

BSBI

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Editorial

Once again, thanks to an excellent response from contributors, we are able to present an extensive and varied content for this 23rd edition of the *Scottish Newsletter*.

Our request for your experiences of the Atlas 2000 project brought forth two very contrasting contributions, dealing on the one hand with experiences in the field (which was rather what we had in mind) and on the other with the trials of checking VC records. Our Chairman's exploits in the north make fascinating reading and demonstrate the value of the contribution made by field workers willing to tackle such trackless country.

With the main effort towards the Atlas now passing from the 'rank and file' to the 'general staff' as it were, we naturally ask ourselves "what next?" Despite talk of possible future changes in emphasis for the role of the Society, there is little doubt that our main strength will continue to be in recording the composition and distribution of the Scottish flora. This is not to say we should neglect other aspects such as conservation, but we can probably best further such activities by making available to relevant bodies information from the considerable volume at our disposal.

At local level we will have been considering the lessons learned through our experiences with Atlas recording. There will be undoubted shortcomings which will require remedial treatment. It is unlikely that recording of 'criticals' will have received anything like adequate attention for instance, and the same situation probably exists with established aliens. Referees are likely to be kept busy! Coverage of the more remote highland areas will continue to be a challenge (see comment above) - active members take note!

The cover illustration was drawn by Barbara Hogarth to complement her article on *Salix arbuscula*.

As we go to press, 'spring has sprung' though foot and mouth restrictions prevent full enjoyment of the countryside. May this blight be soon past for everyone's sake.

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Chairman's Remarks

GORDON ROTHERO

2000 was a fairly quiet year for the Scottish Committee. We have done our best to respond to the consultation documents on the new Loch Lomond and the Trossachs National Park, Scotland's first national park. Essentially, our main point has been to emphasise where we can, the founding principle of the National Park, that conservation of our natural and cultural heritage is the over-riding interest. The worry is that the National Park label will be seen as a means of exploiting the area for economic benefit. On the whole, an increase in economic activity on the back of the Park designation is a good thing, but one which will need careful management and is certain to create conflict. I think the planning looks reasonable but so much will depend upon how the structure works in practice, how the balance of interests manifests itself within the Park Authority. This is very difficult to predict but I remain optimistic while being aware that there will be disappointments on the way.

Similar consultation documents have now been issued for the proposed Cairngorms National Park. This is a much larger park (indeed if the widest option is chosen it is enormous) and a very different proposition in that the core area has only a tiny resident population. It is arguable that the botanical interest is much stronger in this Park and the Committee will no doubt make a response with this in mind.

There seems to have been little further development on the review of SSSIs in Scotland but I hope that I detect a change in the tone of the debate. The welcome changes introduced in England and Wales by the Countryside and Access legislation has put strong pressure on Scotland to consider something along the same lines and certainly this pressure is being applied by the conservation organisations. In Scotland, the draft access legislation has just been published to mixed reviews. There is much in it to be welcomed in my view, but I am slightly concerned by some aspects. There is a strong feeling in the climbing community that, in the hills at least, there is the prospect of access becoming more restricted than it is at present if the legislation goes through in its current form. However, the new rules may benefit those who seek better access over more intensively farmed ground where some restrictions at certain times are understandable and necessary.

The learning process involved in managing a large project like Atlas 2000 and a different perspective of what is possible if sufficient funding is available - one can pay people to do some of the work - means that the BSBI will view itself in a different light from now on. This perspective, along with the growth of the 'conservation industry' and a paradoxical falling away of the traditional roots into a taxonomic knowledge of wild plants has presumably led to the appearance of the BSBI Strategy 2000 document. This seeks to redefine the objects of the Society and sets out a programme whereby progress towards these objectives can be

achieved over the next five years. The financial implications to the Society of such a strategy are considerable and what is attainable will depend on funding. By the time you read this, the AGM may already have approved the strategy. The Scottish Committee has made a number of comments on the draft Strategy document but I wonder how many of the general membership will have written in for a copy - the wee note in the January *BSBI News* does not convey any sense of the scale of change envisaged. There has been some good news during the year on the conservation front. Sam Galbraith lost no time in refusing planning permission for the super-quarry at Lingerabay, bringing to an end a sorry saga that was unfair to both the people on Harris and to the quarry company. There must be a better way than this to resolve these matters. There are a few more proposed Special Areas of Conservation following a rap over the knuckles for the UK from the EU for not having declared a sufficient area of those habitats for which we have a particular responsibility. The saddest news was of the death of Brian Brookes. He was an inspiration in both the knowledge that he had of Scotland's natural history and in the ability to communicate, not just the knowledge, but the enthusiasm on which a deeper understanding has to be based. The wilder bits of Scotland have lost a good ambassador.

BSBI Committee for Scotland

The following is the composition of the Committee from Nov 2000 - Nov 2001. Chairman - GP Rothero; Secretary/Treasurer - Miss L Farrell; Field Meetings Secretary - JW McIntosh; Minutes Secretary - Dr MF Watson; Meetings Secretary - Mrs EW Stewart; Members of Committee - Mrs PF Braithwaite, PS Lusby, Drs P Macpherson and CJ Miles.

Representing SNH - Dr C Sydes; Representing BSS - J Lyth.

At the AGM on 3rd November 2001, P Macpherson, PS Lusby and GP Rothero retire, the last two being eligible for re-election. Nominations for the vacancies, signed by two members of the Society normally resident in, or recorders for, a vice-county in Scotland, although not resident there, and with written consent of the candidate, who must also qualify as above, should reach the undernoted at Scottish Natural Heritage, Kilmory Estate, Kilmory, Lochgilphead, Argyll PA31 8RR by 30th September 2001.

L Farrell - Hon Secretary.

Scottish Annual Meeting 2000

EDNA STEWART

Introduction

The Scottish Annual Meeting for the year 2000 was held at the Royal Botanic Garden, Edinburgh on 4th November. This was a most enjoyable occasion. There was a large number of exhibits, displayed in a spacious room which allowed the many members and friends to circulate. We heard a well presented and enthusiastic talk from Ian Evans, the afternoon speaker. Our new book suppliers had brought an enticing supply of the latest publications and I think must have been satisfied with the level of sales. The evening meal was again held in the Marina Hotel, after which we saw slides from rather fewer members than usual.

Scottish VC Recorders Meeting

The attendance was 40 of which 29 were Scottish VC Recorders. Gordon Rothero was in the chair. David Pearman spoke about the distribution of *Melampyrum sylvaticum* (Common Cow-wheat), which had been researched by R Fitzgerald and T Rich. He suggested that it may be overlooked by recorders. There are 33 recent records. Trevor Dines spoke on the progress of the Atlas. The final list is about to be sent out to Recorders for checking. Chris Preston explained there would be three categories listed 1 Native, 2 Archeophytes (before 1500 AD), 3 Neophytes (more recent introductions). In each case plants would be assessed on national and local criteria. The species maps were very good, but subspecies and hybrids were poorly recorded. There will be a CD Rom with the Atlas which will cost £75. Publication date is late 2001 or early 2002. There was a query about Scottish records of *Epilobium tetragonum* (Square-stalked Willowherb). Chris Sydes spoke on the Scottish Rare Plant Project. Although there is no proposal for a continued grant, he has budgeted for another 3years. The project has run for 3years, but it could take a year for the Scottish Executive to give approval for its continuation. The Botanic Garden will put in a proposal so that existing projects can be resumed. SNH has passed on records of reintroductions, which are relatively few in Scotland. UK BAPs have increased the number of species about which SNH can take action. It was up to Recorders to pick up new sites. Kathleen Fallowfield mentioned problems with landowners denying access in connection with *Linnaea borealis* (Twinflower). David McCosh said that there will be discrepancies between the Atlas and the VC Census Catalogue. No more data could be taken for the catalogue. New records can go to *Watsonia*. (but now see *BSBI News* 87. 67).

