

BSBI News

April 2009

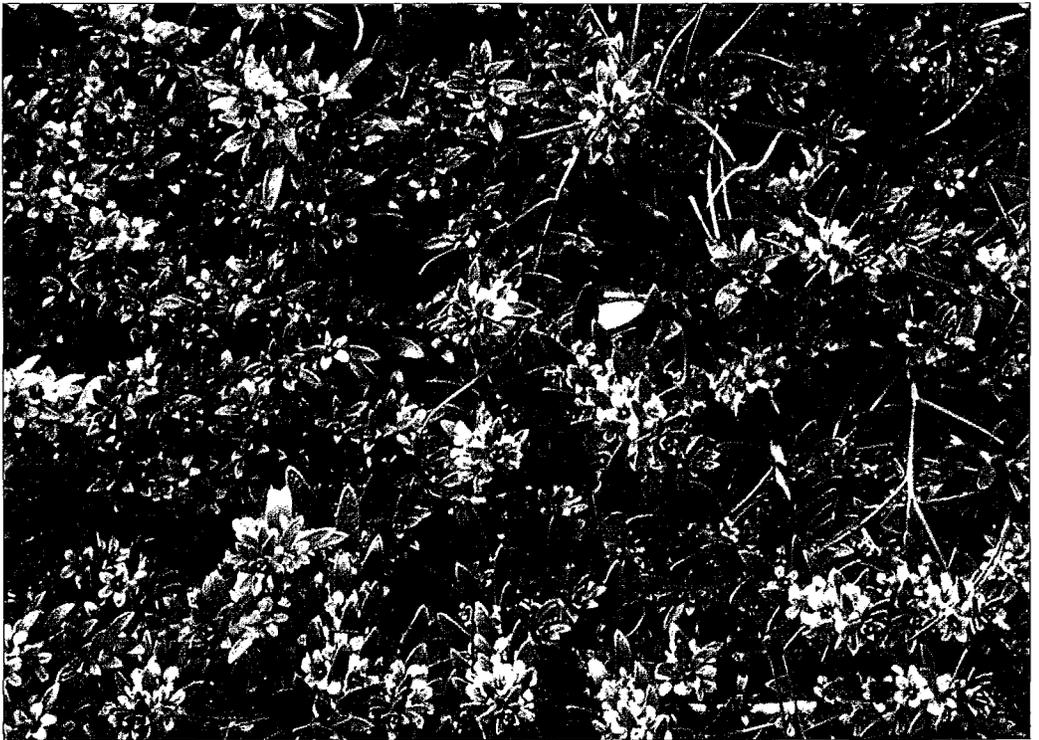
No. 111



Edited by Trevor James & Gwynn Ellis



4-merous *Glaux maritima*, Eriskay, Hebrides



5-merous *Glaux maritima*, Berneray, Hebrides
Both photos M. Atkinson © 2007 (see p. 28)

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Cover picture – Eighteenth century herbarium specimen of *Althaea rosea* found at Clowance, Cornwall, from the St. Aubyn Herbarium, Plymouth City Museum and Art Gallery © 2009 (see p. 53)

BSBI Plant Unit

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Some members seem unclear as to what the Plant Unit actually does so I thought it might be useful to summarise our main work in a few short paragraphs. The Plant Unit is the professional arm of the Society responsible for the coordination of recording projects, research, data management, data provision and external relations. The Unit employs four staff (myself, Alex Lockton, Jim McIntosh and Bob Ellis) and is funded centrally from BSBI funds with support from the Countryside Council for Wales, Scottish Natural Heritage and Natural England. Below are a series of short reports on recent developments that may be of interest. If you would like more information on the work we do please email me at kevinwalker@bsbi.org.uk.

Recording strategy

2009 is the last year of dateclass 4 and this has led to discussions over recording priorities for the next decade. This will include a repeat of Local Change and preparation for the next Atlas. We think it is unrealistic to expect repeat coverage in each DC but it should be possible for most counties to achieve this, at the hectad scale, in 20 years (i.e. DC4 & 5). We intend to produce guidelines in the autumn setting out what we would hope VCRs might be able to achieve by 2020, ways to reach this and how it will fit in with central projects run by the Plant Unit.

