of British plants that is suitable for use on smartphones, tablets or computers. It can be run off the web or downloaded to your tablet or smartphone. It enables one to identify plants using a largely image-based approach, either using flower or leaf characteristics. For further information see visual-flora.org.uk.

Identify Mountain Flowers **Alan Walker**

Identify Mountain Flowers of Britain and Ireland by Alan R. Walker. This is a guide for people who explore the moors and mountains of this distinct botanical area: hill walkers, mountain instructors, naturalists, botanists and others. The design is for download as a 16Mb file in pdf format over the internet to save for field use on a smartphone or tablet, or on a home computer. The guide can also be printed as a ring-bound book for modest cost at a high-street laser-colour printer.

Population dynamics and life history of *Sagina nivalis* on Ben Lawers (v.c.88 NTS) **Sarah Watts, David Mardon and Dan Watson**

Sagina nivalis (Snow Pearlwort) is one of Britain's rarest and least known arctic-alpine plants. It is a dwarf, tufted cushion-forming perennial which can only be found by careful observation. In Scotland it occurs at the extreme southern margin of its north European range. The vast majority of plants are located within the Ben Lawers NNR at altitudes between 915-1192m. Such rear edge populations deserve high priority for investigation in order to maintain biodiversity through anticipated global change. This poster presents the main findings from almost forty years of studying *Sagina nivalis* at Ben Lawers with permanent plots and long-term monitoring. It provides life history information on plant size, pollination, lifespan, survival and flowering rates. Overall numbers across the site have declined since the 1990s, and so threats to the conservation of the species in Britain are also identified. These include natural processes, sheep activity and climate change impacts.

Climate change impacts on Scottish alpine vegetation
Louise Ross (University of Aberdeen)

A 50-year resurvey shows that climate change poses a serious threat to the cold -adapted arctic-alpine species of Scottish alpine plant communities. Results showed a decline in species richness and diversity, characterised by a marked increase in graminoid cover accompanied by a decline in forbs and lichens, particularly those with an arctic-montane distribution. The "winning" species showed a marked preference for higher temperatures, higher moisture levels and more acidic conditions than the "losing" species, and the use of thermic

indicator scores demonstrated the increased abundance of warm-adapted species. Many of the species that had increased significantly since the 1950s were generalist graminoids previously characteristic of lower altitudes, such as *Molinia caerulea* (Purple Moor-grass), *Nardus stricta* (Mat-grass), *Trichophorum germanicum* (Deergrass) and *Carex demissa* (Common Yellow-sedge). In contrast, species that had declined in abundance tended to be alpine specialists, such as *Carex saxatilis* (Russet Sedge), *Alchemilla alpina* (Alpine Lady's-mantle), *Arctostaphylos alpina* (Alpine Bearberry) and *Cherleria sedoides* (Cyphel). This replacement of cold-loving plants with warm-adapted species is a process known as thermophilisation, and indicates the considerable reduction in suitable climate space for Scotland's alpine plant species since the 1950s.

How common are Elders with green berries? Ron Youngman

Who else has seen green-berried *Sambucus nigra* (Elder)? How common is it? I don't recall having ever seen this form before. Stace and others say the fruits are rarely red or greenish-white. A photograph taken in October 2019 near Dunkeld is exhibited. Not two metres away was a 'normal' Elder with black berries.

UK Pollinator Monitoring Scheme (UK PoMS) Tereza Kocarkova

UK PoMS is a citizen science based project supported by various conservation, education and governmental organizations and coordinated by the Centre for Ecology and Hydrology (CEH). Its aim is to gather data on pollinator diversity and abundance across the entire country over an extended period of time. This is to see how pollinators are actually performing, to get a better idea about species distribution and most importantly to establish distribution trends over time. The data gathered will be analysed and the results used as a key stone for making informed decisions while establishing new pollinator conservation practices.

UK PoMS comes in two parts. One which anyone can do and another one which involves a bit more commitment. The first one is simple Flower-Insect-Timed count which takes about 15 minutes including the preparation. You can do it any time you feel like it for example in your back garden while you are enjoying a cup of tea. The second one is more complex. One gets allocated a randomly preselected 1km square to which than has to pay a monthly visit between May and August to collect pollinator samples and gather additional data. The samples collected are than sent to CEH labs to be identified by specialists. To learn more about the project please visit www.ceh.ac.uk/our-science/projects/pollinator-monitoring.

A poster is on display describing the UK Pollinator Monitoring Scheme (PoMS) project run by the Centre for Ecology and Hydrology.

BSBI Outreach 2019 **Faith Anstey**

Workshops held: In 2019 we held four beginners' workshops and one field meeting. Aileen Meek led the Plant Families workshop followed by a field meeting at Braemar. One workshop for Grasses was led by Faith at Stirling University and another by Chris Miles at Boreland, Dumfriesshire. The new Sedges & Rushes workshop was held at Mugdock Park and was a great success.

Who came? 81 people in total including more and more professionals – even on the Plant Families workshop. On the Sedges workshop, two-thirds were full-time ecologists. Participants came from far and wide, including England.

What did they think of it? The courses were enthusiastically appreciated. Whatever their level of experience (and it varied considerably), students always seem to find it 'pitched just right' – which is due to individual, expert and accessible attention from group tutors.

Next year: As yet we have no firm dates or venues. However, with the help of Recorders, we are hoping to run a Plant Families workshop in Edinburgh, Grasses workshops in Lanarkshire & Perthshire and Sedges workshops in Kinross and Dumfries. We are also planning several follow-up field meetings with perhaps one specialising in graminoids.

Plantlife – Cairngorms Wild Plants project **Alistair Whyte**

Species such as twinflower *Linnaea borealis* (Twinflower) and *Moneses uniflora* (One-flowered Wintergreen) exist in small isolated populations, vulnerable to extinction, genetic isolation, disease and changing environmental conditions. The Cairngorms Wild Plants project, covering the Cairngorms Important Plant Area, trains volunteers, land managers, outdoor industry professionals and students to monitor populations of key species, provides bespoke land management advice, and assesses the feasibility of future translocations and other interventions. The project has engaged with over 700 individuals, as well as major private landowners, and demonstrates the positive ecological impact of working on a small range of priority target species within a defined geographical area.

Plantlife – Road verges **Alistair Whyte**

Over 700 species of wildflower grow on the UK's road verges, and there is the potential for the road verge network to provide vital habitat and connectivity for pollinators as well as being refuges for threatened and scarce wild plants. This potential is often unrealised because of the mis-management of road verges. In September 2019 Plantlife released a new set of guidelines - "*Managing Grassland Road Verges - A Best Practice Guide*". This new publication has been endorsed by multiple highway agencies, industry and wildlife organisations, including Transport Scotland and Scottish Natural Heritage. Two case studies are highlighted on the poster demonstrating the benefits of sensitive management.

Mapping Species Rich Grassland across Scotland
Apithanny Bourne, SNH (Scottish Natural Heritage)

Britain has lost 97% of its species rich grassland (SRG) in less than a century, according to UK charity Plantlife. Hundreds of plants, fungi and invertebrate species rely on these important habitats – which in turn support healthy populations of mammals and birds. Evaluating the best method to locate and map remaining fragments is therefore vital for its protection.

Only around half of Scotland has currently been mapped for SRG, so the initial phase of this project will involve a period of data collation. Local authorities, conservation NGOs and individuals will be encouraged to submit any grassland data they hold. The feasibility of using satellite technology to address non-surveyed areas will then be evaluated. In collaboration with the Cairngorm National Park, a pilot will be performed in Royal Deeside using satellite methods followed by ground truthing.

The British Pteridological Society for fern enthusiasts Heather McHaffie

The British Pteridological Society (BPS) has a Scottish group that visits and monitors ferns in the wild and enjoys cultivating them in our gardens; everyone is welcome to join our excursions. We have leaflets offering suggestions for growing ferns and also an assortment of books about ferns and lycophytes (clubmosses and allies). Please talk with us for more information.

Conservation of *Woodsia ilvensis* (Oblong Woodsia) Nadia Russell (RBGE)

Current conservation surrounding *Woodsia ilvensis* (Oblong Woodsia) is in the form of PhD research being carried out at RBGE by Nadia Russell. This research is investigating the reproductive biology and genetic diversity of this rare and endangered fern. Combinations of ecological, biological, and molecular processes are being used in an attempt to recognise the reasons why there is a recruitment issue with new plants at most sites in the wild in the UK. However, one population in the Lake District does appear to be regenerating somewhat, but it is unclear if the new plants are just spreading vegetatively and warrant further investigation? Initial results indicate *Woodsia ilvensis* populations in the UK have low genetic variation compared to populations in Norway and Canada where genetic variation is much greater. In an attempt to understand the reproductive biology of this fern a series of germination, fitness and crossing experiments are being carried out alongside plants being exposed to different environmental stresses. Research is ongoing.

Botanical Society of Scotland (BSS)

The BSS is Scotland's national botanical society and seeks to promote public interest in Scotland's plants and plant habitats and to advance the study, appreciation and conservation of all plants including cryptogams and fungi. Each year, we run series of lectures and field meetings, along with occasional training workshops on plant identification. We also award an annual student prize for

the best final year dissertation and make grants for student field work and training. Our urban flora project, (see other posters) which investigates the flora of our towns and cities is in progress. This year, the dissertations submitted for our annual student prize were of exceptional quality and we awarded two first prizes. Their summaries will be on display.

BSS POSTER – Urban versus Rural Species Richness (and what lies behind it)
John Grace, Brian Ballinger, Roger West

We asked: Are towns and cities more species-rich than nearby rural areas? If so, why? We investigated urban *versus* rural species richness using two sampling methods:

1. Interrogation of the BSBI Distributional Database (monad and hectad)
2. Forty-minutes of new sampling by an expert observer in the field.

We found: the evidence from the BSBI Database is that urban areas are indeed more species rich than rural areas. However, the 40-minute sampling in the field suggested that the difference is small and may not be significant. Both approaches have possible biases, and we are seeking ways to make a fair comparison.

BSS TALK - Urban Flora of Scotland: notable finds 2015-2019 John Grace

I focus on a few cases where introduced species seem to be spreading rapidly. The first case is the grass *Polypogon viridis* (Water Bent) which we have found at several new Edinburgh sites, yet in Scotland as a whole it is very scarce. The second is the case of four species of *Conyza* (Fleabane), also spreading in Edinburgh (and we found new records in Ayr). The third is *Acaena novae-zelandiae* (Piri-piri burr) which is very common at a site in South Queensferry. Why might these taxa be increasing rapidly? Two hypotheses are discussed (i) we have had three successive warm summers (ii) many common species are showing glyphosate-resistance, and thus some habitats which are annually sprayed may now be open to certain species. Finally I present an intriguing case of 'mad clover disease' which we found whilst surveying the flora of the Edinburgh tramline, but which may be widespread.

This talk is accompanied by a poster, which will be displayed with other Urban Flora posters.

Unusual Phyllotaxy of *Acer platanoides* (Norway Maple)
Roger West (BSS)

A description, with photographs, of an *A. platanoides* sapling which grew from a tricotyledonous seedling and continues to have leaves in whorls of 3; and a shoot of *A. platanoides* which has leaves in an irregularly alternate phyllotaxy. The causes of these unusual phenomena are discussed.

Some Freshwater Algae from the Edinburgh Area Derek Christie (BSS)

This PowerPoint presentation illustrates some of the freshwater algae to be found in freshwater ponds and lochs within Edinburgh. At the request of the Holyrood Park Ranger Service, I sampled the various water bodies within the park boundaries and presented my results as a short video and PowerPoint presentation. I also assisted in the identification of freshwater algae found during an investigation, led by Vladimir Krivtsov, into SUDs (Sustainable Urban Drainage) ponds within Edinburgh. The images are from these sources.