Lecture

An illustrated talk on "What we didn't know about the flora of Assynt" was given by Ian Evans. Since 1988 his wife Pat (Recorder for VC 108) and he had been

engaged in a tetrad survey of this large, geologically-diverse, parish in West Sutherland (183 sq. miles; 164 tetrads, including 30 'marginals'). The survey was 'completed' in 1999, with over 30,000 records, of at least 714 species, having been entered by Pat into RECORDER.

The text, distribution maps and illustrations were now being prepared for publication. Amongst species found 'new' to the area were: *Carex otrubae*, on the island of Soyea (on the very last day of the survey!); *Anagallis minima*, widespread on the coast just above high tide mark; *Neottia nidus-avis*, in hazel woodland near Achmelvich (Iain MacDonald); *Utricularia stygia*, by far the commonest of four taxa in this genus (although, in the absence of flowers, all had to be determined using a microscope); *Dactylorhiza incarnata* ssp. *cruenta* in a mire which was also a new locality for *D. lapponica*; *Pyrola media*, identified only after it had been coaxed into flower in 'captivity' by Gordon Rothero (GPR); *Astragalus danicus*, both on the coast and inland limestone; *Poa glauca*, at 500m., just inside the parish/VC boundary (GPR); *Lycopodium annotinum*, in two localities; *Luzula arcuata*, on Conival and Canisp (GPR); and *Saxifraga nivalis*, on Suilven (GPR).

Other noteworthy discoveries had been: *Zostera marina*, on four beaches as washed-up rhizomes (the source of which remains a mystery); *Asplenium marinum*, at five inland localities, one of them 2.5 km. from the sea; three new localities for *Asplenium septentrionale*, on south-facing basic dykes in the Lewisian gneiss; 135 populations of *Ajuga pyramidalis*, some of over 500 plants; four additional sites, in mires, for *Carex paniculata* and 24 for *Cladium mariscus*, mostly on loch margins. Finally, the Canisp population of *Diphysastrum issleri* had been found to extend over 0.5 km. of rocky hillside, with 1000+ plants, which may make it the largest population in the U.K.

Abstracts of Exhibits

Finds in Fife and Kinross (VC 85)

GH Ballantyne

NCRs or species not seen for many years were Parsley-fern (*Cryptogramma crispa*) (1875), Hard-grass (*Parapholis strigosa*) (1874), Flat-stalked Pondweed (*Potamogeton friesii*) (NCR) and Dwarf Gorse (*Ulex minor*) (2nd record). Hybrids displayed were Hybrid Fescue (*X Festulolium loliaceum* (1871). Des Etangs' St John's-wort (*Hypericum x desetangsii*) (NCR), Hybrid Cinquefoil (*Potentilla x mixta*) (NCR), a hybrid docken (*Rumex x abortivus*) (NCR) and a hybrid willow (*Salix x subsericea*) (1958). Highlighted were the cats ears *Hypochaeris radicata*, *H. glabra* and possibly their hybrid *H. x intermedia* from Tentsmuir, first seen in 1996. Also shown were Slender Rush (*Juncus tenuis*) (not yet spreading), Shady Horsetail (*Equisetum pratense*) (new localities) and Pale Willowherb *Epilobium roseum* (declining).

Some Ayrshire VC 75 Records 2000

John Blane

The exhibit consisted of a specimen of *Carex riparia* (Greater Pond Sedge), the second Ayrshire record, collected 27th June, 2000, on the Water of Girvan between Kirkmichael and Crosshill. Confirmation from R.D.Meikle of *Salix* specimens collected October 5th, 2000 from the dismantled Darvel-Strathaven railway line close to the county boundary. The samples sent confirmed as: *Salix aurita* (Eared Willow), *S. caprea* (Goat Willow), *S. cinerea* ssp. *oleifolia* (Grey Willow (with unusually small leaves), *S. cinerea* x *S. phylicifolia* (*S. x laurina*) (Laurel-leaved Willow), *S. pentandra* (Bay Willow), *Salix phylicifolia* (Tea-leaved Willow) and possible *S. caprea* x *S. phylicifolia* hybrid which the referee has planted in the hope that it will root. Also displayed was a photograph by John Docherty of the Memorial Stone dedicated to the 'Father of Scottish Botany' - James Smith which is located in Blackfriar's Kirkyard (off the High Street) in Ayr.

Taxa within *Trichophorum cespitosum*, (Deer Grass)

ME Braithwaite

Using the descriptions in GA Swan's recent paper (*Watsonia* 22,209-233) ssp. *cespitosum* and nothosp. *foersteri* as well as the common ssp. *germanicum* had been found in Berwickshire in 2000 together with one plant of the back-cross between ssp. *cespitosum* and nothosp. *foersteri*. These were illustrated and hints for fieldwork were distributed based on the experience gained.

Threatened Plant Site Recording

ME Braithwaite

An illustrated report was presented of a field meeting held in Berwickshire in June 2000 where a provisional threatened recording form had been field tested. The form had been found too complicated to use without specific training. The site had been revisited later by MEB to try a technique using a hand held GPS (Global Positioning System) to plot a detailed plan of the *Dianthus deltooides* (Maiden Pink) colony present. The successful results were illustrated.

Isolepis cernua - New Records from the Inner Hebrides

Paddy Braithwaite

A brief report was made on the discovery of sites for *Isolepis cernua* (Slender Club-rush) on the islands of Coll, Tiree and Muck in June-September 2000.

**Noteworthy plants exhibited from
Roxburgh and Selkirks (VCs 80 & 79)**

RWM Corner

VC 79. *Fumaria purpurea* (Purple Ramping-fumitory) found by Luke Gaskell was the first record since 1914, and a second vice-county record for *Coeloglossum viride* (Frog Orchid) was made from a montane site. First records for the county were *Leontodon autumnalis* ssp. *pratensis* (a subspecies of Autumn Hawkbit) and *Dactylorhiza incarnata* ssp. *pulchella* (a subspecies of Early Marsh-orchid).

VC 80. *Typha angustifolia* (Lesser Bulrush) found by Michael Braithwaite was new although the colonies have been present for well over 50 years presumably as an introduction. First and second records for *Dactylorhiza incarnata* ssp. *pulchella* (a subspecies of Early Marsh-orchid) were made.

***Alopecurus magellanicus* Lam. (Antarctic Foxtail)
and *A. borealis* Trin (Alpine Foxtail)**

RWM Corner

Plants of *A. magellanicus* from a sea level site at Ushuaia in Tierra del Fuego, Argentina were shown. These plants are considered conspecific with *A. alpinus* var. *robustus* found as a wool alien from South America in a sewage tank at Galashiels by Miss I M Hayward in 1916. Plants from Greenland and short awned and long awned plants from Scotland were also shown. A photograph of especially vigorous plants from the Northern Pennines showed the variation even in British material. It was concluded that the southern hemisphere race of *Alopecurus magellanicus* could be a subspecies of *A. borealis*.

Vegetative reproduction in *Ajuga pyramidalis*

P & I Evans

Ajuga pyramidalis (Pyramidal Bugle) is shy to flower in the wild. Despite this, local populations in Assynt may number into hundreds and we have long wondered how these two observations might be reconciled. Historic accounts of *A. pyramidalis* are doubtful or contradictory about its powers of reproduction. An exception is provided by 'Mr Duncan of Scarp' (Bennett, A.S.N.H. 1904), who refers to 'short stolons'. However, Rich et al. (Bot J. Scot. 1999) considered that his observations required 'independent confirmation'. This we can now provide, after a fashion. *A. pyramidalis* grows well in our garden at Nedd, multiplying rapidly. New small rosettes appear up to 10 in. (25 cm.) from the main one. This prompted Pat to a careful excavation, the results of which were shown in photographs. The rosettes are connected by long thin roots (verified by microscopic sections).