Threatened Plants Project (TPP)

The pilot in 2008 was very successful and to date (16th March) we have received over 700 completed survey forms (see table below) plus 1000s of new or amended records for the 10 species covered. Both the number of samples and geographical coverage has been excellent and the initial results suggest some very interesting differences between species in terms of refind rates (Table 1, p. 4) and population sizes (Figure 1, p. 5). We intend to complete the analyses this summer and report the results

in the autumn. We are covering another 10 species this year: *Carex ericetorum*, *Cephalanthera longifolia*, *Coeloglossum viride*, *Dianthus deltooides*, *Fallopia dumetorum*, *Gnaphalium sylvaticum*, *Groenlandia densa*, *Melampyrum cristatum*, *Oenanthe fistulosa*, *Vicia orobus*. The sites selected for survey (c.750) will be sent to VC recorders in late March along with a list of hectads for each species with the most recent date record. This should allow VCRs to update records relatively easily if they hold more recent records.

The response was excellent for 2008, especially as it was the first year of a new type of project. The project is an excellent opportunity for members to get involved and so if you would like to take part please get in touch with myself or your county recorder who I'm sure will be glad of any assistance you can give.

Surveillance

In the last News I reported on BSBI's involvement in developing JNCC's UK *Terrestrial Biodiversity Surveillance Strategy*. This year we have been asked to attend a workshop on the monitoring the effects of nitrogen deposition. We are also assessing how well national schemes compliment each other (Local Change, Plantlife's Common Plants Survey and CEH's Countryside Survey) as this will be vital in helping us understand the strengths (and weaknesses) of Local Change and to guide us in the selection of indicator species for monitoring the next time around.

Celebrating the 1962 and 2002 Atlases

In the last report I mentioned the possibility of a conference to 'showcase' the use of BSBI data. Since then a number of proposals have been brought forward. These include a conference in 2012 to celebrate the 50th anniversary of the publication of the 1962 Atlas, focusing on the way BSBI hectad maps revolutionized the way we map organisms. 2012 is also ten

years since the last Atlas and this would seem a good time to summarize the work we have done since then (possibly as a book to go with the conference).

Climate change

There is currently very little work on the potential impacts of a warming climate on the British flora. We are therefore pleased to announce that Alexandra Bell (currently at Kew) will be starting a PhD on this topic in October. This is a collaborative studentship between BSBI (as a CASE partner) and Chris Thomas at York University and will apply both field-based and modelling approaches, using BSBI data, to a range of species.

Rapidly spreading aliens

Over the winter we analysed Maps Scheme (AUP) data to identify the 200 most rapidly spreading alien species. The method used the number of new DC4 records (colonisations) as a proportion of the total number of hectads recorded in DC3. This allowed us to pick out species recorded only recently in the wild (e.g. *Lemna minuta*) as well as those that have been known for a very long time but seem to be spreading at the moment (e.g. *Echinochloa crus-gallii*) (Table 2, p. 4). The information will be used by Defra to produce maps on new 'Non-native Species Portal' due to be launched in May.

Species accounts

One of the most popular recent BSBI initiatives has been the species accounts on the website. This was originally developed by Alex Lockton and he plans to relaunch the project in 2009 with the aim of covering another 100 or so species over the next few years. Accounts will be entirely voluntary and we hope that members will 'adopt' species that they are interested in and produce stimulating and informative accounts that others can comment on via the website. If you are interested in writing an account then please email Alex at coordinator@bsbi.org.uk. To compliment this project we are working closely with CEH to develop a British Botany webpage that will provide links to information such as

accounts, traits, maps, taxonomic sources, illustrations and literature.

Data management

Since I last wrote there has been much discussion about how we manage our data and make it available to others via the NBN Gateway. Both are central to the work of the Plant Unit and are currently under review. 2009 should therefore see major developments following the completion of technical trials and also discussions with JNCC, NBN and the conservation agencies. One of the main options we are considering is how to centralize our data-holdings to make manipulation, verification and data provision more efficient. We intend to trial Recorder6 and have commissioned Tom Humphreys to develop a prototype database capable of handling all our records (currently c. 20 million records). There are many issues to resolve but hopefully this first step will highlight the major issues and give us a better idea of what is achievable given the resources available.

One of the main issues is how we handle the six million plus records in the MapMate Hub. We hold these on behalf of VCRs but we are being increasingly asked to make them available to others via the NBN Gateway. This poses many challenges mainly because the majority are continually being updated by VCRs. We are therefore investigating ways of incorporating them into central data-holdings without generating duplicates and errors that inevitably occur when records are passed from one user to another.