Is phenology keeping pace with rapid climate change in the arctic? Preliminary results Maude Grenier (BSS)

Under climate change, phenology in many high latitude systems is advancing. Whilst the Arctic region has experienced warming twice the global average, few long-term phenological records for these regions exist. Field observation records and herbarium specimens can provide historical phenology records to estimate plant sensitivity to climate change. Where data collection has historically been spatially and temporally sparse, as in the Arctic, estimating plant response can be challenging. Botanical collection in South West Greenland dates from the 18th century. However, many of the collected specimens are not digitised and therefore not available for analysis. In order to investigate plant response in SW Greenland, 3,581 herbarium specimens were digitised at the Royal Botanic Garden Edinburgh (RBGE) and 2,051 were imaged in the Natural History Museum of Denmark, Copenhagen (CPH). For SW Greenland specimens containing taxonomic information, date and location, phenology was scored using four categories from Yost *et al.* (2018). Analysis was conducted on the flowering mature phenological event in the most abundant 19 species in the dataset from 1871 to 1993. Each observation was matched with monthly mean temperature from the SW Greenland and a random slope model was used to estimate parameters. The preliminary model showed great variation between species, but not sites, and no overall advancing phenology trend over 122 years.

Coadaptation in the Caledonian pinewoods: are local mycorrhizal a better fit? Jim Downie, University of Edinburgh

Mycorrhizal fungi play an important role in forests, aiding their host trees in accessing nutrients, water, and providing disease resistance in exchange for nutrients bound in the soil. Some fungal species provide more benefit to their hosts than others, and distributions of fungal species do not overlap. This leads to the question: have plants evolved to perform best with local mycorrhizal fungi? To test this, we set up an experiment with populations of *Pinus sylvestris* (Scots Pine) from the Caledonian pinewoods of Scotland paired with soil from each population. While we found no evidence of local adaptation to mycorrhizal fungi, we did find that different pine populations interacted differently with

different groups of fungi, suggesting that other evolutionary factors may be driving interactions with symbiotic fungi.

Floristic DNA Barcoding reveals the landscape of hybridisation in the British Flora **Max Brown, University of Edinburgh**

Natural hybridisation is widely recognised as an important ecological and evolutionary factor that may facilitate adaptation and promote species survival, generate novel variation, or cause extinction. We investigate hybridisation across an entire flora (1408 species) in a phylogenetic context by coupling ecological and genetic data. This is only possible as DNA data is now being generated rapidly and on large scales. We specifically look at how genus size, and a variety of genetic factors affect hybridisation after controlling for overlap in pairs of species distributions. Out of the 12,410 possible pairwise congeneric combinations of species in the British Flora only 9.1% produce hybrids. There is a significant but weak correlation between hybrid propensity, calculated as the number of hybrid combinations a species produces, and genus size. Phylogenetic mixed models show that hybrid formation has a clear phylogenetic signal, though with considerable variation not attributable to phylogeny. The effect of parental divergence on hybrid formation was also strongly significant and of large effect size. Lastly, parental species with differing ploidy levels are much less likely to lead to hybrid formation.

BSBI: helping you as you learn more about wild plants
Jim McIntosh & Louise Marsh

Find out how the Botanical Society of Britain & Ireland (BSBI) can support you, even if you are not a BSBI member: there are many useful ID resources free to download from our website, and there are some great plant-related activities to get involved with, such as field meetings and training workshops across Scotland, recording for Atlas 2020 or some midwinter plant-hunting with the New Year Plant Hunt. But there's even more on offer if you join BSBI! Our members have exclusive access to a network of 100+ expert plant referees to help with ID of tricky plants; they benefit from some great money-saving offers on botany books; our membership newsletter *BSBI News* is popular with botanists at all skill levels; and there are many opportunities to develop or gain new skills, either for fun or to improve job prospects. Talk to Jim McIntosh, BSBI's Scotland Officer, to find out more or go to: www.bsbi.org/scotland

BSBI Atlas 2020 **Kevin Walker**

The main aim of this major project is to provide up to date distribution maps for all native and non-native vascular plants that occur in the wild in Britain and Ireland, so we can improve our understanding of how our flora has changed taking into account recording behaviour, human pressures and environmental drivers. Details of the survey methodology are given. Since the beginning of the survey in 2000, over 1,000 volunteers have collected an amazing 20 million rec-

ords. This progress in charted and the geographical coverage is compared favourably with that for Atlas 2000 in a map of Great Britain & Ireland.

The outputs are outlined, including an updated and enhanced online atlas, summary reports for England, Scotland, Wales and Ireland, a fully verified dataset for use in research, conservation, policy-making and education and a popular book (Tbc) on the British and Irish flora based on the results of the survey.

BSBI Grants Programme 2020 Louise Marsh

BSBI offers a range of grants to help you learn more about wild plants. BSBI Training Grants are available to beginner and improver botanists looking to take a short plant ID course: www.bsbi.org/training-courses - note that in 2020 there is extra funding available, thanks to a generous donation from Inverness Botany Group, towards Training Grants for two applicants based in Scotland. BSBI Plant Study Grants support botany/ plant science students undertaking botanical projects, such as: https://bsbipublicity.blogspot.com/2019/10/bsbi-plant-study-grant-funds-sedge.html BSBI Science & Research Grants help fund research that advances our understanding of the British & Irish flora. Applications for all three grants open on 1st January each year and you will be able to download an application form here: www.bsbi.org/grants. You don't have to be a BSBI member to apply, but BSBI members are favoured if there is competition for grants.

BSBI New Year Plant Hunt: how many wild or naturalised species can you find in bloom in three hours over the New Year holiday? Louise Marsh

BSBI's New Year Plant Hunt started in 2012 as a bit of midwinter fun but it has become an important citizen science project, helping us build up a clearer picture of how wild flowers across Britain and Ireland are responding to changes in autumn and winter weather patterns. Go out plant-hunting with friends, family, on your own or with fellow botanists, see what you can find in flower and then submit your records via our easy-to-use online form. Your finds will show up within seconds on our interactive map. Last year, Scottish plant hunters were out recording from Galloway to Orkney, from Galashiels to Arisaig. Join us in January and let's find out what's blooming across Scotland despite the weather! More info here: www.bsbi.org/new-year-plant-hunt

BSBI Committee for Scotland seeks young volunteer Lindsey Mackinlay

The Committee for Scotland is keen to foster the next generation of botanists by promoting a passion for wild plants amongst younger people. So, we are looking for a young person to co-opt onto the committee to join in with our discussions and represent younger people on the committee and help promote the BSBI amongst young people in society. It will give you a fascinating insight into the study, understanding and conservation of wild plants, including the workings of BSBI (a charitable NGO) in Scotland and the many valuable botani-

cal activities taking place across the country. The poster gives details of the voluntary position, and how to apply.

National Plant Monitoring Scheme **Kevin Walker**

This poster sets out the aims, method, results and outputs of the National Plant Monitoring Scheme, a collaboration project between the BSBI, CEH, JNCC & Plantlife. The increasing take-up of plots over the past 4 years is illustrated and the locations of plots from where data has been submitted mapped. One of the key outputs is an experimental statistic to provide trends in abundance for individual habitats and indicator species and graphs are presented to illustrate this for two such species.

Grassland Plants of the British and Irish Lowlands **Peter Stroh**

The composition of lowland grasslands in Britain and Ireland has changed radically in the last 80 years. Following a forward by George Peterken and an introduction describing the history and types of lowland grassland and the reasons for change, the main focus of this book concerns those plants currently considered to be of greatest conservation concern, assembling in one place everything you could ever need to know about over 100 of our most threatened species, from Orchids to Lady's-mantles, Maiden Pink to Meadow Thistle, Pasqueflower to Penny-royal.

Each meticulously researched species account provides valuable information about identification, including similar-looking plants with which it may be confused, typical habitat, biogeography, a comprehensive ecology section, known and potential threats, and management requirements. Accounts are illustrated with a colour photo of the species, it's typical habitat, and an up-to-date distribution map.

The information contained in these accounts is essential reading for both amateur and professional ecologists alike, and will be especially useful to land managers and others who are responsible for the care and conservation of our wild flora.

BSBI Photographic Competition **Natalie Harmsworth**

A wonderful display of 80 photographs for this year's competition is on show. Vote for your favourite shot in each of the two categories: Native Plants and Alien Plants. The winners will be announced after the main talk and, if present, the photographers will be awarded their prizes. The winning photographs will be on display at the prize giving and will also appear in future BSBI publications.

BSBI Plant Identification Table **Douglas McKean**

A great opportunity to get expert help with identification with so many experts in the audience! Remember to bring your specimens and handlens!

RBGE Library & Archives Lorna Mitchell, Head of Library Services, RBGE

The Royal Botanic Garden Edinburgh Library, founded on the library of the Botanical Society of Edinburgh, is Scotland's national reference collection for specialist botanical and horticultural resources.

The Library is open for anyone to use on a reference-only basis from 10am to 4pm, Monday to Friday. Access to the Archives and Special Collections (Rare Books collection, Illustrations, Nursery Catalogues, etc) is by appointment. The Library catalogue is available to search at https://rbge.koha-ptfs.co.uk/ and a collection-level listing of the Archives can be found at http://atom.rbge.info/.

RBGE Herbarium Elspeth Haston, Deputy Herbarium Curator

The Herbarium of RBGE currently houses 3 million specimens, of which we estimate that over 500,000 were collected in Britain and Ireland. These specimens are an incredible resource for botanists for a wide range of scientific research and we have many researchers from UK and from around the world coming to work with the collections. They represent over 300 years of plant and fungal diversity, including many rare or extinct species. We welcome more Scottish botanists to use these collections and we are also working to make them more accessible through digitisation. There are now over 130,000 specimens catalogued from Britain and Ireland of which over 31,000 have been imaged. They are available on the Herbarium Catalogue at http://data.rbge.org.uk/herb. If you are interested in coming to use the collections please contact us at herbarium@rbge.org.uk.

Alva Moss, Ochil Hills (vc87)

walking from Burnfoot Windfarm Sunday, 30 June 2019

Four of us drove in one car from the carpark at the road end by the A823, up the road past Lower and Upper Glen Devon Reservoirs to the bridge across the Broich Burn below Backhills Farm, probably the remotest farm steading in the Ochils. We had permission from EDF Renewables to park in a large layby and walk up through Burnfoot Windfarm from here. Our aim was to get to Alva Moss, a potential LNCS (Local Nature Conservation Site) and collect some recent records for an up to date assessment, sites are now taken into account by local authorities in Scotland when considering planning applications. We also collected records for Atlas 2020 on our walk up.

Our first find of the day was by Jane, a base rich flush a few metres from the car with over 50 clumps of beautiful pink flowers of *Sedum villosum* (Hairy Stonecrop) in a 2m x 3m patch, rare elsewhere in Scotland, it is unusually common in the Ochils. An amazing 88 species were recorded in the flush and on rock outcrops along the sides of the stream at NN914034. Notable in the base rich flush were *Chrysosplenium oppositifolium* (Opposite-leaved Golden-saxifrage), *Montia fontana* (Blinks) and *Ranunculus hederaceus* (Ivy-leaved Crowfoot –also in a ditch beside the windfarm track at 557m, NN90240253) – all are frequent associates in

flushes in the Ochil Hills; *Cardamine amara* (Large Bitter-cress), the sedges *Carex flacca* (Glaucous Sedge), *Carex canescens* (White Sedge), *Carex dioica* (Dioecious Sedge) and *Carex pulicaris* (Flea Sedge), grasses *Danthonia decumbens* (Heath-grass) and *Glyceria declinata* (Small Sweet-grass), *Eleocharis quinqueflora* (Few-flowered Spike-rush) and *Triglochin palustris (*Marsh Arrowgrass); there were several patches of *Thymus polytrichus* (Wild Thyme) on rocks and *Linum catharticum* (Fairy Flax) in grassland beside the burn.