A collection of 68 photographs taken recently during post-Atlas euphoria!

Kathleen Fallowfield

Some of these were the result of an expedition to obtain samples for DNA tests on the leaves of *Cicerbita alpina* (Alpine Sow-thistle). Others were of Scarce Species in the Outer and Inner Hebrides:- *Dactylorhiza lapponica* (Lapland Orchid) *Lycopodiella inundata* (Marsh Club-moss) and some orchid inter-generic and inter-specific hybrids. In the Recorders own vice-county (92 South Aberdeen) Scarce Species such as *Melampyrum sylvaticum* (Small Cow-wheat) and *Linnaea borealis* (Twinflower) were depicted, along with some possibly unique shots of the rare Mountain Burnet Moth on the equally rare *Astragalus alpinus* (Alpine Milk-vetch).

Pipewort and Lesser Water-plantain

Lynne Farrell

There are some previous records of *Eriocaulon aquaticum* (Pipewort) from Tiree and Islay, from lochs with a sandy substrate. The Tiree site was visited in 1999 but only young *Baldellia ranunculoides* (Lesser Water-plantain) found. Washed up rosettes of *Eriocaulon* were collected from Coll in June 2000. The young, submerged rosettes of *Baldellia* do look very similar to *Eriocaulon* rosettes. The distinguishing characteristics are the 'wormy' roots of *Eriocaulon* with very distinctive transverse septa. *Baldellia* has a very strong smell, even when pressed - it resembles hydrogen sulphide. It is likely that the young submerged rosettes of *Baldellia* were mistaken for *Eriocaulon* in both Tiree and Islay.

North American Asters

Geoffrey Halliday

Specimens and draft Atlas maps were shown of the most frequently encountered taxa, three species: *A. laevis*, *A. novi-belgii* and *A. lanceolatus* and the two hybrids - respectively *A. x versicolor* and *A. x salignus*. It was pointed out that the difficulties of identification were apparently the result of backcrossing between the somewhat fertile hybrids and their parents, so creating, more or less, a continuous spectrum from *A. laevis* to *A. lanceolatus*. Consequently statements in the Floras on the relative frequency of the taxa need to be interpreted with some caution, as do the Atlas maps themselves.

Some new Cumbrian records

Geoffrey Halliday

Specimens were exhibited of five alien taxa new to Cumbria:- *Euonymus latifolius* and *Rosa filipes* (both new to VC 70) and *Vitis vinifera* (Grape-vine), *Rosa ferruginea* (*R. glauca*) and *Senecio cineraria* x *S. jacobea* (all new to VC 69), together with a specimen of the eyebright *Euphrasia ostenfeldii* from one of its two Westmorland

localities (VC 69). Also shown were photographs of the hybrids *Gymanadenia conopsea* x *Dactylorhiza fuchsii* (Fragrant Orchid and Common Spotted-orchid) and *G. conopsea* x *D. maculata* subsp. *ericetorum* (Fragrant Orchid and Heath Spotted-orchid).

Some new finds around Milngavie

Mogens Hansen

1. *Polygonum rurivagum* (Cornfield Knotgrass) - found in vegetable bed in 1998. Not found before or since. Suspect 'imported' via a growbag. 2. Abnormal forms of *Cardamine pratensis* (Cuckooflower) - normal and abnormal seedpods, plantlets instead of seeds. 3. *Solanum dulcemara* (Bittersweet) ssp? - white flowers, leaves without basal lobes, paler than normal. 4. *Alchemilla* (Lady's-mantle) - which species?

Philately and Flowers

Barbara Hogarth

This exhibit continued last year's with sets of postage stamps from around the world with designs illustrating wild flowers.

Plants of the Tideline at Whiting Bay, Isle of Arran

John Lyth

For at least ten years, *Lycopersicon esculentum* (Tomato) has been growing on the shore, at the high tide mark, at Whiting Bay. In 1999, tomato plants were extremely prolific, stretching from the Glenashdale Burn in the south to the Viking Burial Mound in the north. Among the tomatoes that year was found a seedling of *Solanum laciniatum* (Kangaroo Apple) near the Viking Burial Mound. On returning this year (2000) there were a lot fewer tomato plants, possibly due to the dry spring, and no sign of the Kangaroo Apple, but, just below Whiting Bay School were four plants of *Physalis peruviana* (Cape-gooseberry or Strawberry Tomato). Cape-gooseberries had been used in salads by one of the nearby hotels. Seeds of Tomato and Cape-gooseberry arrived on the beach through the sewage system, but the poisonous Kangaroo Apple was probably spread by bird droppings. What this says for the cleanliness of this Arran beach is left to the imagination!

Some recent Hawkweeds from Rum, Colonsay and S. Scotland

DJ McCosh

The exhibit consisted of herbarium sheets of Hawkweeds collected by DJMcC in July 2000 from localities not recently examined for *Hieracia*.

The sheets included:

Fionchra, Rum VC 104 *H. anglicum*, *H. flocculosum*, *H. shoobredii*
Allt Loch Sgaoristhal, Rum *H. nitidum*

Loch Fada, Colonsay VC 102 *H. strictiforme*
Garrel Burn, Kilsyth VC 86 *H. dewarii*

Three Diverse Exhibits

Douglas McKean

1. A poster and publication on the Biodiversity Plans of the City of Edinburgh showing the 'HUNDRED' SPECIES selected for special treatment.
2. An exhibit on the native/introgressed oak species highlighting the diagnostic characters.
3. Some rare and interesting plants from around the Lothians were shown eg *Rubus caesius*, *Rubus ulmifolius*, *Inula helenium* and *Gilia capitata*.

Stowaways from Guernsey— 30 Years Persistence in a Glasgow Garden

P Macpherson

In 1970 I attended a BSBI Field Meeting in Guernsey. Another member brought in for identification a specimen of *Trifolium occidentale* (Western Clover) with soil attached. The leader suggested that I take it home and see if it would grow in my garden in Glasgow. The *Trifolium* did not survive but no less than seven interesting plants grew from the soil. Some appeared only once, one for two and another for three years, but Musk Stork's-bill (*Erodium moschatum*) and Four-leaved Allseed (*Polycarpon tetraphyllum*) have spread and persisted unaided for thirty years.

Year 2000 in VC 104

CW Murray

The VC Recorder must have been suffering 'Atlas 2000' exhaustion, as all the plants exhibited were found by other people.

Neottia nidus-avis (Bird's-nest Orchid) reappeared after a two year absence (new in 1997) noticed by J. Philips and later photographed by M. Henriksen, followed by *Beta maritima* (Sea Beet), found by A. White and J. Taylor. This was new to Muck, and only the second VC 104 record. *Loiseleuria procumbens* (Trailing Azalea), had been seen and photographed in 1998 by R. Cottis on Ben Aslak in Sleat, in the same area already searched by the Recorder (more than once!) Finally, a carefully packed specimen of *Typha latifolia* (Reedmace) from Eigg (J. Chester, SWT Warden), from a reed bed where it must have been introduced, but it is the only recent record for VC 104.

The BSBI Education Initiative

Franklyn Perring

The problem of where the next generation field botanists is to come from is being

tackled by the Society in four ways. 1. By collaborating with the Field Studies Council and Birmingham University in providing Accredited Botanical Courses aimed particularly at young professionals. 2. By running a FREE course, Spotlight on Plants, for post-GCSE students at Preston Montford Field Centre in June 2001 intended to inspire successful applicants to become professional taxonomists/field botanists. 3. Developing a Trees and Shrubs web-site in collaboration with Science and Plants for Schools (SAPS) including a key to 75 native and established species based on leaf shape with a 'fact page' for each. 4. Promoting Local (County/Regional) Education networks. Progress has been made in Northamptonshire coordinating courses provided by University, Local Authority, Field Centres, the Wildlife Trust and BSBI and promoting them with a combined leaflet. Details available on the SAPS web-site (www-saps.plantsci.cam.ac.uk) or under Learning Resources on the BSBI web-site (www.rbge.org.uk/BSBI).