Data provision

The BSBI receives numerous requests for data. The following are just two examples of how are data has been used recently:

- Hectad distribution for *Heraclium mantegazzianum* used to model spread by Miguel Franco, University of Plymouth. This showed that after discounting the 95 years that it took for the first 1% of its current distribution to be occupied, its subsequent spread was incredibly rapid, with 70% of its current occupation (from 20% to 90%) taking place in just under 35 years (Figure 2, p. 5)

- Tetrad data for *Vaccinium myrtillus* used by Moray Taylor (CSL York) to target areas to sample for the introduced fungus *Phytophthora kernoviae* for which *V. myrtillus* is a common host.

Table 1. Number of populations surveyed for TPP species in 2008

Species	Total	Extant	Null	% null
<i>Astragalus danicus</i>	88	63	25	28
<i>Blysmus compressus</i>	66	51	15	23
<i>Crepis mollis</i>	41	28	13	32
<i>Gentianella campestris</i>	142	95	47	33
<i>Campanula patula</i>	18	7	11	61
<i>Monotropa hypopitys</i>	81	44	37	46
<i>Ophrys insectifera</i>	77	50	27	35
<i>Pyrola media</i>	59	43	16	27
<i>Scleranthus annuus</i>	97	41	56	58
<i>Stellaria palustris</i>	49	25	24	49
Total	718	447	271	38

Table 2. Top 10 most rapidly spreading aliens

Species name	1st date in wild	Rank	Hectads/year
<i>Alchemilla mollis</i>	1948	1	16.1
<i>Triticum aestivum</i>	1891	2	7.3
<i>Hyacinthoides hispanica</i> × <i>non-scripta</i>	1953	3	24.8
<i>Verbena bonariensis</i>	1949	4	0.2
<i>Larix decidua</i> × <i>kaempferi</i> (<i>L.</i> × <i>marschlinsii</i>)	1980	5	40.5
<i>Picea sitchensis</i>	1957	6	31.7
<i>Geranium endressii</i> × <i>versicolor</i> (<i>G.</i> × <i>oxonianum</i>)	1954	7	6.8
<i>Lemna minuta</i>	1977	8	25.5
<i>Echinochloa crus-gall</i>	1690	9	0.8
<i>Avena sativa</i>	1875	10	6.5