Our enthusiasm was slightly tarnished when we looked over the bridge across the Brioch Burn to see half a dozen massive, treelike fronds of the non-native invasive *Heracleum mantegazzianum* (Giant Hogweed) on the bank of the river. How did it get into the middle of the Ochil hills! We can only surmise it may have been imported during the construction of the Windfarm. From here it was a long slow uphill slog along the windfarm track, but a comparatively easy way to gain height and reach Alva Moss. We were hit by all seasons at once during our climb from 360m to over 550m, a near gale, thick mist and freezing temperatures, on our walk down this changed to warm sunshine revealing wonderful panoramic views.

We recorded another 45 records in tetrad NN90B beside the track on the way up, and 90 records in NN8902, part of which was within the boundary of Alva Moss. Several opportunists had colonised the wide track built to install the turbines, notable was the abundance of *Erophila verna* sens. lat. (Common Whitlowgrass) and presence of the alien *Epilobium brunnescens* (New Zealand Willowherb). As we approached the edge of Alva Moss, the width of drainage ditches parallel to the road seemed excessive for the seepage draining the peat moss. However where peat had been spread to repair damage at the edge of the track we were very pleased to see it was colonised by many young plants of *Rubus chamaemorus* (Cloudberry) with some young *Calluna vulgaris* (Heather). Alva Moss is described as supporting the largest population of cloudberry in the Ochil Hills.

Alva Moss is an extensive area of mainly blanket mire, approximately 400 hectares on flat or gently sloping ground of the Ochils plateau at 450- 550m altitude. It is the source of the Alva Burn and the River Devon. From our brief visit to the edge of the Moss we were able to confirm the presence of many of the plant communities mapped during an NVC (National Vegetation Classification) Survey of Alva Moss in 2000 by Georgina McCrae for SWT (Scottish Wildlife Trust) as part of their national survey of potential LNCS. Most extensive are vast areas of M19b bog dominated by tussocks of *Eriophorum vaginatum* (Hare's-tail Cottongrass) with heather and some *Empetrum nigrum* (Crowberry). There were areas with eroding peat hags and on the north side of these we found evidence of the most notable priority community mapped by Georgina, H22a *Rubus chamaemorus heath* distinctive by the abundance of cloudberry, *Vaccinium myrtillus* (Bilberry), deep heather and crowberry with sphagnum species and other mosses. It was very good to see so much cloudberry. We also found one patch

of heath with scattered plants of *Trientalis europaea* (Chickweed-wintergreen) but only came across a few *Dactylorhiza maculata* (Heath Spotted-orchid). Numbers of sheep in the Ochils have decreased in recent years and hopefully this will benefit mire and heath communities on the summit plateau.

On our way home, driving past Upper Glendevon Reservoir dam, Eric spotted a magnificent display of *Dactylorhiza purpurella* (Northern Marsh-orchid) on a grassy bank beside the road. We stopped and were thrilled to find 1000s of plants of flowering *Sedum villosum* (Hairy Stonecrop) filling the roadside ditch for a distance of over 40 metres on the south side of the road, NN91670428, also a few plants on the north side of the road where we parked the car. This is the best site for *Sedum villosum* I have found in the Ochils, and it is in a manmade ditch! We counted over 100 Northern Marsh-orchids with several *Dactylorhiza fuchsii* (Common Spotted-orchid) amongst them in grassland. A perfect end to a successful day's recording.

Liz Lavery

Happy ending, *Sedum villosum* (Hairy Stonecrop) 3 plants here, with 1000s of plants in ditch on south side of road at NN91670428
Jane, Alistair and Eric, 30 June 2019 © Liz Lavery

Dalmally recording week (vc98), June 2019.

This meeting was reported in the Yearbook, but here are some extra photographs (thanks to Peter Wiggins).

Editor by River Orchy, Dalmally

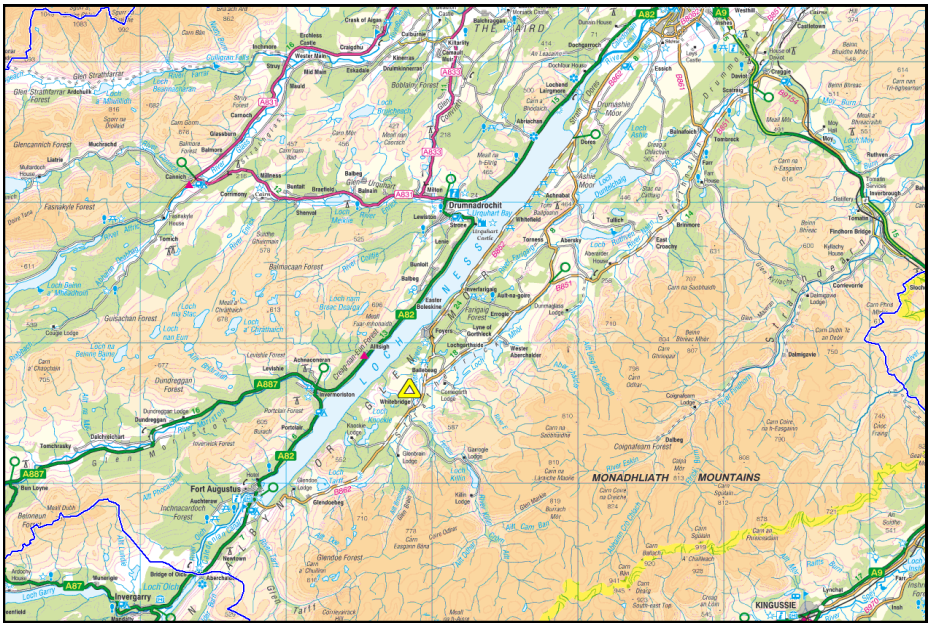
***Elatine hexandra*, Loch Awe**

***Oxyria digyna*, Glen Strae**

***Crassula tillaea*, Dalmally parish church car-park**

***Vaccinium uliginosum*, roadside bank near Dalmally, 100m altitude**

Recording Week at Dell Lodge near Whitebridge, Easterness, June 2019



The yellow triangle marks our base. The blue line is the VC boundary.

Easterness (v.c.96) is the biggest vice-county in the BSBI area. It contains many lochs, including famously of course, Loch Ness, and much remote upland and montane terrain. With Adam Fraser, the County Recorder, based in Glen Urquhart, to the west of Loch Ness and his most prolific assistant, Andy Amphlett being based just east of the eastern boundary of the County there was a large area that was poorly recorded for Atlas 2020 between Loch Ness and the Monadhliath Mountains.

Using a generous contribution from the Finnis Scott Foundation we were able to subsidise the cost per person of hiring Dell Lodge, a magnificent Georgian shooting lodge, close to General Wade's Whitebridge which was ideally situated at the centre of the under-recorded area.

The Recording week took place from 22 to 29 June 2019. A total of 10 BSBI Recorders and 11 BSBI members helped over the week, 18 of whom stayed at Dell Lodge and the others visited daily or stayed in local B&Bs, so we had a hugely experienced team. Jim McIntosh, the BSBI Scottish Officer and Andy Amphlett helped Adam Fraser organise the week. We were very fortunate to have Hilary Hawker cook for the group on a voluntary basis which meant that the botanists

Dell Lodge

White Bridge

could concentrate on recording and identifying and we had tea and cake to look forward on return from fieldwork followed by delicious communal dinners later in the evening.

We went out in small groups of twos or threes every day to specified tetrads in under-recorded hectads using private cars. As far as possible different groupings went out every day to make it as sociable as possible. The target squares were marked up on a giant OS map of the area and crossed off once surveyed. We collected a total of 11,612 records – the greatest number of records we have ever collected in any of the 18 Recording weeks we have organised in Scotland over the past 11 years (though to be fair, many of them were in rather species poor areas like Shetland, Sutherland and West Ross). We recorded on several remote tops in the Monadhliath Mountains, including Bac nam Fuaran 833m, Carn a' Coire Ghlais, 778m, Carn a' Chuilinn, 816m and Meall nan Aighean Mor, 700m. Reaching some of these tops involved extraordinarily long walks.

Kalmia procumbens

Sibthorpia europaea

Over the week, we collected records from 159 monads in 67 tetrads in 12 of the 70 hectads in the Vice-County - many of which had been very poorly recorded previously. All the recording was done at monad resolution or better and some 3,600 records were at 6 figure grid ref accuracy or better. The richest monad was NH4216 which includes the village of Invermoriston and the wooded banks of the River Moriston where it debouches into Loch Ness, with 265 taxa. In total we collected records of 676 taxa, including the following notable species: : -

Category	No.	Notable Species
New County Records	5	*Gentiana asclepiadea* (Willow Gentian), *Lysimachia nummularia* (Creeping Jenny), *Pyrus communis* (Cultivated Pear), *Sibthorpia europaea* (Cornish Moneywort), *Typha angustifolia* (Lesser Bulrush)
Nationally Scarce	18	*Betula nana* (Dwarf Birch), *Juncus filiformis* (Thread Rush), *Juncus balticus* (Baltic Rush), *Lycopodium annotinum,* (Interrupted Clubmoss), *Meum athamanticum,* (Spignel) & *Salix lapponum* (Downy Willow)
Red List - Endangered	5	*Gnaphalium sylvaticum* (Heath Cudweed)
Red Data List - Vulnerable	13	*Coeloglossum viride* (Frog Orchid)*, Gentianella campestris* (Field Gentian), *Polystichum lonchitis* (Holly Fern) *& Salix lapponum*
Red Data List – Near Threatened	63	*Carex diandra* (Lesser Tussock-sedge), *Cornus suecica* (Dwarf Cornel), *Drosera anglica* (Great Sundew), *Genista anglica* (Petty Whin)*, Gnaphalium supinum* (Dwarf Cudweed), *Hymenophyllum wilsonii* (Wilson's Filmy-fern), *Meum athamanticum, Neottia nidus-avis* (Bird's-nest Orchid), *Platanthera chlorantha* (Greater Butterfly-orchid), *Potamogeton praelongus* (Long-stalked Pondweed) *& Viola canina* (Dog Violet)
Scottish Biodiversity List	77	*Coeloglossum viride, Gentianella campestris, Gnaphalium sylvaticum, Juniperus communis* (Juniper), *Platanthera chlorantha, Polystichum lonchitis, Salix lapponum*

We also added 327 records of 85 taxa included in the Easterness Rare Plant Register. In total we made 397 new hectad records, 5737 new tetrad records and 9571 monad records. Particularly notably finds included:

- *Sibthorpia europaea* –one of the biggest surprises of the week, an extensive population growing in the rocky surround to a burn, under Alders in Glen Moriston, surrounded by native species and over 300m from the nearest house and garden. There are records of two other populations in Scotland – one at Stornoway and the other on Mull. This is the first record from the Scottish mainland.
- The high ground in the south-western part of the Monadhliath was shown to hold some locally significant populations of montane species

Jay McKinnon

Andy Amphlett

- Including several extensive populations of *Arctostaphylos alpinus* (Alpine Bearberry)
- Renewed an old record of *Meum athamanticum* at Dunmaglas Lodge, where it is at the northern edge of its range – apart from a distant outlier in Caithness.
- *Hymenophyllum wilsonii* - six records at eastern edge of the species range were good finds.

Thanks are due to the Finnis Scott Foundation for their funding and to all those who participated in the Recording Week and to those who took the photographs.

Jim McIntosh

Participants in the Easterness recording week

Wild Apples: a contribution from Bute

My interest in Bute apple trees was revived by a talk from Markus Ruhsam at the Scottish Botanical Conference in 2018 and a paper by the same team in the Scottish Journal of Forestry (Worrell *et al* 2019). Though Ruhsam, Rennie and Worrell had visited Bute briefly in 2017 and recorded a few trees, these did not include a couple of large, old trees at Balilone near Rothesay, which I had been aware of for many years without examining them closely. Last year I went to look at them in more detail and exhibited some photos at SBC (see VC100 Abstract). In the course of this survey I found three further apple trees on the site, a third large tree and two somewhat smaller, including one obviously younger than the rest.