Geographical and temporal variations in the membership of the BSBI

TCG Rich

This Poster describes the changes in the number of members from the beginnings of the Botanical Society of London to the present, and also shows the present distribution of members by vice-county. Peaks in membership coincide with the early years of the Botanical Society of London, the activities of Druce at the turn of the century, and the recording for the first Atlas. There are notable differences in the number of members per hectad between different counties, and this has implications for the comparability of botanical recordings in these areas.

Azolla filiculoides (Water Fern) in the Forth and Clyde Canal

A Rutherford & A McG Stirling

Colour photographs illustrate the phenomenal growth of the Water Fern (*Azolla filiculoides*) on the Forth & Clyde Canal between Old Kilpatrick and Dalmuir, Dunbartonshire, in September 2000. The population completely covered the water surface over a distance of 2.5 km. The reproductive bodies (sporocarps) were produced in quantity. A new record for VC 99, Dunbarton and possibly for the West of Scotland. A herbarium sheet was also included. Could this exceptional event be another sign of global warming?

A new site for *Carex elongata*

Allan Stirling

A specimen was shown of *C. elongata* (Elongated Sedge) from a new site within the Loch Lomond National Nature Reserve, discovered by John Mitchell, former Reserve Warden. The colony, consisting of four mature tussocks, is small compared with those at the four sites previously known around Loch Lomond, but the

habitat is similar and very typical for the species wet alder/willow woodland close to the loch shore. The exhibited specimen will be deposited in the herbarium of the RBG Edinburgh.

Scottish Mountain *Salix* Hybrids

DJ Tennant

Colour photographs were shown illustrating ten examples from a collection in cultivation of 24 different, mostly rare, *Salix* hybrid combinations which were gathered on Scottish mountains. This collection represents nearly all of the confirmed British hybrids involving an arctic-alpine species, including a few recently discovered ones. It will provide the basic material for projects to be undertaken by the Royal Botanic Gardens both at Edinburgh and Kew (see article p. 16).

The following exhibits were also shown:

Atlas 2000 Progress

Trevor Dines

A new *Equisetum* hybrid

Trevor Dines

Set-aside & arable weeds (see p. 23)

Luke Gaskell

A *Catamagrostis* population in the Borders

MS Porter & MJY Foley

Supper and Slides

After supper, slides were shown by five members as follows:

Rod Corner	Border Plants and Greenland Flora
Lynne Farrell	BSBI Spean Bridge Trip
Jackie Muscott	Some Uncommon Fungi
Dr FH Perring	Some Shetland Oddities from Unst to Fair Isle
Allan Stirling	<i>Azolla filiculoides</i> on the Forth and Clyde Canal

Scottish Field Meetings 2001

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

June 30	Greenlaw, Berwickshire	ME Braithwaite
July 22	Caenlochan Glen, Angus	Mrs BG Hogarth
July 28	Ben Vorlich (Loch Lomond)	JW McIntosh
July 29	Meall na Dige, Perthshire	JW McIntosh
July 31-Aug 3	Uig, Lewis	PA Smith
Aug 9 - 13	Arran	T Smith & Miss L Farrell

In view of the Foot and Mouth epidemic, it is essential to check with the leader beforehand

In Memoriam - Brian S Brookes MBE 1936-2000 IM Strachan

Brian Brookes died in December of last year after a 2 year struggle with cancer. He made a major contribution in the fields of natural history, education and conservation, especially in the Scottish Highlands and Islands. I had the privilege to know him for the last 18 years of his life; his enthusiastic and energetic commitment to natural history and conservation, combined with his ecological understanding, his unassuming personality and his sense of humour, were an inspiration to me as well as many others.

I first met Brian Brookes at the SFSA centre at Kindrogan, where he was a Warden for 18 years. He organised training courses on a wide range of topics, including many aspects of the Scottish flora. With his wide knowledge of natural history, in particular flowering plants and bryophytes, he did much to promote botanical recording in Scotland, including some of the more difficult groups of plants. He was an infectious teacher who could work successfully with people of all ages, and he became a leading figure in the field of conservation education.

A BSBI member since 1960, he was a familiar figure at the Society's Scottish meetings and contributed much to its work. When the BSBI Committee for Scotland was formed in 1977, he was elected its first chairman, serving with distinction in the capacity for a four year period. He assisted with final production of the Inverness-shire Map Flora and his records for Morvern in particular have been a big help for Atlas 2000. He also played a very active role in the Scottish Wildlife Trust, notable for reserves such as Loch of the Lowes, Brerachan Meadows, Handa and Rahoy Hills. He prepared management plans, set up long-term monitoring and ably chaired management committees.

In later years, he continued to run courses as Highland Field Studies from his Perthshire farm at Borelick, but also became increasingly involved in consultancy work. He specialised in habitat survey and a major achievement was his conservation audit of Ardtornish Estate for the Raven family, where he acted as environmental adviser.

The interests and talents of Brian Brookes extended to many other areas - he was for example a skilled bee-master and his turkeys were in great demand! Moving tributes were paid to him at a memorial service in February, at which BSBI was well represented. A fuller appreciation will appear in *Watsonia* later this year.

Mr A.C. Crundwell Regretfully, we have to report the death of Alan Crundwell who had been a BSBI member since 1947, although his professional interests were in the field of bryology. Older members will remember him as a familiar figure for many years on the staff of the University of Glasgow Botany Department. He was one of the leaders of British bryology. After retiring he went to reside in Hampshire.

Woad in the Wild in Glasgow P MACPHERSON & K WATSON

In June 2000 a strong plant of the biennial Woad (*Isatis tinctoria*) was noted growing up behind a railing between the pavement and a steep grassy bank at the side of Great Western Road, Glasgow (Lanarkshire VC 77). The situation and lack of other hortal vegetation indicated that the plant was bird-sown. The discovery was made after *The Changing Flora of Glasgow* (Dickson *et al* 2000) had gone to press and was the first further change to be recorded in the Glasgow flora. It is also a new record for VC 77.

Despite having been the source of the blue dye used for war-paint by the ancient Britons, it is generally considered that Woad is not native in the British Isles (Stace 1997), although it is accepted, with reservations, as native by Clement & Foster (1994). It is a Mediterranean species, long established on the cliffs above the River Severn at Tewkesbury (VC 33) and on the wall of a chalk pit near Guildford (VC 17) and being a rather infrequent casual elsewhere.

Isatis is a genus of about 30 species and has been described as ideal for a wild garden, with *I. tinctoria* suitable for a herb garden (Royal Horticultural Society 1996). Presumably the Great Western Road plant came from such a location. We have, in fact, ascertained that it is cultivated in the herb garden of the Glasgow Botanic Gardens and has appeared as a weed in other locations within the Gardens.

Woad was reported in 1837 from a beach at Dunoon (VC 98) - "presumably long since disappeared" (Rothero & Thompson 1994) and as a pre 1934 ruderal at Musselburgh and introduced Bawsinch 1986 (VC 83) (McKean 1988). In addition there are three casual records from Fife (VC 85), but little detail on localities (Young 1936).

It would seem, therefore, that the plant is very rare in the wild in Scotland, even as a casual.

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A Reassessment of Montane Willow Hybrids in Scotland

D.J. TENNANT

A survey of the willow hybrids occurring on Scottish mountains has been carried out during the last decade. This is a difficult but important group in the Scottish mountain flora, as extensive hybridisation has occurred leading to great variation, which combined with their inaccessibility and the extreme rarity of many individual hybrids in the field has led many botanists to avoid involvement with them, and the origins of mysterious hybrids such as *S.x boydii* and *S.x eugenes* of Linton or *S.x grahamii* of Baker have never been fully resolved.