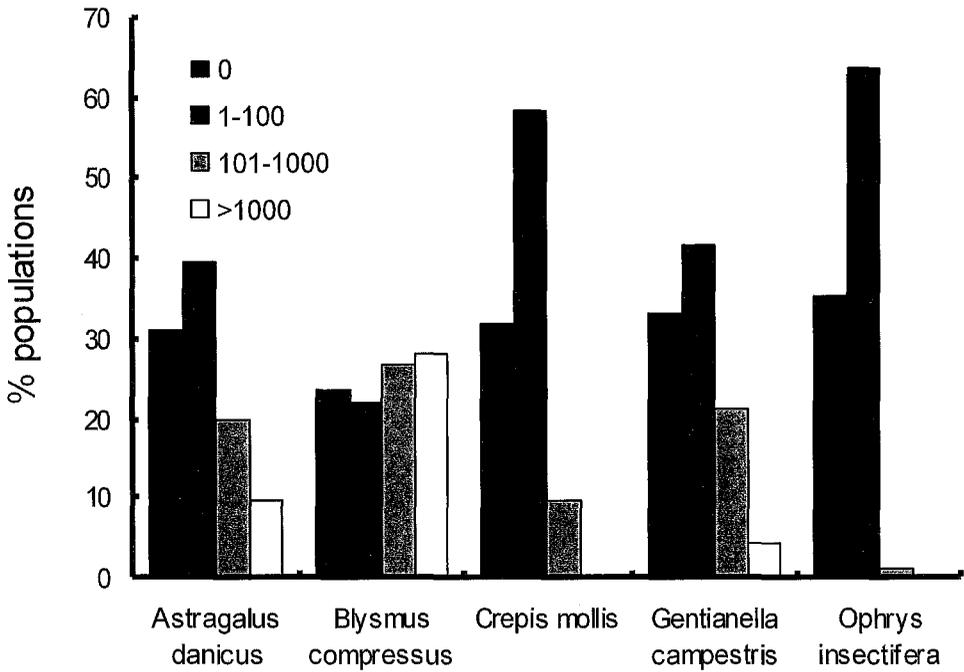


Figure 1. Population sizes of five of the TPP species covered in 2008

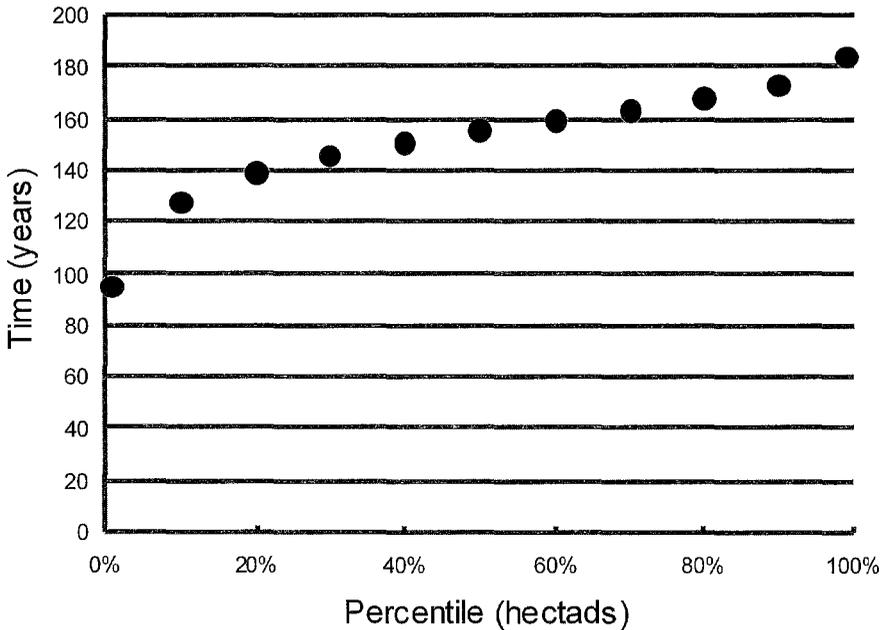


Figure 2. The time taken for *Heracleum mantegazzianum* to reach in its current distribution in Britain based on hectad records supplied by the BSBI

Important notice to members in the Euro zone

GWYNN ELLIS, *Membership Secretary*

As from the 1st of April, the Euro subscription rate has been reduced for new members to reflect the recent fall in the value of the Pound against the Euro.

The new rates are:

For members in the Irish Republic

Ordinary €30 Junior €12
Family €4 Institutional €30

For members in Europe

Ordinary €33 Junior €12
Family €4 Institutional €33

While on the subject of 'money', may I make a plea that all cheques sent to me in payment of subs., or for pre-publication book orders be made payable to 'BSBI' or 'Botanical Society of the British Isles' and please, never, ever, to me personally!

Editorial

Our attention has been drawn to the fact that **Mrs Jean Combes** of Ashtead in Surrey, a member since 1983, has been awarded the OBE for 'services to phenology' in the New Year's Honours List. Apparently she has spent the last 41 years meticulously recording the leafing dates of four tree species: *Aesculus hippocastanum* (Horse Chestnut), *Tilia ×vulgaris* (Common Lime), *Quercus robur* (Pedunculate Oak) and *Fraxinus excelsior* (Ash) in a small area of Ashtead, the data from which have demonstrated that this has advanced between five and seven days over that period, depending on the species. Her data has been incorporated in the UK Pheneology Network database, run in conjunction with the Woodland Trust by Dr Tim Sparks, formerly of CEH Monks Wood.

We are also grateful to Stephen Bungard for sending an extract of a letter by H. Beentje in *New Scientist* (11/2/2009) entitled 'Punning stunts' in which he draws attention to some amusing taxonomical 'curiosities' such as 'Hebejeebie, a genus close to Hebe in the family Plantaginaceae, described by Michael Heads in 2003; *Aquilegia flabellata nana pumila alba* "Rama Lama Ding Dong", a cultivar of dwarf white columbine in the family Ranunculaceae; and *Eriogonum inflatum* var. *deflatum* of the Polygonaceae'.

You can find more about these 'Curiosities of Biological Nomenclature' and about taxonomy in general at www.curiooustaxonomy.net. It's well worth a visit even if our zoological colleagues seem much more adept at coining weird and wonderful names!