1. Apple with typical 'heavy' crown

2. Apple on third ridge at Balilone

The site lies within a mile of Rothesay town centre, yet it is one of the least frequented places on the island. It forms the western edge of the Kirk Dam, the most northerly of the water-bodies occupying the rift of the Highland Boundary Fault, and bays to the north and south backed by swampy ground cut off access from all but the west, where a slightly rising field gives passage from the Loch Fad road. On the site itself four roughly parallel ridges of olivine-dolerite run N/S, rising 15m above the surface of the Dam, very close to the line of the Fault, affording a striking contrast in soil and hydrology with the surrounding organic-rich wetland.

The earliest surviving mention of the small farm of Balilone is in 1513. It was a poor farm, and the steading was 'waste' by 1773. It is marked as ruinous on May's estate map of 1781, and the field-banks, yards and footings shown there can still be traced at NS 080630. In the 18th century the Kirk Dam was a water-meadow associated with Lochly farm on its eastern side. With the development of Rothesay's cotton mills in the early 19th century the water-level was raised to provide a more consistent source of power. When no longer used the dam was breached,

3. Apple with 12 stems on crag-face of second ridge

and the shallow parts of the remaining loch have been extensively invaded by *Typha*, though water levels can still rise by several metres after persistent rain.

No woodland is indicated by May on the immediate site, though scattered trees would probably not have been drawn. Parts of the area are now well wooded in an open fashion, with three dozen mature oaks on the ridges, along with frequent birch, holly and hawthorn, occasional ash and hazel, scattered rowan and a very few sycamore, as well as the five apples which are widely scattered across all four ridges, while the peaty lower ground has a few old coppiced alders with dense willow carr in patches. Other areas are open grassland both wet and dry, the former with bog myrtle in some parts and *Phalaris arundinacea* in others, the drier with bracken, bramble and gorse where rocky, and the area is grazed by a small herd of cattle in summer and sheep in winter.

The context of the apples is best described as wood-pasture. Many of the older oaks may have been pollarded, which was a regular practice in wood-pasture, a few have been coppiced and others, mature but less old, are maidens. Several of the pollards have girths over 4m (the largest measured 5.3m) and spread very widely. One coppiced alder has a stool of 7m girth. Seven of the oaks were investigated using the Potter/Dupouey & Badeau method described in last year's Newsletter. These yielded one each of *petraea* and *robur* and five intermediates,

proportions similar to those found elsewhere among 'semi-natural' populations on Bute.

The apples, well scattered across all the ridges, seem likely to be self-sown. All are mature trees, one in particular with a stool extending 3m down the steep rocky side of the ridge and 12 living trunks giving an impression of considerable age (photo 3). Another has just two main trunks, one of which has recently fallen but continues to live. The girth of the standing stem is 1.7m, similar to the thickest stem of the first tree (photo 1). A third tree may be slightly less old, it has a single trunk of similar girth and may possibly have been pollarded (or browsed off) at about 1.2m; above this point there are 9 stems (photo 2). This is the tallest of these trees at 13m, but all three spread up to 15m or more, sometimes restricted on one side by adjacent oaks, and have the typical storeyed crown of the wild apple. The two remaining trees are smaller, the tree in photo 1, though quite old, is only 6m high. All the Balilone trees have small leaves, the largest measured being 80-90mm including petiole, and glabrous except for some hairs along the proximal third of the main veins beneath. Their fruits are globose, up to 30-35mm but mostly 20-25mm, and very abundant in most years. They are yellow or green, a few occasionally developing a red patch in sunshine. Taken together, these characters suggest *Malus sylvestris s.s.*, with just possibly a hint of *M. pumila/domestica* in their make-up. Surprisingly, Worrell *et al* do not mention sepals, on which the density and distribution of hairs is generally considered to be an important diagnostic character.

Another old apple tree not mentioned by Ruhsam is on the west coast of Bute near Mecknoch on a raised-beach escarpment of schist some 400m from the sea and close to the road at a lay-by (NS044593). However, it long pre-dated the lay-by, and even the road itself, which was not made up in this section until the early 20th century. Unfortunately, the tree suffered from official vandalism some years ago when its four outer trunks were felled because their foliage was obstructing the view from the lay-by. In consequence it now has rather the shape of an umbrella, the seven remaining trunks being near-vertical and unbranched for several metres. The girth of the stool is 2.9m. In leaf and fruit morphology it resembles the Balilone trees.

Despite the multi-stemmed growth habit of some of them, it seems unlikely that any of these apples has been coppiced, as the varied girths of their stems indicate that these have arisen successively over many years. It has been suggested that a similar multi-stemmed habit in hazel is not necessarily a sign of former coppicing, though it may be a response to browsing, as may also be the case with the apples.

Reference**:** Worrell, R., Ruhsam, M., Renny, J., Jessop, W., Findlay, G., *Malus sylvestris*: Genetic issues and conservation, *Scottish Forestry*, 72 No.2, Autumn 2019, pp.33-41.

Angus Hannah

Reports from the vice-counties

Dumfriesshire (vc72) *Chris Miles*

The main focus was to ensure as many species as possible were recorded for each hectad ahead of the Atlas deadline. The target was to get all hectads to 75% or better for all species ever recorded also recorded post 2000. In January 22 Hectads were below this level but by December all 40 Hectads were at 76% or better. In total 9200 records were entered via Mapmate. The Dumfries Botany Group continued with 10 meetings in the county in 2019. This included a training day on an introduction to identifying grasses attended by 15 people. The Botany Group generated 1712 records. One of the meetings was a joint meeting with the Botanical Society of Scotland (BSS) Urban team over 4 days which generated a fantastic 1913 records. Accounts of all of these meetings can be seen on the blog. Botanical highlights from Dumfriesshire Group and the Urban meetings included refinding Moonwort *Botrychium lunaria* at Wanlockhead and seeing the first Yellow-horned Poppy, *Glaucium flavum* recorded for over a 100 years at Powfoot, Henbit Dead-nettle, *Lamium amplexicaule*, not seen in Dumfries for over 100 years, and Northern bedstraw, *Galium boreale*, on the river wall, not seen in the Dumfries square since 1936. Elsewhere the refinding of Flat-sedge *Blysmus compressus* in a hectad after more than 100 years, the first refind of Small-white Orchid, *Pseudorchis albida* since 1988 and the new VCR for Small-flowered Crane's-bill *Geranium pusillum* in an arable field near Dumfries were particular highlights.

Kirkcudbrightshire (vc73) *David Hawker*

A busy season: a weekend upland meeting (see Yearbook) - targeted northern hills incomplete due to restricted vehicle access, and a BSBI grass training day; 13 KBG meetings. 11,800+ records submitted, twice the annual average total. Thanks to all contributors. Involved with 4 private/community re-wilding projects and MoD Conservation Group. Highlights: NCRs: *Acanthus mollis* (Bear's-breeches) long-established garden discard, *Viola cornuta* (Horned Violet), *Vulpia myuros* (Rat's-tail Fescue), *Euphorbia cyparissias* (Cypress Spurge), *E. amygdaloides* (Wood Spurge), *Malus spectabilis* (Chinese Crab) long-established, *Salix x forbyiana*, *Cordyline australis* (Cabbage Palm). 2nd VCRs for *Neottia nidus-avis* (Bird's-nest Orchid), last seen 1848, belatedly another reported elsewhere from 2017/2018, *Lagarosiphon majus* (Curly Pondweed), *Phormium tenax* (New Zealand Flax), *Datura stramonium* (Thorn-apple), *Pulmonaria angustifolia* (Narrow-leaved Lungwort), *Primula elatior* (Oxlip) and *P. veris x elatior*, *Anemone ranunculoides* (Yellow Anemone), *Ceratophyllum demersum* (Rigid Hornwort), *Cortaderia selloana* (Pampas-grass) in forestry far from housing. Others: *Viola reichenbachiana* (Early Dog-violet), 5th site; *Coeloglossum viride* (Frog Orchid) less numerous than previously; *Gentianella campestris* (Field Gentian), *Calamagrostis canescens* (Purple Small-reed), *Drymochloa sylvatica* (Wood Fescue), *Persicaria vivipara* (Alpine Bistort) and a belated 1985 second record; *Carex elongata* (Elongated

Sedge); *Rubus chamaemorus* (Cloudberry) at its only VC site; new sites for *Saxifraga hypnoides* (Mossy Saxifrage), *Myosotis ramosissima* (Early Forget-me-not); *Trifolium striatum* (Knotted Clover) 2nd-5th recent sites. Some coastal *Elytrigia* specimens submitted and determined as *Elytrigia x obtusiusculus* and *E. x drucei*. Unfortunately, we said goodbye to Nick Stewart which is Somerset's gain, we welcomed Michael Jeeves (ex-VCR Leicestershire).

Wigtownshire (vc74) (*Jim McIntosh*)

Alan Silverside, the Recorder for Wigtownshire for the past 42 years resigned at the end of the year. Despite Alan being unable to do any fieldwork over the past year we managed to add some 4,000 records to the DDb – thanks to local and visiting members including Jim McCleary, Michael Jeeves, Alan Wake and Sue Jury. More impressively we added 22,000 records to the DDb from a variety of sources during the year – largely from Mark Pollit at South West Scotland Environmental Information Centre – but a significant number were also digitised by Marion Moir and myself. Together with the records from the Recording Week at Lagafater Lodge in 2018, Atlas 2020 coverage is now pleasingly good. Most notable NCRs were a group of Orache taxa *Atriplex paecox* (Early Orache), Atriplex *glabriuscula x longipes = A. x taschereaui* and *Atriplex longipes x prostrata = A. x gustafssoniana* by John Richards. The first two at Auchenmalg and the last at Port Logan. The most notable rediscovery was that of *Hammarbya paludosa* (Bog -orchid) at Loch Derry by Jim McCleary – first record since 1882 in the VC. Jim also made notable refinds of *Anthriscus caucalis* (Bur Chervil) at Claymoddie - last recorded in 1892 and *Utricularia minor* (Lesser Bladderwort) at Peat Loch - last recorded 1989. Many thanks to him and all the other contributors.

Ayrshire (vc75) *Dave Lang*

Over the final year of recording for Atlas 2020 our small team in Ayrshire attempted to double up on scheduled field survey trips to two per month. As we are generally only able to meet at weekends, due to work and other commitments, this was a more significant undertaking than it may at first appear. I am pleased to say however that at least two of us were able to attend almost all scheduled field days, meaning that our attempted extent of recording coverage was met. Although we generally fell a little short of the project's targets for both tetrads recorded per hectad and pre-2000 refinds, the Ayrshire data for Atlas 2020 is consequently in much better shape than it was only a few years ago. And we now have up-to-date records for many of our County Rare and Scarce species. The most interesting record of the year was probably *Carduus tenuiflorus* (slender thistle) on Horse Island. This species is only known from this and one other offshore island in the County – Ailsa Craig. The only County first of the year (possibly pending a confirmatory site visit next year) was *Salix triandra* (almond willow) at Stevenston Beach Local Nature Reserve in the north. A great deal of time has subsequently been spent verifying records, and trying to weed out as

many of the innumerable duplicates that creep in with centrally imported datasets as is possible, ahead of the deadline for the final Atlas 2020 analysis.