E.F. Linton (1913) published a major monograph on *Salix*, but since then little further progress was made until a full reassessment was completed by RD. Meikle (1975). *Salix* hybrids, however, are extremely difficult to determine from herbarium material in many cases, and in 1975 the reassessment left many questions unanswered, as fresh material of some of the rarer montane hybrids was unavailable at that time. A further study with the help of Desmond Meikle, still the leading British expert, was therefore commenced by examination of the major herbarium collections, followed by field-surveys in an attempt to relocate all of the described hybrids and confirm or redetermine their identity. At the same time efforts were made to persuade major institutions to undertake DNA studies to test the hypothesis of hybridity which might help to confirm the parentage of the hybrids, which had not been done previously. Such studies have now been proposed at the Royal Botanic Garden Edinburgh and collaborating institutes, where some cytology work will also take place. Similarly, material will be supplied to RBG Kew for use in a new project on British plant phylogeny and the establishment of a United Kingdom DNA Bank.

Accordingly, the necessary permits and landowner permissions were obtained and the fieldwork was extended. As well as herbarium vouchers, a cutting was always taken so a living collection has now been built up which includes over 400 potted plants, and a further number were donated to RBG Edinburgh where a special willow garden for them has been created. The plants will be used as the basic material for the scientific work over the next four years or more. This approach to the determination of *Salix* hybrids is essential, as identification based on visual characters alone is unsatisfactory in many cases, and some of the recent determinations included in the revised British list (Stace 1997, Kent & Stace 2000) should therefore be regarded as tentative. The present reassessment has been restricted to hybrids, which have at least one of the six British arctic-alpine species as a parent, but will also include hybrids which only involve 'lowland' species in the case of the five British 'lowland' species which often occur with the arctic-alpine species in Scotland, and are known to hybridise with them.

There are other objectives of this work, which can be summarised as follows:

- Provision of recent and confirmed herbarium material

- Collection of data for the preparation of descriptions and photographic records for identification and reference
- Revision of the British hybrid list (recently completed Stace 1997, Kent & Stace 2000)
- Updating the vice-county recorders with hybrid records and their distribution
- Production of selected hybrids by design (useful also for the scientific programme as parentage would be certain)
- Setting up a permanent 'foliage bank' for future molecular work
- Finally but not least, conservation. The events leading to the formation of the less common hybrids in the field were clearly very rare occurrences, and the few individual plants which have survived are highly vulnerable to rock falls, avalanche or destruction by deer. Site details and population sizes have therefore been maintained, and the final stage might be the reintroduction of selected hybrids into their original locations in the wild, supervised by and in co-operation with SNH and the local wardens concerned.

In summary, there has been considerable progress in the majority of the objectives and a full interim report summarising this has been issued to the BSBI Science and Research Committee.

Linton (1913) described 28 Scottish *Salix* hybrids which involved an arctic-alpine parent and 11 additional crosses involving 'lowland' species which were likely to occur in the same habitats. Thirteen of the arctic-alpine hybrids which Linton had accepted were rejected in the list prepared by Meikle (1975), either due to lack of satisfactory evidence or earlier redetermination by non-British Salicologists, notably SJ Enander and Floderus, although two were added by Meikle. However, the provision of fresh material collected during the recent field work has now enabled six of the rejected arctic-alpine hybrids to be restored, at least tentatively to the current British list (Stace 1997, Kent & Stace 2000), which now includes 24 arctic-alpine hybrids and 13 'lowland' crosses which might occur in the same habitats. In addition, the present list also includes six hybrid combinations discovered during the recent field work, four of which have arctic-alpine parents, which had not been recorded previously in Britain, and a further three, which are excluded from the list, are currently under examination.

The scientific phase of the work at the Botanic Gardens has not yet commenced but their initial findings will be awaited with great interest, meanwhile the field work will continue in an attempt to find the few remaining elusive hybrids.

Acknowledgement:

I would especially like to thank Desmond Meikle for the help provided, and the BSBI Science and Research Committee for their support in the year 2000. Others who assisted in various ways will be acknowledged at a later stage.

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Raasay - 1999-2000 Update

STEPHEN J BUNGARD

The past two seasons have led to several additions to the Raasay list.

A few plants of *Schoenoplectus lacustris* (Common Club-rush) were found in Loch na Cuilce (Loch of the Reeds - which also has plenty of *Phragmites australis* (Common Reed)).

Proliferous ("viviparous") plants of *Trichophorum cespitosum* (Deergrass) which were first spotted in 1996 were identified as *T. cespitosum* ssp. *foersteri* by Professor G Swan. This is the hybrid between ssp. *cespitosum* and ssp. *germanicum*. *T. cespitosum* ssp. *cespitosum* is unknown on Raasay.

Callitriche brutia (Pedunculate Water-starwort) was confirmed beside Loch na Meilich. An old record of *C. intermedia* by Loch na Meilich did not state which subspecies (as *C. brutia* was then considered). *C. hamulata* (Intermediate Water-starwort), the other species that was previously considered a subspecies of *C. intermedia*, is already known on the island.

Other additions were all aliens, planted or casuals: *Papaver somniferum* (Opium Poppy), *Umbilicus rupestris* (Navelwort), *Ribes rubrum* (Red Currant), *Narcissus pseudonarcissus* (Daffodil), *Lycopersicon esculentum* (Tomato) - enough to pick on the shoreline - and, worryingly, *Cortaderia selloana* (Pampas-grass).

Old records re-found included a single plant of *Epilobium parviflorum* (Hoary Willowherb), the only previous Raasay record being by Mary McCallum Webster

in 1957. A decent patch of *Phalaris arundinacea* (Reed Canary-grass) became the first record since the 1937 flora which noted its presence on the east coast - a limited description that is consistent with the location of the existing patch. Nearby, another old J W Heslop Harrison record, *Calamagrostis epigejos* (Wood Small-reed) was re-found, but this is known in two other Raasay sites, one of which was also a JW HH record.

Other records from the 1937 flora recorded again for the first time include *Salix x reichardtii*, the hybrid between *Salix caprea* (Goat Willow) and *Salix cinerea* ssp.

oleifolia (Grey Willow), *Ruppia maritima* (Beaked Tasselweed), *Potentilla sterilis* (Barren Strawberry) near Inverarish and *Gnaphalium uliginosum* (Marsh Cudweed)

Ophioglossum vulgatum (Adder's-tongue) was found in much greater numbers and over a much wider area than had been recorded before, including one site well away from the east coast from where all other extant records come.

Ophioglossum azoricum (Small Adder's-tongue) was found in two locations that represent a different type of habitat from that of previous records. These are flat areas that flood in winter from, in one case a lochan, and in the other a small burn. The associated flora is also different. These are areas of partly bare peat but also present are species such as *Filipendula ulmaria* (Meadowsweet), *Leontodon autumnalis* (Autumn Hawkbit), *Potentilla erecta* (Tormentil), *Ranunculus repens* (Creeping Buttercup), and *Ranunculus flammula* ssp. *flammula* (Lesser Spearwort).

Willow Warblings

BARBARA HOGARTH

Working as a Seasonal Ranger on Ben Lawers NNR was the catalyst that rekindled my interest in mountain plants. In the course of one season there I witnessed the erection of two experimental enclosure fences, one of which contained a sizeable colony of Mountain Willow (*Salix arbuscula*), and during my second season, 1990, I helped to collect seed from some of these plants. The green seeds were cleaned up by removing the silky hairs and surface sown immediately - most on to moist compost but a few were put on moist kitchen paper in improvised propagators (margarine cartons with clear lids). Germination rates were good. Those on paper proved to be easier to pot on in a growing medium consisting of a mix of multi-purpose compost and schisty soil (cleared out of the car park drains). To this I added the magic ingredient - a small amount of soil taken from within the area of the willow colony. I hoped this would contain enough mycorrhizal fungal spores to benefit my plants. By the end of the season I had 24 healthy plants. My willows turned out to be surplus to requirements of the NNR planting schemes so I took them home to Invergowrie and a sea level existence.