Diary

N.B. These dates are often supplementary to those in the 2009 Calendar in *BSBI Year Book 2009* and include provisional dates of the BSBI's Permanent Working Committees.

8-10 May	Spring Conference, Berwick	7 Oct	Records Committee, London
9 May	Council, Berwick	9 Oct	Committee for Wales, Aberystwyth
16 May	Committee for Scotland	13 Oct	Publications Committee, London
26-28 June	Welsh AGM & Exhibition Meeting, Builth Wells	28 Oct	Executive Committee, London
26 June	Committee for Wales, Builth Wells	4 Nov	Database Subcommittee, Leicester
15 July	Executive Committee, London	7 Nov	Committee for Scotland
9 Sept	Meetings Committee, London	11 Nov	Council, London
22 Sept	Training & Education Committee	21 Nov*	Annual Exhibition Meeting, London
26 Sept	Committee for Scotland		

*Note change of date

NOTES

A visible response to climate change

DR HEATHER MCHAFFIE, *Scottish Plants Officer, Royal Botanic Garden Edinburgh, 20A Inverleith Row, Edinburgh EH3 5LR*

The predictions of the effects of climate change include erratic weather patterns and winter warming, resulting in a much shorter period of snow-cover on the hills. At high altitudes there are several species of fern that only survive the winter by being protected by a covering of snow. These alpine species, most notably *Athyrium distentifolium* (Alpine Lady-fern), cannot survive extreme low temperatures. Once covered by snow, possibly from October until May or June, they are protected at an even temperature of approximately 0°C. In 1995-97 I was studying *Athyrium distentifolium* and what turned out to be the variety *A. distentifolium* var. *flexile* at two sites in the Scottish Highlands: a corrie between Meall Buidhe and Beinn Achaladair near Bridge of Orchy and a small site at the head of Glen Prosen, which is parallel to Glen Clova. I visited marked plants of both taxa at fortnightly intervals from April to October. These plants were usually single identifiable crowns on large, multi-crowned plants. I recorded how long it took for the fronds to fully expand, how many fronds there were, the maximum height and when ripe spores were shed. I had maximum and minimum thermometers screened under the edge of rocks and there was usually no frost in the growing season.

The Glen Prosen site was probably the original type site where the *flexile* variety was first found, but apparently collected out within three decades. As a recessive variety, it had reappeared, but I was puzzled that the plants were very small and not always fertile, very different from the larger type specimens in the RBGE herbarium. Most fern beds are in north, east or west-facing corries which retain the snow, but Glen Prosen is unusual as it is south-facing. In April 1996 some of us visited the area and found a large snow-bed extending

the length of the site, wrapping round the rocks that sheltered the ferns. 1997 was different, as there was far less snow and none on the site by April, so that on a mid-May visit there was the sorry spectacle of blackened croziers on ferns that had started to grow too soon and had been frosted. I remember thinking that this is the result that might be expected with climate change and that this site would be especially vulnerable with its southern aspect. When the first fronds are lost in this kind of event the following year's fronds are produced prematurely. They are infertile, as they have not had time to develop their sori. Subsequent visits have been made to this site in 2002 (*flexile*'s 150th birthday) and 2004 when the fronds were still small and reasonably fertile, but surviving. Retrospectively I realise that the frond size indicates that frosting must even then have occurred sporadically, not enough to kill the population altogether but sufficient to reduce its vigour.

The site near Bridge of Orchy was one of the best sites for montane ferns that I knew (see upper photo, back cover). It had lush, green clumps of the two alpine *Athyrium* taxa and some *A. filix-femina* (Lady-fern) *Dryopteris oreades* (Mountain Male-fern), *D. affinis* agg. (Golden-scaled Male-fern) *Cryptogramma crispa* (Parsley Fern), *Gymnocarpium dryopteris* (Oak Fern) and *Phegopteris connectilis* (Beech Fern). Most of the vegetation in the hollows on the boulder scree consisted of large crowns of these ferns, dominated by *Athyrium distentifolium*. In 2002 there was no snow on the ground from January onwards and there must have been severe frosts when the ferns had no protection. As we approached on our visit in July of that year there appeared to be no ferns there at all. Only on close examination did we find blackened crowns with occasional small fronds. A few larger clumps