Lanarkshire (vc77) *Michael Philip*

Our aim for 2019 was to complete the Atlas 2020 task of accounting, in the period 2000-2019, for 75% of the all-time lists for every hectad in the vice-county. We decided to regard this as a 'hard target', although we accepted that the enormous botanical diversity and detail recorded in the 'Flora of Lanarkshire' (Macpherson, 2016) and 'The Changing Flora of Glasgow' (Dickson *et al,* 2000) - coupled with the loss of the Garden Festival site and other key urban sites - made the challenge all the harder. However, due to excellent, carefully-targeted and intense fieldwork by our Team the seemingly-impossible task was completed by the end of October! There is no space here to go into details, but we recorded over 1,000 distinct taxa in a single season for the first time. This included, within a couple of weeks of each other, our first ever record for *Ophrys apifera* (Bee Orchid) and our second -ever for *Hypopitys monotropa* (Yellow Bird's-nest). Digitisation of the Lanarkshire record is complete and up-to-date, and data validation is on course to be completed shortly. 'Team 77' (as we have become known) comprises 62 correspondent members, of whom 18 were active in fieldwork in 2019. Because of the need for detailed recording skills, we have seen a big jump in individual skill levels. We held 31 official outings and added nearly 13,000 records to the database. Our occasional newsletter can be viewed on the Lanarkshire page.

Peeblesshire (vc78) *Luke Gaskell*

In this, the last year of recording for Atlas 2020, I have concentrated mainly on surveying monads to fill in gaps in the less accessible south-west of Peeblesshire. This has been quite rewarding with 5,032 records added and digitised with many re-finds and some new county records. These include *Juncus filiformis*, (Thread Rush), and *Viola x scabra*, (*V. odorata x V. hirta*), both of which were exhibited at the Scottish autumn meeting. While I have not prioritised updating the better known sites, I have made some exceptions so as to include rare plants for the new Atlas. For example, I surveyed Little Cramalt Craig's arctic-alpines and re-located *Carex vaginata* (Sheathed Sedge), last seen in 1978. Recording full species lists in monads has greatly increased the overall number of records and species with 60,500 plus Atlas 2020 entries in the DDb post 2010, compared to 20,000 pre-2010. A large number of new species have been found, although, not surprisingly many of these are casuals and aliens. In addition I have been helping with recording in neighbouring counties and continue to teach plant ID and field skills at Edinburgh Napier University. I have also provided assistance by reviewing new native tree planting schemes in the Peeblesshire uplands.

Berwickshire (vc81) *Robin Cowe*

A huge thank you to Michael Braithwaite and Jeff Waddell who in-put this year's sightings and cleaned up the county records for 2020. 725 records were added to the database by 8 Recorders. The new species were added to the county this year including *Erigeron acris* (Blue fleabane) close to the A1, *Allium triquetrum* (Three-cornered garlic) on the edge of the caravan park at Eyemouth. Berwickshire natives also got a look in with a new 10K for *Dianthus deltoides* (Maiden pink) and two new sites for *Scleranthus annuus* (Annual knawel). Old records for *Gymnadenia conopsea* have been reclassified to *Gymnadenia densiflora* (Marsh fragrant orchid) and *Gymnadenia borealis* (heath fragrant orchid) on the coast with the help of Prof R.M Bateman. Michael also published an update to the Berwickshire site register taking in recent records in the county and bringing as up to 2020.

East Lothian (vc82) *Helen Jackson & Marion Moir*

Marion has joined Helen officially as Joint Recorder, giving East Lothian, vc82, a much-needed contact email address at last. More than 40,000 records were added to the Ddb for the vice-county, of which 20,000 were 2019 field records and the rest were from record cards and notebooks that Marion digitised. Helen worked extraordinarily hard to prepare her records for digitisation. As in 2018, a three-day meeting was based in Haddington, this time in May, with about 20 people attending, giving a great boost to Atlas 2020 recording. There was an emphasis on collecting aquatics and we recorded *Ceratophyllum demersum* (Rigid Hornwort), *Potamogeton berchtoldii* (Small Pondweed), *P. pectinatus* (Fennel Pondweed) and *P. crispus* (Curled Pondweed) (amongst others). Following this, Marion continued to organise recording and training with the local botany group. Sue Jury and Sandra Goodswen should be acknowledged for their enormous help in recording. The grass *Festuca heterophylla* (Various-leaved Fescue) was found on Winton estate. In aquatics, the *Chara* (Stoneworts) were reconfirmed at Aberlady and several new finds along the coast. The under-recorded Lammermuirs were visited finding *Viola lutea* in several places and we have been helped enormously by Matt Parratt in the remoter areas. We would like to thank everyone who has contributed in any way to East Lothian recording, and in particular Jim McIntosh for his unstinting support.

Midlothian (vc83) *Barbara Sumner*

9222 records were entered into MapMate in 2019, gathered from 220 monads in 17 hectads by 43 recorders, surveying as individuals, pairs or groups. Grateful thanks to all recorders and determiners. Verifications and validations are progressing. *Allium tuberosum* (Chinese Chives) was found on the pavement at the north-east side of Rodney Street (NT25487496) on 10th September by Richard Milne, and determined by Paul Green. This late-flowering *Allium* was a New Record for Scotland, the second year in a row that Richard has added to the Scottish flora. Another first for Scotland, *Eryngium agavifolium* (Agave-leaved Sea-holly), discovered by David Merrick, was displayed on a poster at the Scottish Botanists'

Conference at RBGE in November (see Abstract, also picture on Dropbox). At the disused Monktonhall Bing, the new site for *Silene viscaria* (Sticky Catchfly) (see poster), the plants looked naturally integrated among broom and other vegetation beside an ashy path, but a niggling question remains. Did they arrive there naturally or were they planted? If you know the answer, please communicate. NCRs reported in 2019 included *Cotoneaster rehderi* (Bullate Cotoneaster), *Petunia x hybrida* (Petunia), *Polystichum x bicknellii* (P. aculeatum x setiferum) and *Tripleurospermum maritimum x inodorum*. Rarities re-found included *Epilobium x erroneum* (E. hirsutum x montanum), *Erythranthe x maculosa* (Scottish Monkeyflower), *Lepidium ruderale* (Narrow-leaved Pepperwort), *Medicago sativa nothosubsp. varia* (Sand Lucerne) and *Verbascum nigrum* (Dark Mullein). The VC recorder represented the BSBI on steering groups for Local Biodiversity Sites, and for the Edinburgh LBAP. BSBI and TWIC conferences were attended.

Fife (vc85) *Sandy Edwards*

The year started with the annual New Year Plant Hunt which this year was a walk around the Castle golf courses above the cliffs east of St. Andrews. A total of 19 species were found, slightly less than last year. I occasionally help with the monthly plant recording that is done here for the golf course. *Vicia tetrasperma* (Smooth Tare), rare in vc85 was found here. Also in the winter months a few of us go and practice using the Vegatative Key, a useful exercise. I helped tutor at Faith Anstey's Grass identification workshop at Stirling. This really shows the best way to get into plant id is by a well planned practical sessions. I had 4 students for the online Identiplant course which also works well but I try to see if they can also have a field session which they find very useful. I am on the Fife Wildlife Sites Steering Committee as the botanical recorder. They are updating the records for these sites, reviewing the boundaries and also recording the surrounding habitats to show how these sites interact with them A good lot of recording was done this year to try and fill all the "gaps". The BSBI field meeting in the Dunfermline area, arranged by Jim McIntosh, was particularly valuable. (Report for this is on the BSBI field meetings.) Species of interest this year are *Galanthus elwesii* (Greater Snowdrop), *Scandix pecten-veneris* (Shepherds Needle), *Fumaria capreolata* (White ramping -fumitory), *Helleborus foetidus* (Green Hellebore) and *Equisetum tematiea* (Giant Horsetail). The *Reseda lutea* (Wild Mignonette) is still at Kinghorn as is the *Tanacetum macrophyllum* (Rayed Tansy) on the coastal path. These and the *Salvia vertcillata* (Whorled Sage) at Ardross are the only know sites in vc 85. An area by the old flooded part of the St. Fort sand pits revealed a fine colony of *Parentucellia viscosa* (Yellow Bartsia), which is one of two sites recorded in N. Fife by George Ballantyne. But as an extra icing on the cake a lot of *Erigeron acris* (Blue Fleabane), also rare in vc 85 and a small patch of the locally rare *Conyza canadensis* (Canadian Fleabane)! A good recording day with Jim McIntosh in the NE corner of vc85 found a few interesting species: *Ceratocapnos claviculata* (Climbing Corydalis), *Nitella flexilis* and *Chara virgata* (Stoneworts), *Hypericum maculatum* (Imperforate St. John's Wort), *Nymphaea alba* (White Water-lily), *Rosa multiflora* (Many-flowered Rose) which is very rare in vc85, *Phegopteris connectilis*

(Beech-fern), *Gymnocarpium dryopteris* (Oak-fern) and *Cardamine amara* (Large Bitter-cress). Last but not least, many thanks for all the help and records from various people, many of whom have sought out some interesting finds.

Stirlingshire (vc86) *Matt Harding*

A push was made to fill in Atlas gaps both in new recording and adding older datasets. 2019 generated more records than any year since before 2000. We feel most wholly vc86 hectads are now adequately, if not perfectly, covered. Luckily areas of weakness around the edges will be offset by the excellent coverage in vcc 77, 84 & 87. 20,474 records were added to the database including 11,137 2019 records, and 24 taxa added to the county flora. Thank you to all those who contributed records and enthusiasm! The year began with a focus on recording early spring flowers, many of which were under-recorded. An excursion around Muiravonside in May yielded interesting records such as *Equisetum pratense* (Shady Horsetail) and *Ribes alpinum* (Mountain Currant), but things really got going with a trip up Glen Gyle in July, with a NCR for *Salix arbuscula* (Mountain Willow) amongst a good variety of mountain plants. Despite challenging weather, an August recording weekend in the Fintry Hills targeting 'strategic tetrads' produced around 1,500 useful records including large, previously unknown populations of *Carex aquatilis* (Water Sedge) around Carron Valley Reservoir and refinds of *Potamogeton perfoliatus* (Perfoliate Pondweed) and *P. berchtoldii* (Small Pondweed) at Loch Walton. Other Stirlingshire events included meetings with the Glasgow Natural History Society, a bioblitz at Cashell Glen, and Faith Anstey's popular grass identification workshop at the University of Stirling. Post-atlas, work will begin on an RPR, with excursions planned for the fledgling Stirlingshire Botanical Group. To get involved email **matt@hardingecology.com**.

West Perthshire (vc87) *Liz Lavery & Jane Jones*

In 2019 both Liz and Jane concentrated on recording for Atlas 2020. Between us we entered 8591 records into MapMate which were forwarded to the BSBI Distribution Database (DDb). We would like to thank everyone who helped by sending us records, in particular from remote parts of our vice-county.VC87 has more than 50,000 records on the DDb for the Atlas recording period 2000 – 2019.

Mid-Perthshire (vc88) *Alistair Godfrey & Jim McIntosh*

Never have so many records been collected in one year in Mid-Perthshire. A total of 15,588 records were made in 2019 – with particularly large and important contributions from local BSBI members Neale Taylor, Matt Harding and Alison Wilson and significant contributions from our friends at Ben Lawers National Trust for Scotland, BSS Urban Flora project volunteers and Perthshire Society of Natural Science (PSNS) members. We also digitised records from an excellent JMT Habitat Survey of Schiehallion by Ben & Alison Averis. We are immensely grateful to all these and other contributors. With their help and that of others over the past 20 years we managed to get the re-recording rate over 70% in all but one of

our 54 hectads. New County Records in 2019 included *Juncus compressus* (Round-fruited Rush) near Crianlarich and *Juncus gerardii* (Saltmarsh Rush) on a road verge near Killin by Mike Wilcox, *Carex x limula* (*C. aquatilis x bigelowii*) beside the lochan at 945m on Meall nan Tarmachan by Dan Watson & Jim McIntosh. Sarah Watts recorded *C. x biharica* (*Carex echinata x canescens*) on Ben Lawers, which was last seen there by Druce in 1899. In total we made 7,500 new post 2000 species-hectad records (i.e. new Atlas dots) in the year. Vice-county Recorders in Perthshire and neighbouring vice-counties are members of the PSNS Botanical Section. Reports on excursions for 2019 and other articles are provided in the PSNS Bulletin and can be downloaded from this link

East Perthshire (vc89) *Martin Robinson*

The biggest annual recording effort so far resulted in 8,049 records being made in 67 tetrads, nearly all at monad level. All bar a handful had been digitised by the year's end. There was rather more attention paid to lowland sites than in recent years and many gaps were filled. Further sites on Fealar Estate were searched for *Saxifraga hirculus* (Marsh Saxifrage) to no avail. Unfortunately, some appalling weather in August put paid to a Rough Squad trip to the remote Ring of Tarf - an area that remains largely unrecorded. Three species were NCRs, of which the most surprising was *Erigeron acris* (Blue Fleabane) – the second-most northerly UK record. Two Perth Society of Natural Science outings I was to have led were rained off, but we had one successful joint recording session with BSS at Moncrieffe Island in Perth. A 4th edition of the RPR was published on-line in April, including 291 taxa. Now that relatively common species are dropping off the bottom of the list the RPR is beginning to be a valuable record of the true status of the VC's plants. Three species fell out and two were added: *Euphrasia ostenfeldii* (Ostenfeld's Eyebright) and *Saxifraga hirculus*. Plans are afoot to produce a new Checklist of Perthshire's plants, together with VCs 87 and 88.