They went from little pots to bigger pots to sinks but eventually those that survived some hot, dry summers outgrew all available containers and the only option I had was to put them out into the garden. Some went onto a sunny, slope which is fairly well-drained, one joined some ornamental Woodrushes (*Luzula* spp.) and two are now doing battle with a prostrate Juniper in a fairly shady situation. The soil conditions are nothing special and fairly neutral. Several years on they appear to be thriving and by good fortune I have male and female plants which produce catkins and (as I placed the male plants upwind of the female plants) even a few seeds. What is remarkable is that given space and absolutely no grazing most of the growth has been outwards rather than upwards. As this sprawling habit took

one plant across a path I gave it a good prune. Did this encourage upwardly mobile growth? NO!

From observations of the willows (and other montane plants from which seed was collected) I wonder how beneficial the fencing will prove to be in the long term. Other than temporary fencing for woodland regeneration I am not in favour of 'exclosing' areas of mountainside. I feel it may lead to greater uniformity with common species out-competing the rarer species which I believe rely on an element of disturbance to create open spaces for their seeds to settle and develop. Many of our upland rarities would have come in as early, post-glacial colonisers and are probably favoured by occasional landslides and winter scouring.

It would be presumptuous of me to say what conditions plants need but in the light of what I have learned from growing *Salix arbuscula* and other montane species for ten years I feel that conservation initiatives seldom consider the longer term implications and are often based on poor quality of basic information on what makes plants tick.

I would also like to see more emphasis on proactive land management. When walking through the high alpine pastures in the Alps and Pyrenees a wealth and diversity of plant life abounds and there is a tendency to draw unfavourable comparisons with our own Scottish montane flora. Being somewhat further north than these mountain ranges and geologically and climatologically 'challenged' are often put forward as plausible explanations but I would like to propose that the real key may lie in the management.

My contention is that the controlled grazing of sheep, cattle, horses and goats observed abroad is actually beneficial and that the problem in Scotland is that for years sheep and deer have been the main grazers but wander at will choosing only the tastiest greenery. For some time I have been mulling this over and have rightly or wrongly come to the conclusion that many of the pockets of richer vegetation are remnants or survivors of a 'peasant' culture that no longer exists in Britain and that some species must have hung in there in spite of centuries of land abuse.

This is not a plea to emulate the impossible - perish the thought - but a hope that as gatherers of botanical information we in the BSBI can contribute our knowledge to influence initiatives that will help to improve the fate of our flora through beneficial management rather than allow it to continue to degenerate through inertia, neglect or the short-term piecemeal approach.

The Re-discovery of *Gentianella amarella* ssp. *septentrionalis* in Moray (VC 95)

IAN P GREEN

On the evening of 14 July 2000 at about 9pm it was getting rather chilly, even so Alastair Stevenson and I decided we would do one more stop. This was to visit

some sand dunes on the edge of Roseisle Forest (NJ109664) to see *Astragalus danicus* (Purple Milk-vetch). Alastair had found the *Astragalus*, one plant still flowering, but I had been distracted by some dead *Gentian* plants, as I knew there were no modern records for any species of *Gentian* in the 10km square NJ16 in which we were recording. A few feet away I came across some fresh specimens, and I couldn't believe it when I suddenly realized I was looking at *G. amarella* (Autumn *Gentian*), even more exciting was that it was ssp. *septentrionalis*, which neither of us had seen before. We found about 40 plants in two spots on the dunes.

The most recent records that I have been able to trace for Moray are from the 1930's. One of these is just over 4 km away, where it was seen in an old lime quarry at Inverugie.

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Books by Scottish BSBI members

A McG Stirling

Two important publications have recently appeared which will be of great interest to Scottish members. Their authors are well known to *Newsletter* readers.

The first, which had an official launch at University of Glasgow on 14th December 2000 is *The Changing Flora of Glasgow* with Professor Jim Dickson, Dr Peter Macpherson and Keith Watson as principal authors. The other is *Lochlomondside*, number 88 in the Harper Collins New Naturalist series, by John Mitchell, lately Chief Warden at Loch Lomond National Nature Reserve.

Full reviews of these books will certainly appear elsewhere in due course, but in the meantime be assured that both are full of interest general natural history as well as botanical, and provide fascinating reading. Both are well deserving of a place on your bookshelf.

Congratulations to Peter Macpherson on his election as an Honorary Member of the BSBI.

Recordship - Clyde Isles (VC 100)

The present recorder, Mr A Church has intimated a desire to resign, and has expressed a willingness to pass on his records. Applications are sought for a successor and anyone interested in this vacancy should contact Miss L Farrell, Honorary Secretary, BSBI Committee for Scotland

Differentiation Between Field and Shady Horsetails

P MACPHERSON & A McG STIRLING

The sterile stem of Field Horsetail (*Equisetum arvense*) usually has semi-erect branches with a tapered top, while that of Shady Horsetail (*E. pratense*) tends to have semi-horizontal branches and a blunt top. However, when Field Horsetail grows in shade, it frequently has the same morphology as described above for Shady Horsetail.

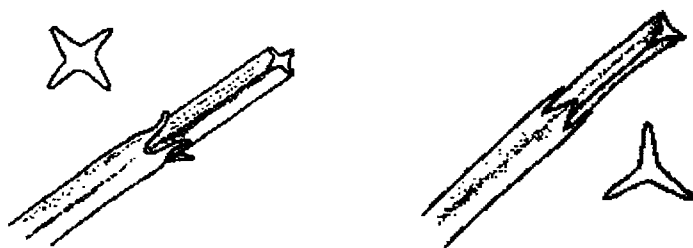


Fig 1 (a) Field Horsetail branch (b) Shady Horsetail branch

The branches of Field Horsetail are stated to be 4-armed in transverse section with splayed teeth, those of Shady Horsetail being 3-armed with appressed teeth (Jermy & Camus 1991). Fig. 1 above.

In an endeavour to check the validity of the transverse section criteria, we have sectioned the branches of 21 specimens of Field Horsetail growing in shade and exhibiting the general outline of Shady Horsetail.

Results

Upper and lower branches 4-armed	7
Upper and lower branches 3-armed	4
Upper 3-armed, lower 4-armed	10

Both species can grow in similar habitats, as along the wooded parts of the Clyde Valley. Were one, therefore, simply to take the general appearance and transverse section shape into account, then the identification would be wrong in many cases. However, we found invariably that the branch teeth were splayed in Field Horsetail, whereas those of Shady Horsetail were more triangular (deltoid) and appressed. We are grateful to Elspeth Lindsay for providing the illustration.

Reference:

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Arable Weeds in South East Scotland

L GASKELL K VELANDER

Arable weeds appear to be under threat; for the last two seasons we have surveyed three crop types in SE Scotland; natural regeneration set aside, sown set aside, and fodder roots and kale, to see what species and communities are present. Most of the species considered problematic seventy years ago are still numerous, others less common are successful in the right conditions (Table 1).

We attempted to fit the data to Rodwell's Classification of vegetation of open habitats but found that whilst the fields were quite close to the communities listed, notably OV 12 and OV 13, both the frequencies found and the absence of some southern species made this approach of little value.

Finally, as set aside can provide such good conditions for arable weeds, we suggested that the BSBI might consider campaigning for changes in the regulations to make these types of set aside management more common, rather than industrial crops bare fallows.