had survived in among massive boulders and, surprisingly, on open ledges, but the bulk of the fern beds had been very badly affected. On repeat visits in 2003, 2005 (see lower photo, back cover) and 2007 the ferns have gradually recovered. Big clumps have been replaced by dispersed, single crowns, quite close together but far removed from the original dense clumps, which might have been decades old. What has been especially noticeable is the change in vegetation as grasses have grown more vigorously without the inhibiting effect of prolonged snow-cover, which only the ferns could tolerate. Interestingly, at Creag Meagaidh in 1996 I had been puzzled by finding several groups of four or five plants of *flexile* for which isozyme evidence demonstrated that each group was the same clone. These fertile plants were growing vigorously and at the time I had no explanation for a mechanism that would explain this, but now realise these plants too must have been multi-crowned plants that were severely frosted some years before and had recovered. Here too, the grass was longer, just as I was observing a decade later.

As I had photographs of the original ferns that I had monitored I decided to try and refind them all and in 2007 commenced monitoring ferns that I had last measured ten years before. Of the ten marked clumps of *A. distentifolium* two had been completely killed and none were yet fertile, while all ten of the *A. d.* var. *flexile* had survived and two were producing spores. They were still small and several were suffering from deer grazing. No information was recorded as to how many crowns the original clumps had had, but the surviving number of crowns varied from just one to several. It is intended to continue to visit the site every two years.

These sites provide a visual example of the changes that might be expected. In hindsight, I was already observing the effects of reduced snow-cover in the 1990s on the Glen Prosen plants, but did not fully recognise what was happening. While the plants can recover from occasional events of this nature, they would not be able to survive if the frequency increased.

Ex, by, times, cross, hybrid ...? – pronunciation of ‘x’

EDWARD PRATT, 7 Bay Close, Swanage, Dorset, BH19 1RE

Botanists take great care over getting the names of taxa correct, including spelling and origin. But little concern is given about pronunciation. Is this logical? I suggest that it would be good for a start for appropriate bodies to recommend how we should pronounce the ‘x’, ‘x’ or ‘X’ in a hybrid's name. At present there are at least seven ways of doing it!

- Some people ignore the ‘x’.
- ‘Ex’ seems to be little used. The advantage is that it is straightforward. The disadvantages are that ‘ex’ is the pronunciation for ‘ex’ as well as for ‘x’, and that ‘ex’ has other meanings in both Latin (= out of) and English (= former).
- ‘By’ has some merit as a term used in breeding, but is also little used for plants.

- ‘Times’ is used by more people, having been derived from its use in arithmetic, where ‘x’ is the multiplication sign. But hybridisation is pairing, usually leading to sterile offspring rather than to multiplication.
- ‘Cross’ seems to be one of the best choices, as it describes what has happened. One species has crossed with another.
- ‘Hybrid’ is rarely used, but is very explicit.

‘The hybrid ...’ is Eric Clement’s choice (pers. com). (I am grateful for his help with this note).

This seems to be a confusion about which the BSBI Science and Research Committee and The Royal Horticultural Society could make a joint recommendation – please.

Unusual species coincidences in some familiar habitats in south-east Kintyre (v.c.101)

D.W. SHIMWELL, *High House Farm, High Stoop, Satley, Bishop Auckland, DL13 4HL*

In contrast to the much vaunted and scenically spectacular landscape of the Mull of Kintyre Regional Scenic Area, which forms the south-west extremity of the Kintyre peninsula, the landscape east of Conieglen Water in the south-east is one of the least spectacular from a scenic viewpoint, yet probably the most productive in agricultural terms in the whole of the peninsula. South of the coniferous forests of Kerran (NR7313), rising to 240m, and flanked by the *Calluna-Molinia* heathlands of an arc of hills at altitudes between 150 and 190m, the land slopes rapidly to the lowland basin of Corachan Burn (NR7109) below 50m, before rising again to Blasthill (NR7209) overlooking the island of Sanda and the North Channel between Scotland and Northern Ireland. A network of narrow lanes, often with high hedge banks, links some sixteen modern farms, originally the tenanted crofts of the estate of the Dukes of Argyll, who were absentee landlords until the eighth Duke built Macharoch House (NR735093) in 1874. The farming is mainly a mixed economy type of beef cattle-rearing on reclaimed and improved grassland and arable cultivation of barley as a feed supplement. The landscape does not suggest diversity of habitat or flora, but there are several unusual ecological features which recommend closer attention. Here are four examples taken in mid-August 2007.