Angus (vc90) *Mark Tulley*

Despite an enthusiastic start, the season was marred by health and work issues. However, we managed a reasonable number of recording days and were assisted by various other contributors. One of the highlights was the confirmation of *Alchemilla monticola* (velvet lady's mantle) in Glen Isla by Barbara Hogarth, a new Scottish Record. We were delighted to receive many record cards dating back to 2008, which swelled our data input remarkably.

Kincardineshire (vc91) *David Welch & David Elston*

We concentrated this year on adding extra monads or tetrads in hectads that fell short of them, and hunting for species not recorded since 2000. For the DDb, 1832 records excluding duplicates were added this year via DW`s Mapmate, with more added for the vice-county from other sources. Roughly two-thirds of the species are now validated. The usual one-day field meeting for the local SWT branch visited the NTS policies at Crathes Castle and the nearby former railway station and

sand-pit; it attracted 20 participants. The outing and planning visits added 28 species to the NTS Rangers' site list, including Chaerophyllum temulum (Rough Chervil) not recorded in VC91 since 1959. Notable species found at the sand-pit included *Clinopodium vulgare* (Wild Basil), *Potentilla argentea* (Hoary Cinquefoil) and *Teesdalia nudicaulis* (Shepherd`s Cress). A long cycle and walk to Mount Battock by DE in search of *Gnaphalium supinum* (Dwarf Cudweed) yielded instead the NCR *Epilobium anagallidifolium* (Alpine Willowherb). Other NCRs this year were *Carex oederi* (Small-fruited Yellow-sedge) (found by Theo Loizou on the Nigg coast), *Luzula luzuloides* (White Wood-rush) (Marykirk), and *Raphanus sativus* (Fodder Radish) (Fettercairn). A notable 2nd record was *Symphytum officinale x asperum x tuberosum* (hybrid of Russian Comfrey) (Muchalls). Rediscoveries included *Carex riparia* (Greater Pond-sedge) and *Milium effusum* (Wood Millet), with last records respectively pre-1845 and pre-1960. For DW, refereeing *Myosotis* (forget-me-nots) had the extra task of checking whether the sub-species of *Myosotis discolor* (Changing Forget-me-not) are worthy of species status, as suggested by recent studies.

Aberdeenshire south (vc92) *Ian Francis*

2019 saw a substantial flurry of activity in VC92 South Aberdeenshire in terms of Atlas 2020 fieldwork. Much effort was made to target blank areas and seek out key missing species. In total, almost 24,000 records were submitted from around 38 botanists, with a major input from the North-East Scotland Biological Records Centre (NESBReC), whose ongoing habitat survey work yielded around 60% of the year's records. One satisfactory feature of 2019 was that we were able to complete recording (over the 20 year period) in every one of the complete tetrads within the vice-county. Another useful exercise was a survey of a large atlas gap in the westernmost and highest parts of the vice-county. Over one weekend in July, six botanists visited the remote central parts of the Cairngorms. Fifteen tetrads here had no Atlas records since 2000, stretching from Braeriach, the UK's third highest mountain, south to the river Geldie in upper Deeside, yet past records showed the presence of many rare and interesting plants. Despite much rain, low cloud and seriously bad midges, 18 monads spread across 10 tetrads were visited in 38km of walking, generating around 900 records. Many interesting and noteworthy species were found, some new, many relocated, as well numerous commoner plants filling many distribution blanks. Noteworthy records included *Carex lachenalii* (Hare's Foot Sedge), *Alopecurus magellanicus* (Alpine Foxtail), *Phleum alpinum* (Alpine Cat's-tail) and *Veronica alpina* (Alpine Speedwell), as well as montane willows and some contenders for altitudinal records for some plants.

Aberdeenshire north (vc93) *David Welch & David Elston*

We concentrated this year on adding extra monads or tetrads in hectads that fell short of them, and hunting for species not recorded since 2000. For the DDb, 4019 records excluding duplicates were added in the year via DW`s Mapmate, with more added for the vice-county from other sources. Most species are now validated. Searches of former sites for species not seen since 1999 proved successful for *Callitriche hermaphroditica* (Autumnal Water-starwort), *Nuphar lutea* (Yellow Water-lily), *Anagallis tenella* (Bog Pimpernel) and *Bromopsis ramosa* (Hairy Brome). Another rediscovery of note was *Silene vulgaris* (Bladder Campion), which had been recorded previously in seven hectads but not seen since 1991; it was found near Rosehearty in a new hectad. NCRs include the hybrid Buckler-fern *Dryopteris carthusiana x dilatata = D. x deweveri*, recorded from a single site but suspected elsewhere, along with neophytes *Spiraea alba* (Pale Bridewort), *Amsinckia micrantha* (Common Fiddleneck) and the crop-derived *Trifolium incarnatum subsp. incarnatum* L. (Crimson Clover) and *Raphanus sativus* (Fodder Radish). Other good finds were *Salix aurita x myrsinifolia = S. x coriacea* on a verge near Glass from which Dr Meikle identified many willow species decades ago, and *Ulmus minor* (Small-leaved Elm) in a hedgerow near Freefield House, both being furthest North UK records. A hill-top search on The Buck indicated the colony of *Salix herbacea* (Dwarf Willow) covers more ground than previously recognised, with shoots found up to 100m apart. For *Saxifraga hirculus* (Marsh Saxifrage), flowering was below average at the single site monitored.

Moray (vc95) *Ian Green*

I took a year out of work to get as much recording done in the final year for the Atlas 2020. This meant there was plenty of recording done throughout the year across vc95 by me and several other recorders. A total of 32,162 records were made. The aim was to visit as many monads without any records as possible, plus trying to update as many species as possible for each hectad. Digitisation and validation for Atlas 2020 is going very well for vc95. The plan is to produce a monad Atlas for vc95, but there is still plenty of work to be done, with many monads still not yet visited and other monads that need more work. The aim is to have all the recording done by 2025. A few botany walks were arranged by me across vc95, with the main aim to do recording or to try and hunt down an old record of a rare or interesting species.

East Inverness (vc96) *Adam Fraser & Andy Amphlett*

18,234 records were collected in 2019, including 11,615 records during a very successful BSBI Recording Week based at Dell Lodge, Whitebridge, involving 21 recorders. Over the year, 459 new hectad, 6928 new tetrad and 12259 new monad records were made. The most intriguing NCR was a large population of *Sibthorpia europaea* (Cornish Moneywort) growing in the rocky surround to a

burn, 300m from the nearest house. Verification and validation of records is complete. Post 1999, there has been some recording in 64% of tetrads in the vc, and for all years combined, from 77% of vc tetrads. Vc96 is the largest vc in Britain and Ireland, and has a very small pool of regular recorders. There remains a backlog of pre-2000 records, some historic, to enter, but that was not possible for Atlas 2020.

West Inverness (vc97) *Ian Strachan*

Over 9000 records were collected from 41 hectads in 2019, with many contributors, notably Liz McDonald, Jim McIntosh and Marion Moir, as well as the VC recorders. Ardnamurchan and Loch Leven had many records but significant Atlas gaps were also filled in Moidart, the Arisaig-Mallaig area and the far east of the vice-county, including Loch Pattack and Geal Charn. Highlights included *Schoenus ferrugineus* (Brown Bog-rush) in Coire na Coichille (new VCR), *Galium sterneri* (Limestone Bedstraw) in Glen Roy, *Phleum alpinum* (Alpine Cat's-tail) on Geall Charn and *Ranunculus bulbosus* (Bulbous Buttercup) at Kinlochlaggan. All records were digitised and validated, along with another 17,000 from 2018 and earlier. Despite all our efforts, some gaps in Atlas coverage inevitably remain in remote corners for future expeditions. Limited further progress was made on a checklist/ RPR but this will be a major task for 2020. An exhibit at the SBC featured *Najas flexilis* (Slender Naiad) and *Potamogeton x griffithii*, and I gave a talk on the North Face project following publication by the Nevis Landscape Partnership of a booklet, partly written by me and Dan Watson. I also represent BSBI on the Lochaber Biodiversity Group and helped with projects on grasslands, road verges and invasive species.

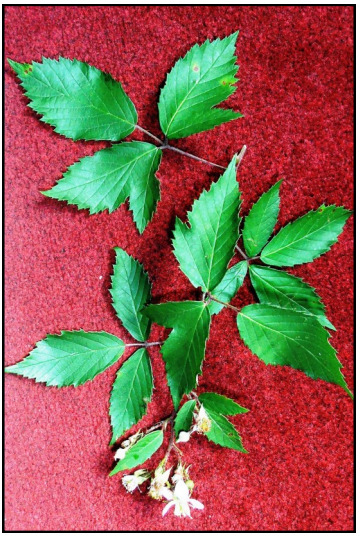
Main Argyll (vc98) *Gordon Rothero*

Over 15000 records were made during 2019, many being made during the field meeting based in Dalmally but also with significant input from Carl Farmer and the Lorne Natural History group, Dan Watson in Glencoe and Jeff Waddell who visited several areas where coverage was poor. There are still significant areas with poor coverage at the tetrad level as will always be the case in a county with remote montane areas and very few local botanists. There were no outstanding additions to the flora during the year, but the addition of *Crassula tillaea* (Mossy Stonecrop), found during the field meeting, confirms its relentless spread in Scotland and (also during the meeting) records of *Ranunculus x levenensis* and *Meum athamanticum* (Spignel) were welcome. Jeff Waddell's trips into the hills confirmed the interesting flora on Beinn Bhuidhe with updates for *Woodsia alpina* (Alpine Woodsia), *Cerastium alpinum* (Alpine Mouse-ear) and *Juncus biglumis* (Two-flowered Rush), and also confirmed what hard work it is in the granite hills around Loch Etive. Dan Watson has updated records of the rarities like *Saxifraga cernua* (Drooping Saxifrage) and *Cystopteris montana* (Mountain Bladder-fern) in

Coire nam Beitheach in Glencoe along with other more mundane species. The task of validating records proceeds.....

Clyde Isles (vc100) *Angus Hannah*

Bute and Cumbrae are very well covered for the Atlas, and Arran acceptably so, with a couple of hectads marginally below the 75% refind target. Circumstances conspired to prevent these being revisited. In April my Isle of Bute Flora was published. The first for any part of VC100, it has been well received, and was awarded the Presidents' Prize at SBC in November. This brought an end to general recording on Bute (updates are added regularly to a linked webpage), and consequently fewer records were made in the vc than in any previous year of my tenure. On the positive side I had more time to record elsewhere, and was able to help regularly with Atlas coverage in Ayrshire and occasionally in Renfrewshire, where I found a new *Sedum villosum* (hairy stonecrop) site, and in Lanarkshire, where I led a three-day bramble workshop at Chatelherault in July. I organised a week-long field meeting in Dalmally (vc98) in June, reported in the Yearbook. A fully revised Arran Checklist was published in the spring; thanks to Tony Church. Tony's work also led to the publication in November of a new diploid fern taxon (see p.13), *Dryopteris affinis ssp. cluthensis*, known so far only from Arran. The Bute dandelion, *T. chrysoglossum,* which I originally found on Bute in 2013 was published earlier in the year, and in May I found it on Arran. In Rothesay in September I found *Rubus echinatus*, a bramble new to Scotland.