Table 1. Species of interest recorded during the study (n=78)

Species	Set-aside	Sown Set aside	Turnips & Kale
<i>Aethusa cynapium</i>			✓
<i>Amsinckia micrantha</i>	✓	✓	
<i>Coryza canadensis</i>	✓		
<i>Descurainia sophia</i>		✓	
<i>Erysimum cheiranthoides</i>	✓	✓	✓
<i>Fumaria densiflora</i>	✓	✓	✓
<i>Fumaria purpurea</i>	✓	✓	✓
<i>Geranium pulchellum</i>	✓		✓
<i>Hypericum humifusum</i>	✓		
<i>Lactuca virosa</i>	✓		
<i>Lamium amplexicaule</i>	✓	✓	✓
<i>Lamium confertum</i>	✓	✓	✓
<i>Persicaria lapathifolia</i>		✓	✓
<i>Potentilla norvegica</i>	✓		
<i>Sherardia arvensis</i>		✓	
<i>Silene noctiflora</i>		✓	
<i>Stachys arvensis</i>			✓
<i>Veronica agrestis</i>	✓		

ATLAS 2000 - the final check-out

LYNNE FARRELL

At the Scottish Annual Meeting on 4th November 2000, Allan Stirling suggested that recorders might like to contribute an article on their experiences of Atlas

2000. I think he probably had field recording stories in mind, but here is another aspect for your contemplation. Having received the lists for VC 103 for final checking, I set aside 3 weekends in December in order to meet the deadline of 17 December for return to Monks Wood. The lists came in alphabetical species order, with 10km squares in sequence. Fine - I like alphabetical order. But - I realised all my paper records were on Master Cards on each 10km square! This meant that I could not check each 10km² Master Card easily. Oh. The only solution I could come up with was to spread my 10km square cards out in order on a large table, and walk round them for each species A (*Abies alba*) to Z. So I purloined the SNH Conference Room and started at 10 a.m. Saturday morning. By 4 p.m., I had got as far as C. With 3 evening sessions, as well as 3 total weekends I reached *Zostera noltei* by 4.30 p.m. on Sunday 17 December. Phew!

The facts

1. The Conference Room tables measured 5ft x 21¹/₂ft. I had 5 tables put together. One complete circuit was approx. 45ft..
2. There were 850 species on my list. I had to walk round the table for each of them.
3. Therefore, I walked at least 850 (species) x 13.7 metres (45ft) - a grand total of 11545 metres or 11.5kms (7.15 miles). It seemed further!

Will we need a new carpet in the Conference Room sooner than scheduled in our refurbishing programme and how much shoe leather did I expend?

Some botanical wandering in the far north

GORDON ROTHERO

In an attempt to boost the recording from some of the more remote areas of Caithness and Sutherland for the Atlas 2000 project, I spent part of the summer of 1998 wandering about in various reputedly under-recorded places. This is not a botanically rich area although there are little pockets of interest if one is willing to poke ones nose into odd places. It is wild and empty country - on my, admittedly idiosyncratic, trips I saw only a couple of people once I had left the public road. I realised that this trip would inevitably be condensed down to a series of dots amongst many, so I kept a few notes to remind me both of the places and plants. Just as important, while I was expanding my notes for this article, I was also reminded that, for most of us and despite its serious intent, botanical recording is really about having fun. A look at a map of the area to the north of Loch Shin leads one to suspect that it is probably pretty dull stuff and, as usual, the map does not lie. The weather was grim, low cloud and drizzle all day making the scarred margin of Loch Shin even less attractive than usual. Just south of Overscaig Hotel is a patch of birch woodland on the loch margin, with a poor flora enlivened by a huge population of *Trientalis europaea* (Chickweed Wintergreen). North of Loch

Shin is Glen Fiag, with large areas of production forestry and moorland which shows all the signs of regular burning. The track-side and the old farm at Fiag are the most productive areas with some moderately flushed grassland, including a small stand of *Botrychium lunaria* (Moonwort). The low hills east of the track have a few *Schoenus* flushes and these have limited populations of *Eriophorum latifolium* (Broad-leaved Cottongrass), *Pinguicula lusitanica* (Pale Butterwort), *Dactylorhiza incarnata* ssp. *pulchella* (Early marsh-orchid) and *Hammarbya paludosa* (Bog Orchid). But these are tiny patches of interest in large tracts of dull, wet heath. The low ridge bounding Glen Fiag on the east, ends in the bump of Cnoc an Laoigh. In the bealach to the north of this, the ground has some better mire areas with the pattern of pools just catching the light and lifting the spirit. This area has *Carex limosa* (Bog-sedge), *Carex lasiocarpa* (Slender-sedge) and a good population of *Betula nana* (Dwarf Birch).

Having had my fill of the lower ground I decided to head for an area with a few more contours. On the road over from Lairg to Altnaharra is the lonely Crask Inn; from here one can gain access to the wonderful system of tracks and stalker's paths that cover the Ben Armine Forest to the east. Lots of scope here for long treks - try Crask to Strath Brora via Ben Armine; not much change out of 40km, mostly on good paths. My plan was to head east to the wooded areas on Loch a' Bhealach and Loch Choir. The first 6km, on a good path, are rather dull, especially on a dreich day, but on approaching the Bealach Easeach, on the East Sutherland side, there are better things. Right by the path there are large *Saxifraga aizoides* (Yellow Saxifrage) flushes with *Schoenus nigricans* (Black Bog-rush) and *Eriophorum latifolium* and a patch of *Lycopodium clavatum* (Stag's-horn Clubmoss), an uncommon plant up here.

Looking east, a series of large and broken crags extends from the bealach eastwards to Creag na h-Iolair and the waterfall at Easan Fheidh; rather confusingly, moving east here takes one into West Sutherland. These crags are north-facing and somewhat base-rich and have a good flora including *Galium boreale* (Northern Bedstraw), *Saxifraga oppositifolia* (Purple Saxifrage), *Saussurea alpina* (Alpine Saw-wort) and at least two small stands of *Polystichum lonchitis* (Holly Fern). The small burns and flushed grassland below the crags are also nice with a good population of *Alchemilla wichuriae* and frequent *Botrychium lunaria* and also *Gentianella campestris* (Field Gentian) in one place. On the opposite, south facing, side of the glen there are smaller crags and a huge, wooded rock-fall. Time did not allow a thorough exploration of this complicated area but some time was spent examining hundreds of basal rosettes of *Pyrola* (Wintergreen) in a fruitless quest for a flowering spike. In a more open patch of scree here is a small stand of *Cryptogramma crispa* (Parsley Fern), another very uncommon plant in Sutherland. The crags took up some time and so the wooded areas could only be given a rapid survey. The craggy bits retain a montane flora with *Trollius europaeus* (Globeflower), *Sedum rosea* (Roseroot) and *Oxyria digyna* (Mountain Sorrel) but

are generally rather disappointing. Some of the wetter areas have *Saxifraga aizoides* and *Botrychium lunaria* in the open, flushed areas below the trees and in one ravine there is *Polystichum aculeatum* (Hard Shield-fern). The mire area between the two lochs is poor but does have *Carex pauciflora* and in the lochs there is *Isoetes lacustris* (Quillwort). A 10km plod back to my van, so thank goodness for the long, light evenings.

A slightly better morning and an 'improving' forecast led me up on to the southern part of Ben Klibreck from Vagastie. The ravine and falls on the Feith Bad an Loch are rather poor, though the amount of water made access tricky, but there are scattered stands of *Betula nana* in the mire around Loch Bad an Loch. The crags north east of Loch nan Uan, on the margin of my target hectad are rather acid but some common montane species occur and *Arctostaphylos alpinus* (Alpine Bearberry) is frequent. On A'Chioch cushions of *Minuartia sedoides* (Cyphel) become reasonably common as they are over much of the higher part of the hill, apparently the site from which it was first recorded in Britain. I had lunch with a dotterel near the top though, yet again, I couldn't see much else. To the south is Creag an Lochain with an impressive line of crags, largely acidic although there are stands of *Saxifraga oppositifolia*, *Saxifraga aizoides*, *Saussurea alpina*, *Alchemilla wichurae* and *Athyrium distentifolium* (Alpine Lady-fern) to be seen if one is willing to scramble about.