The coincidence of *Montbretia Crocosmia aurea* × *C. pottsii* and Hay-scented Buckler-fern *Dryopteris aemula* in hedge banks

A dominant feature in the landscape along the network of lanes is the hedge bank, often a complex structure comprising a hedge of woody shrubs atop an herbaceous bank sloping down to a shallow roadside drain. Maintenance of the hedge banks appears to be minimal, and largely dependent upon the whims of local farmers. A prominent aspect of the herbaceous bank in this habitat is the presence of patches of the brilliant orange flowers of *Crocosmia aurea* × *C. pottsii*

(*Montbretia*), not merely in the vicinity of old farmsteads but spread along the lanes, mainly on south-facing banks. Whereas the stands close to habitation tend to be virtually monodominant *Montbretia*, those more than 50-100m from farm buildings tend to include the plant as a component of a relatively diverse herbaceous community. Analysis of ten 30m long samples from south-facing banks on the lanes running east from Mill Park (NR703092) to Polliwilline (NR735100) and Macharoch (NR734094) revealed the species complement shown below. Of particular interest was the commonness of *Dryopteris aemula* (Hay-scented Buckler-fern) as by far the most frequent fern, and the predominance of *Oenanthe crocata* (Hemlock Water-dropwort) as the most common umbellifer. Constant species were *Galium aparine* (Goosegrass), *Rubus fruticosus* agg. (Bramble) (mainly *R. nemoralis* and *R. polyanthemus*) and *Silene dioica* (Red Champion). This plant community is probably well represented in western Britain and Ireland and may be looked upon as one of the more acceptable features of the assimilation of a gregarious alien into the native flora.

10: *Crocosmia aurea* × *C. pottsii*, *Galium aparine*, *Silene dioica*

8: *Arrhenatherum elatius*, *Dryopteris aemula*

6: *Digitalis purpurea*

5: *Oenanthe crocata*

4: *Dactylis glomerata*, *Filipendula ulmaria*, *Ulex europaeus*

1: *Anthriscus sylvestris*, *Athyrium filix-femina*, *Centaurea nigra*, *Heracleum sphondylium*, *Pteridium aquilinum*

A *Juncus bufonius-Isolepis setacea* micro-community of a poached lawn

Chiskan Cottage in Polliwilline (NR729104) is surrounded by damp, improved pasture on surface water gley soils. The sward is dominated by *Lolium perenne* (Rye-grass), *Holcus lanatus* (Yorkshire-fog) and *Cynosu-*

rus cristatus (Crested Dog's-tail), and grazed by Charollais/Limousin cross-bred heifers, which also browse the garden hedge of the cottage, indiscriminately cropping *Ligustrum ovalifolium* (Garden Privet) *Escallonia macrantha* and *E. ×langleyensis* (Escallonia), while sheltering from the prevailing south-westerly winds. On some occasion, months before we came to spend a fortnight in the cottage, they had breached the hedge and flimsy fence to graze the lush grass of the south facing lawn, of a similar composition to the pasture but with prominent growths of *Leontodon autumnalis* (Autumn Hawkbit) and *Lotus pedunculatus* (Greater Bird's-foot-trefoil). In so doing, they had poached the lawn with scattered hoof-prints, between ten and fifteen centimetres in both breadth and depth, thus creating a moist and relatively shaded micro-environment, in which rainfall accumulated, infiltrated slowly into the surface water gley soils, and gradually evaporated between spells of rain. The lawn had not been mown for six weeks and the lush grass growth, whilst precluding a game of cricket, helped maintain the moist microhabitat. On closer inspection of the divots it became apparent that many were colonised by *Juncus bufonius* (Toad Rush) and *Isolepis setacea* (Bristle Club-rush), and a variety of less common species. Of particular interest were growths of the Mediterranean-atlantic *Anthoceros punctatus* (Dotted Hornwort). A random survey of thirty hoof-prints gave the following results:

- 24: *Juncus bufonius*
 18: *Isolepis setacea*
 12: *Poa annua*
 8: *Anthoceros punctatus*
 4: *Gnaphalium uliginosum*, *Sagina procumbens*
 2: *Cerastium glomeratum*, *Polygonum aviculare*
 1: *Epilobium ciliatum*