***Rubus echinatus*, showing the unusually sharp, irregular serration on both stem and rachis leaves and acuminate terminal leaflet on the latter. (Conf. R. Randall)**

Kintyre (vc101) *Pat & Dave Batty*

Plans for the final year of recording were modified due to a long family illness. However by the end of the year we had visited all hectads during the Atlas survey period the necessary number of times and during different seasons. By the end of 2019 all records up to that date had been digitised and entered into the database. In addition good progress was made with the validation of records. There was one outstanding NCR for *Ophrys apifera* (Bee Orchid) from Machrihanish. It was photographed by a local, eventually identified and the record sent in. Thanks again are due to the Kintyre Botany Group who have recorded many areas, principally in the Campbeltown area, over the Atlas recording period and made many interesting finds.

South Ebudes (vc102) *Malcolm Ogilvie & Simon Smart*

Recording on Islay by Oli Pescott yielded 731 records of 268 taxa. No new taxa for the vice-county were recorded. Two species that had not been reported for the v.c. since the start of 2002 New Atlas recording were refound; the native *Pulicaria dysenterica* (Common Fleabane) (rare in Scotland) and the non-native *Inula helenium* (Elecampane). Other notable records included *Calystegia soldanella* (Sea Bindweed), *Dryopteris cambrensis* (a Scaly Male-fern), *Epilobium tetragonum* (Square-stalked Willowherb), *Eryngium maritimum* (Sea Holly), and *Festuca arenaria* (Rush-leaved Fescue). The Euphrasia hybrid E. arctica x nemorosa was also tentatively identified as new to the island based on descriptions in the recently published BSBI Handbook (Metherell & Rumsey, 2018). Although this has not been reported before for v.c. 102, it is scattered throughout Scotland (at least according to BSBI data), and is likely to be under-recorded.

Intensive recording of Colonsay and Oronsay drew to a close in 2019 with a further 2,100 records added by Kevin Walker and friends. This brings the total number of records collected to 20,000 over the past 5 years. Malcolm's annual orchid monitoring on Islay had mixed results, with more *Plantanthera chlorantha* (Greater Butterfly-orchid) but fewer *P. bifolia* (Lesser Butterfly-orchid) at the regularly monitored sites. The *Cephalanthera longifolia* (Narrow-leaved Helleborine) site was not visited, but 224 flowering spikes of *Epipactis palustris* (Marsh Helleborine) at their main site was one of the highest counts in the last 30 years. Notable records from Jura in 2019 included a second population of *Isolepis cernua* (Slender Club-rush) – first recorded from Jura in 2017 – small populations of *Ophioglossum azoricum* (Small Adder's-tongue) and *Botrychium lunaria* (Moonwort); the former new to Jura and the latter possibly new. *Saxifraga stellaris* (Starry Saxifrage) and *Alchemilla alpina* (Alpine Lady's-mantle) were also refound for the Atlas 2020 period, along with *Salix herbacea* (Least Willow). The latter was found by Simon Smart in two new locations on Beinn Shiantaidh while competing in the Jura Fell race! Some new localities for the gametophyte of

Trichomanes speciosum (Killarney Fern) were found on the west and south coast of Jura. It is felt that further searches would turn up more new sites.

Mid-ebudes (vc103) *Lynne Farrell*

All tetrads updated to post 2000 for Atlas 2020. Advice given on practical management of the alien, species *Allium triquetrum* (Three-cornered Garlic) on Iona, which is being eradicated by local volunteers. Ash splash plots revisited and photographed. Input to Ulva community plan and botanical advice. All data entered into MapMate by Dec 2019. Now writing captions for Mull rare species for Atlas. New vice-county and records of note for VC 103 confirmed in 2019 include: *Asplenium ceterach* (Rustyback Fern) on Coll - photo sent by a visitor. *Euphrasia x venusta* (E. arctica subsp. borealis x scottica) on Erraid- determined by Chris Metherell. *Hieracium rubicundiforme* – 2nd VCR on Mull. *Hieracium chloranthum* on Mull. *Sorbus croceocarpa* (Orange Whitebeam) on Mull, confirmed by Tim Rich. *Schoenodorus giganteus* (Giant Fescue) on Ulva, found by Matt Harding during his surveys for the Iona community, and confirmed by myself and Arthur Copping. *Equisetum x rothmaleri* (*E. arvense x palustre*) Lochbuie West, Mull. Found by John Crossley, Ro Scott and Lynne Farrell whilst updating tetrads for Atlas 2020 and confirmed by Heather McHaffie. *Epilobium x schmidtianum* (*E. obscurum x palustre*) on Mull. Specimen collected by me in 2018 and identified by Geoffrey Kitchener 2019.

North Ebudes (vc104) *Stephen Bungard*

A record 15,000 vascular plant records were made in VC104 in 2019 including over 200 new hectad records. Skye Botany Group met six times including a visit to Ulfhart Point on Skye (opposite Soay) where the last two tetrads with any significant land but no plant records were finally covered. Ulfhart means roar or howl and we had to postpone our boat trip from Elgol twice before the seas were calm enough and even then, getting back to the boat at the end of the day was slightly hair-raising. There is now no tetrad in VC104 with more than 2% land and no post-1999 records. Six partial tetrads have been checked and have no vascular plants and the three remaining with no records are likely to be the same, as they appear to comprise only bare rock above HWMS. However, quite a few tetrads remain far from thoroughly surveyed. An issue over which species of *Agrimonia* is or are present in VC104 was largely resolved, in that all specimens examined closely once fruiting are *A. procera* (Fragrant Agrimony). *Hieracium subcrinellum* (previously *H. crinellum*) (Blunt-leaved Hawkweed), *Lemna gibba* (Fat Duckweed) and *Polygonum boreale* (Northern Knotgrass) were new to the vice-county as were quite a considerable number of aliens, notably *Spiraea hypericifolia* (Iberian Spirea), the first record on the BSBI Distribution Database and *Euphorbia sikkimensis* (Sikkim spurge), the second record on the DDb.

Wester Ross (vc105) *Duncan Donald*

Occasionally it is local residents who provide the exciting records, this year's highlight being a new *Cephalanthera longifolia* (Narrow-leaved Helleborine) site in the south (NG82); I myself added alien NCRs *Erythranthe* × *burnetii* (Coppery Monkeyflower) and *Tasmannia lanceolata* (Tasmanian Pepperberry). However, as usual, most new records have come from visitors. Stephen Bungard's extensive survey around Toscaig (SW Applecross) added hawkweed NCR *Hieracium subcrinellum* and a new square for *Melica nutans* (Mountain Melick). Stuart Gray updated many old records around Achnahaird (NC01), including locally-rare *Catabrosa aquatica* (Whorl-grass). Matt Harding recorded extensively across Torridon and Applecross, adding several new sites for Liathach rarities [such as *Luzula arcuata* (Curved Wood-rush)] by ascending from the south-west. Peter Wortham continued his invaluable long-walk-ins to remote boundaries, finding *Hammarbya paludosa* (Bog Orchid) near Bendronaig (NH03). The Inverness Botany Group's annual visit, this year to Strath More, was a particularly good day for grasses: a second VCR for *Melica uniflora* (Wood Melick); and the first update for *Schedonorus giganteus* (Giant Fescue) since Druce's 1929 Flora, growing with equally locally-rare *Elymus caninus* (Bearded Couch). As the Atlas 2020 fieldwork draws to a close, it's a good time to thank all those who have helped out over the past two decades.

East Ross (vc106) *Brian Ballinger*

We have continued recording and were able to reach the target of 75% of species ever recorded refound in all but 10 of the 58 hectads. The remaining 8 hectads were either shared, remote or had very few previous records. Peter Wortham and others made major contributions to recording over the year. All recent field records have been entered and the majority validated. I sent an updated VC106 checklist to the BSBI last year and produced a printed version. A successful field meeting joint with the Botanical Society of Scotland (BSS) was held at Conon Bridge (co-led by Mary Dean). I also led several other field meetings in various parts of Scotland. As part of the Botanical Society of Scotland's Urban Flora Project I carried out two comparative surveys of urban and rural flora in 25 pairs of sites. The number of species recorded was similar but the particular species found differed considerably. Recording for the Urban Flora project continues and records are shared with the BSBI. I have drafted a checklist of the urban flora of Scotland on behalf of the BSS and I am grateful for the BSBI contributions to this. There have been some useful new records including a fifth new site for *Linnaea borealis* (Twinflower) at Alladale. This species was formerly thought to be extinct in VC106.

West Sutherland (vc108) *Ian Evans*

Fieldwork during 2019 focused on improving the representative coverage of hectads across the eastern part of the vice-county. In three weeks based at Tongue, on the north coast, Gwen Richards and I, aided by Gordon Rothero and Ro Scott, made some 3300 records in 30 monads, ranging from Strath Vagastie (NC5429) and Friesgill (NC4865) in the west to Forsinard (NC9041) to Strath Halladale (NC9060) in the east. Particularly memorable were boat trips to two islands off Skerray, Neave Island (NC6664) and Eilean nan Ron (NC6365/6465) and another to two remote monads on the eastern shore of Loch Eriboll (NC4865/4965). Records of particular interest included *Logfia minima* (Small Cudweed), a NCR, from the Strathy Forest (NC85) and Melvich (NC86) and *Eupatorium cannabinum* (Hemp Agrimony) near Bettyhill (NC76), where it has not been seen since 1833. We should like to thank the Blodwen Lloyd Binns Bequest Fund (Glasgow NHS) and the Finnis Scott Foundation (BSBI) for grants towards the expenses of the three weeks at Tongue. We also made 1200+ records in 12 monads in the better-worked western part of the vice-county, notably in two remote monads alongside Loch Dionard (NC3548/3549). With the essential help of Avril Haines and Andy Amphlett, all records were digitised and validated by the end of December.

Caithness (vc109) *Francis and Margaret Higgins*

In August we spent the weekend at a hotel in Thurso so we could concentrate on more remote, unrecorded monads in the north of our county. Although we started recording later than in previous years, we recorded nearly as many species in that weekend that we did in the whole of June. On one afternoon we found several rare plants, including *Drosera intermedia* (Intermediate Sundew), last recorded in 2001, plenty of *Radiola linoides* (Allseed), last recorded in 1997, and also *Pinguicula lusitanica* (Pale Butterwort), last seen in 1956, that we were told mainly grows on the west coast; when inputting the cards via MapMate when we got home, both the *Radiola* and *Pinguicula* came up with "1st for 109". MapMate came up with another "1st for 109", in July, when we found *Arabis hirsuta* (Hairy Rockcress) but we see on the BSBI database that this had been found in 1999, 1972 and before that, in the 1920s. These "1sts" were post 2000, but our best was a 1st for the North of Scotland, let alone for Caithness, being *Cyperus longus* (Galingale), confirmed by David Simpson, of Kew. Finds like this make all the traipsing through the bogs more worthwhile.

Western Isles (vc110) *Paul Smith*

The main recording activity was three-weeks of targeted recording by the VCR in central Lewis and North Uist. In central Lewis this particularly covered areas that were challenging to access, but was rewarded by refinds and new records in several hectads. There were some surprises, such as the frequency of finds

of *Vulpia bromoides*, and a second VC record for *Armoracia rusticana* (horseradish). This essentially completed the coverage of underworked areas for the Atlas. A planned trip with Outer Hebrides Biological Recording to a site in N Harris was stymied by the ferries, but there was a successful excursion on N Uist which resulted in a refind of *Pilularia globulifera*. OHBR continue to make useful records. Other visitors have also sent on records, and I am very grateful for these inputs, which are helpful for ongoing recording activity for a new flora as well as filling in gaps for the Atlas.