Ben Armine is a long way from anywhere but a mountain-bike along the estate track from Badanloch Lodge gives an easy approach which is only gently uphill though the north-west wind was a little unkind. The most interesting flora is associated with crags around Coire na Saidhe Duibhe where there is an excellent population of *Salix lapponum* scattered right round the coire. Other species of interest include *Saxifraga oppositifolia*, *Saussurea alpina*, *Thalictrum alpinum* (Alpine Meadow-rue), *Sedum rosea*, *Cornus suecica* (Dwarf Cornel) and *Salix phylicifolia* (Tea-leaved Willow). *Arctostaphylos alpinus* is scattered over much of the hill but the flora is generally rather poor and one has to search hard for plants of interest. The day brightened and the view eastwards over the flow country was absolutely stunning. On the way back to Badanloch Lodge, the track goes through another target hectad, and I jumped off the bike at points along the track. Most plants seen were species of track sides or associated with old farm buildings but one large *Schoenus nigricans* flush had *Eleocharis multicaulis* (Many-stalked Spike-rush), *Platanthera bifolia* (Lesser Butterfly-orchid), *Dactylorhiza incarnata* ssp. *pulchella* and *Utricularia stygia* (Nordic Bladderwort); the latter seems to be the commonest of the *Utricularia intermedia* segregates in the north west. The southern margin of Loch an Allt an Fhearna is not rich but does have the usual stony shore assemblage of *Littorella uniflora* (Shoreweed), *Lobelia dortmanna* (Water Lobelia), *Myriophyllum alterniflorum* (Alternate Water-Milfoil) and *Isoetes lacustris*. With the wind behind and a few bits of sunshine I flew back down to the public road, hardly touching the pedals - this is the way to do it!

The obvious hill to make for immediately north of Loch Shin is Ben Hee and there is a good track in to the north side from West Merkland. Indications from other botanical visitors to this hill suggested a rather dull flora and I am afraid this seems to be the case. Other visits seem to have headed for the obvious rocky coire of Garbh-Coire Mor so, to cover some different ground, I went up into Garbh-coire Bheag and then round into Coire na Sigh Duibhe before heading south west along the ridge to the coire under the summit. Much of the ground is both very rocky and very acid but high up *Minuartia sedoides* with *Armeria maritima* (Thrift) provide some colour over much of the ridge and in one place there is a good population of *Sibbaldia procumbens* (*Sibbaldia*).

Most of the other montane species on the card were seen in Coire na Sigh Duibhe where there is a remarkable land-slip giving numerous fissures, some well hidden (beware!) and running right across the coire. Some of these fissures are absolutely enormous and it was possible to scramble down into a few of them and find some lunchtime shelter from the dismal rain. There is some base enrichment in places giving *Saxifraga oppositifolia*, *Silene acaulis* (Moss Campion), *Oxyria digyna* and *Rubus saxatilis* (Stone Bramble) and one dry ledge had a good stand of *Poa glauca* (Glaucous Meadow-grass). Most of the *Poa* tended towards the lax variant that used to be called var. *balfourii* but with some stiff and glaucous plants in places. On crag ledges and in scree in one place in this coire, there were stands of *Athyrium distentifolium* but there is a better population of this fern in the coire just under the summit along with a small stand *Cryptogramma crispa*.

Glencassley leads north off the Strathoykel road and gives access to the large tract of hill country between Ben More Assynt and Loch Shin. The big house at Duchally does not seem to welcome visitors and one needs a bit of determination to get onto the good track that leads north-west up the east side of the river. The plants along the track and on rocks by the river gave few surprises but a reasonable list for what is very open and acid ground. There is a birch woodland at Dubh Choille which is rather open but there is an excellent and reasonably accessible ravine at its north west margin. The Allt a'Chnoic Ghlais has a number of large waterfalls and associated crags giving a good woodland flora including *Allium ursinum* (Ramsons), *Fragaria vesca* (Wild Strawberry), *Melica nutans* (Mountain Melick), *Oxyria digyna*, *Stachys sylvatica* (Hedge Woundwort), *Trollius europaeus*, *Ulmus glabra* (Wych Elm) and a large stand of *Orthilia secunda* (Serrated Wintergreen). The blanket bog above seems poor and there were obvious signs of muir-burn. The moorland was followed north to the Hydro aqueduct at the top of the hectad and the associated track added a few more weedy species.

The aqueduct leads on to the Hydro works at the 'end of civilisation' in the glen where a tarmac road comes over from Loch Shin. Near a junction of some tracks there is an area of wet ground that has been disturbed in the past and this has a large population of *Juncus balticus* (Baltic Rush). This is usually a coastal plant and has presumably been brought in by Hydro machinery but it is certainly well-

established. Beyond this, a rough path leads north into the wilderness. Just above the path to the east, is a long line of low crags with some strata of more basic schist and so having some interest. *Galium boreale* is quite frequent, there are a few patches of *Helictotrichon pubescens* (Downy Oat-grass), one small stand of *Orthilia secunda* and a population of *Ajuga pyramidalis* (Pyramidal Bugle) with numerous rosettes but, as usual, with very few flowering spikes. In the curve of a meander of the river, below the crag, flushes in the mire have a small population of *Hammarbya paludosa*. The cloud lifted periodically giving good views up into Coire Reidh on Ben More Assynt, a great place but not on my itinerary.

A morning with a glimpse of sun and a desire for real montane ground, along with the dictates of square-bashing took me up to Bealaich Traligill from Inchnadamph and on into Garbh Coire on the south side of the Conival-Ben More Assynt ridge. This is complicated ground here, with three vice-counties to contend with and confident map lines which in reality are reduced to wiggly watersheds and intermittent burns.

The western margin of the target hectad just clips a sliver of Cambrian limestone, an extension of the Inchnadamph exposure with a similar rich flora. The initial flushes in the Bealaich Traligill are fairly acid but do have *Juncus triglumis* (Three-flowered Rush) and *Epilobium anagallidifolium* (Alpine Willowherb) but the best flora starts with a narrow band of 'fucoid beds' - brown calcareous rocks - which angle upwards and southwards. This strip has a number of calcicoles including *Draba incana* (Hoary Whitlowgrass) but the most interesting plant is probably *Poa glauca*. This is frequent here and varies from the typical stiff, glaucous plant to more lax stems in sheltered crevices and, interestingly, it fails to make the transition to the adjacent limestone. The limestone is very rich and it is probably simplest just to list the rarer species:- *Alchemilla wichurae*, *Carex capillaris* (Hair Sedge), *Carex rupestris* (Rock Sedge), *Dryas octopetala* (Mountain Avens), *Minuartia sedoides*, *Potentilla crantzii* (Alpine Cinquefoil), *Tofieldia pusilla* (Scottish Asphodel) and *Arenaria norvegica* (Arctic Sandwort). This would appear to be a new hectad for the latter species and, with one or two plants on the Glen Oykel side of the watershed, *Arenaria norvegica* should go on to the Easter Ross list - what an odd game this is.

Garbh Coire on Conival is rather acid but has a large population of *Sibbaldia procumbens* in steep, open grassland under the crags where the snow lies late, and much *Athyrium distentifolium* in the large areas of scree. This is a wonderful, wild and rocky area with stunning views over Dubh Loch Mor down the Oykel and on to Seana Bhraigh and the Beinn Dearg massif. The complex crags above Dubh Loch More are composed of moderately basic gneiss and have a good montane flora with frequent *Polystichum lonchitis*, *Silene acaulis*, *Luzula spicata* (Spiked Wood-rush) along with the usual tall-herb community. There is a tiny population of five rosettes of *Draba norvegica* (Rock Whitlowgrass) on a dry sheltered ledge at the eastern end of the largest of these crags. This is big country and there is lots more ground to explore here.

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