Orkney (vc111) *John Crossley*

Annual report VC111 2019 With another 5000+ records collected mainly in 65 monads and tetrads, Atlas 2020 coverage is as complete as hoped for this VC. Most tetrads have had a visit, with the exception of the some of the small uninhabited islands, others with little land area and, I confess, a very few unattractively dull ones. Many people have contributed, this year as in previous ones, and many thanks are due; I cannot mention all by name, but I would particularly thank Tim Harrison and Andrew Upton, visiting and resident BSBI members respectively, for their many records from the islands of Westray, Eday and Stronsay. Weather in 2019 was often not kind either. We had a BSBI Field meeting here, visiting the islands of Sanday, Westray and uninhabited Copinsay; recording was productive and interesting (see the meeting report in the Year Book) and we had fun. The local Flora group met three times. Some special records for 2019 were:

A new site for *Primula scotica* (Scottish Primrose) in Hoy, found by Fraser Milne;

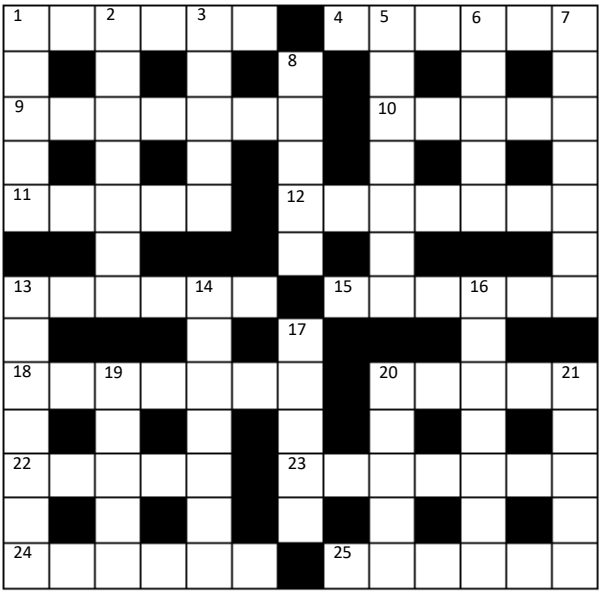
Brassica oleracea (Wild Cabbage), new VCR, on the island of Sanday at what looks like a 'natural' site, unlikely as it may seem;

Rediscovery of *Ononis repens* (Common Restharrow) after 50 years;

Rediscovery of *Vicia sativa ssp. sativa* (Narrow-leaved Vetch), after 40 years.

Some mini-projects were started including investigations of hybridity in *Tripleurospermum* (Mayweed) species, into subspecies of *Betula pubescens* (Downy Birch) in the islands, and analysis of vegetation communities associated with *Primula scotica*. Good progress has been made with verification of records. There is a lot of interest in botany in the county and the outlook post-Atlas 2020 is heartening!

SN Crossword No. 4 by *Cruciada*



ACROSS

1. Gullible root shoot? (6)
4. Find oneself eventually swopped round to high ground (6)
9. Spill gore on a herb of the Lamiaceae (7)
10. Picture this plant synthesis (5)
11. Leaves marks from small vehicles (5)
12. Two friends give what looks like outstretched hand (7)
13. Part of grass enclosing stem that Erica's put back to front (6)
15. This flower could be loosely said to be more diurnal (6)
18. Less polite to adult learner found on waste ground (7)
20. Stratagem makes for enclosed bud with a life of its own (5)
22. Queen known to be dead is resurrected after Harry produces dye from Lawsonia (5)
23. Single penny laid out for rare umbellifer (7)
24. Some bryophytes seen by Old Testament character around pole (6)
25. Tropical fish found dead in 2km squares (6)

Solution and crib: p.60

DOWN

1. Do these people pine for trees? (5)
2. Nitrogen is admitted to produce scalloped edge (7)
3. City of London notices are things that have changed in response to environment (5)
5. Little lump on seed, for example, made father sick when consumed (7)
6. Scent attributed to Italy's capital, in Italian (5)
7. Sundews found as order re-arranged (7)
8. Go round, we hear, with lens (5)
13. Millet may cause gingivitis, they say (7)
14. Seabird consumed in three parts (7)
16. In plates that primarily rowdy animal's overturned (7)
17. Get a warm feeling finding possibly species-rich place near spring (5)
19. Send back deposit of uranium from sandhills (5)
20. Irk, e.g., with destruction of limestone fissure (5)
21. Will it be finally (but not quite!) finished in 2020? (5)

OUTREACH WORKSHOPS IN 2019 and 2020

In 2019 we held four workshops and one beginners' field meeting:

IDENTIFYING PLANT FAMILIES led by Aileen Meek at Mar Lodge followed by a field meeting at Braemar the next day; IDENTIFYING GRASSES led by Chris Miles at Boreland and by Faith Anstey at Stirling, and – new for 2019 – IDENTIFYING SEDGES & RUSHES led by Faith at Mugdock Park.

Braemar field meeting, following workshop at Mar Lodge, vc92

All the workshops were well attended – Sedges & Rushes in particular sold out very quickly – and highly appreciated. A large proportion of those attending were full-time ecologists and others in similar jobs, so it's clear these workshops are offering skills that they very much need, but which are not being provided on their degree or professional courses. The small group format, with expert tutors from the BSBI, is a core strength of these workshops. Attendance at the field meeting was purely voluntary, but in fact all the Plant Families participants came, and had a very good day – in spite of the weather!

Grasses workshop, Boreland, vc72

Now that the BSBI are (at last! some might say) paying attention to the need for training up beginners, our activities in Scotland – being ahead of the game – are setting an example to members in other areas. A set of copies of the *Pocket Guide to Plant Families* was purchased by the BSBI Wales Officer and used by her on seven separate workshops held by her in 2019 – a prodigious achievement! There were also some workshops for beginners held by BSBI in Ireland which ran on similar lines. So just England to catch up with us now!

WORKSHOPS IN 2020 [We do not know now which if any will take place - Ed.]

In 2020 we are holding two Grasses workshops – one to be led by Michael Philip at Chatelherault Country Park in Lanarkshire on 11 July, and one by Faith Anstey at Birnam in Perthshire on 27 June. There will also be two workshops on Sedges & Rushes – one led by Chris Miles at Barony College, Dumfries on 6 June and one by Faith at Vane Farm in Kinrossshire on 13 June. Aileen Meek is

reprising her Plant Families workshop, this time in Edinburgh at Holyrood Education Centre on 31 May.

We also have a Field Meeting on Ben Lawers on 25 July, specialising in grasses and sedges for novices. While particularly aimed at people who have attended the workshops, this is open to anyone who would like to come. Dan Watson is leading this meeting, which is being run in conjunction with the National Trust for Scotland and the Perthshire Society of Natural Science.

For most of these workshops we are still short of a few tutors to take small groups for hands-on study of the plants concerned. Extra help on the field meeting would also be very welcome. You do not have to be an expert! A working knowledge of the species in question, such as would be needed for standard square-bashing, is quite adequate – though of course the more expertise the better. So if you are finding time on your hands now all your Atlas work is complete, do consider offering your services as a tutor – everyone agrees these events are as much fun for the tutors as for the students!

Faith Anstey

Kirkcudbright Botany Group 2020 Field meetings programme

Note: Meetings are cancelled up to the end of May. Further cancellations may be necessary. Please check vc73 web-page for updates.

June	**Fri 12**	Floors Loch/Torrs Moss (NX7761) Relatively unsurveyed *+	
	Sat 27	Barfil (NX8472) Species-rich grassland, marsh and loch *+	
July	**Fri 10**	Cavens, Kirkbean (NX9758)	Rewilding site
	Sat 25	Corserine (NX4986)	Montane species +
Aug	**7-9** (wk/end)	Intro to Brambles @ Auchencairn (NX8052)	BSBI Training
	Fri 14	Dundrennan (MoD) (NX7446) General exploration of sites *+	
	Sat 29	Moorbrock & Beninner (NX6097)	Upland species
Sept	**Fri 11**	Windy Standard (NS0161)	Montane species *
	Sat 26	Criffel (NX9663)	Upland species *
Oct	**Fri 9**	Lotus Hill (NX9067)	Upland species
	Sat 24	TBC	

+Species-rich sites

*Rare plants

Meeting details will be sent approximately 7-10 days beforehand and will include some idea of some of the species we hope to find.

Contact David Hawker, preferably by email (davidhawker3@gmail.com) or on the day 0774 895 0838.

Fern Society (BPS) Scottish Meetings 2020

NB: meetings have been cancelled up to the end of June on account of Corona virus. Further cancellations may be necessary: please check BPS website.

BSBI members are welcome at all these meetings. If you would like to attend any of them, please contact Bridget Laue a few weeks before the date of the meeting, when further details should be available. Contact details:

bridgetlaue@blueyonder.co.uk Home: 0131-258-9592 Mobile: 0793-243-9989

Saturday 4 July Inland *Asplenium marinum* and a walk along the Tweed (Leader: Yvonne Golding)

Near Ladykirk House (NT885 456) is a colony of sea spleenwort, more than 10km from the sea. After a walk along the Tweed, we will go on to Paxton House near Berwick, to explore the grounds which are very ferny, and then have tea!

Saturday 25 July Kirkton Glen, Balquhidder (Leaders: Andy MacGregor and Natalie Cozzolino)

A strenuous hill-walk hoping to refind *Polystichum lonchitis, Asplenium viride, Botrychium lunaria, Equisetum variegatum* etc. Meet 10.30 in Balquhidder at Rob Roy's grave NN5360 2092.

Saturday 22 August Lochan na h-Achlaise, Rannoch Moor (leader Clive Dixon)

Meet at viewpoint car-park NN 316 485. We will look for *Lycopdiella inundata* and other ferns recorded in the area in 1990s.

Sat 26 September Annual Indoor Meeting, Strathbungo Glasgow (Leader: Chris Nicholson)

Arrive 10:30am. Tour of Chris Nicholson's garden, and fern-related presentations. Includes plant sales, book sales, and planning for 2021. Coffee/tea and lunch provided!

For up to date information check the BPS website: www.ebps.org.uk/events/category/meetings/regional/scotland

Crossword Solution and crib

ACROSS
1. SUCKER 4. UPLAND 9. OREGANO 10. PHOTO 11. SCARS 12. PALMATE 13. SHEATH 15. DAHLIA
18. RUDERAL 20. GEMMA 22. HENNA 23. SPIGNEL 24. MOSSES 25. TETRAS

DOWN
1. SCOTS 2. CRENATE 3. ECADS 5. PAPILLA 6. AROMA 7. DROSERA 8. LOUPE
13. SORGHUM 14. TERNATE 16. LAMINAR 17. FLUSH 19. DUNES 20. GRIKE 21. ATLAS

CRIB
ACROSS
1. double definition 4. land up 9. anagram GORE ON A 10. dd 11. S/CARS – apostrophe implied after 'leaves' 12. charade: PAL/MATE 13. HEATH'S 15. daily-er (groan!) 18. RUDER/A/L 20. strataGEM Makes 22. H + reverse ANNE (famously dead queen) 23. anag SINGLE + P 24. MOS<S>ES 25. TETRA(D)S

DOWN
1. pun 2. CRE<N>ATE 3. EC/ADS 5. PAP<ILL>A 6. a Roma (to Rome, in Italian) 7. anag AS ORDER 8. loop 13. sore gum (groan again) 14. charade 16. rev R + ANIMAL 17. dd 19. rev SEN<U>D 20. anag IRK EG 21. at las(t)