Arable weed flora of the barley field headlands at Machariorch

The density of the barley crop in the field of Machariorch Chambered Cairn (NR736094) was probably a significant factor in the general paucity of the arable weed flora. The main species growing on the very sandy glacial drift

soils, probably augmented by blown maritime sand, were *Poa annua* (Annual Meadow-grass) and *Polygonum aviculare* (Knotgrass), with occasional *Spergula arvensis* (Corn Spurrey), *Matricaria recutita* (Scented Mayweed) and *Juncus bufonius* on slightly more compacted areas. A more diverse weed assemblage was to be seen growing on the sandy headlands, from where five 10m samples yielded the frequencies shown below. There were four new records for hectad NR70 (N) and three confirmations of pre 1970 records (O):

- 5: *Capsella bursa-pastoris*, *Poa annua*, *Polygonum aviculare*
 4: *Fumaria muralis* (O), *Spergula arvensis*
 3: *Anchusa arvensis* (O), *Fallopia convolvulus* (N), *Geranium molle*, *Juncus bufonius*, *Myosotis arvensis*, *Veronica persica* (N)
 2: *Chenopodium album*, *Matricaria recutita* (N)
 1: *Galeopsis tetrahit* (N), *Geranium dissectum*, *Viola arvensis* (O)

Other weed species, such as *Atriplex patula* (Common Orache) (P), *Cerastium glomeratum* (Sticky Mouse-ear), *Coronopus didymus* (Lesser Swinecress) (P), *Epilobium ciliatum* (American Willowherb), *Lamium hybridum* (Cut-leaved Dead-nettle) (P), *L. purpureum* (Red Dead-nettle) (S), *Persicaria maculosa* (Redshank), *Senecio vulgaris* (Groundsel), *Sinapis arvensis* (Charlock) (S), *Sonchus asper* (Prickly Sow-thistle), *Stellaria media* (Chickweed) and *Veronica arvensis* (Wall Speedwell) seem to be more typical of less sandy, more humid soils of garden borders in Southend (S: NR6808/6908) and Polliwilline (P: NR7310).

A wall community dominated by *Arenaria balearica* (Mossy Sandwort) at Machariorch House (NR735093)

The late Victorian proto-palace of Machariorch House, built by architect George Devey in 1874, was a favourite holiday residence of George Douglas Campbell, Eighth Duke of Argyll (1823-1900) and his third wife Ina, who erected the Argyll Memorial on the nearby headland of Port à Bhàta (NR735087).

Douglas was a Liberal politician who, amongst his many offices, included those of Lord Privy Seal from 1852 to 1866 and Chancellor of the University of St Andrews from 1851 until his death. Outside politics he became recognised as a leader of scholarly opposition to Darwinism in his work of 1869: *Primeval Man: an examination of some recent speculations*. A later publication entitled *The Unity of Nature* (1884) seems to have gained some inspiration from the countryside of south Kintyre and from the walled garden at Machariorch House. The east-facing outside wall of this garden has been colonised by a large population of *Arenaria balearica*, extending for some 50m over virtually its full height of c. 3m, growing on copings and wall bottoms alike. It is probably always in the shade of a woodland canopy of *Acer pseudo-platanus* (Sycamore), *Corylus avellana* (Hazel), *Fraxinus excelsior* (Ash) and *Ulmus glabra* (Wych Elm), and being in a perma-

nently damp, moist atmosphere, the Mossy Sandwort appears to mainly reproduce vegetatively. When the site was visited on several occasions in the second and third weeks in August 2007, there were just five flowering or fruiting stems in the ten, one metre square quadrats I took to record its associates:

10: *Arenaria balearica*

9: *Asplenium adiantum-nigrum*

8: *Homalothecium sericeum*

4: *Polypodium interjectum*

2: *Asplenium ruta-muraria*

1: *Aubrieta deltoidea*, *Hedera helix*, *Veronica arvensis*

Aubrieta deltoidea (*Aubrietia*) is a new vice-county record and *Polypodium interjectum* (Intermediate Polypody) new for NR70.

I am grateful to Mrs Pat Batty, recorder for v.c.101, and to Mr Ian Teesdale of Campbeltown for their comments and encouragement.

Picking flowers

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It is good that very few people pick bunches of wild flowers these days. But I agree with David Pearman (BSBI News 110: 70) that the pendulum has swung too far. In the era about which he was writing, the seventies and early eighties, I was learning to identify partly by picking. I learned much quicker by doing so.

Learners should be told that, under the Wildlife & Countryside Act (1981), it is illegal both to dig up a plant without the permission of the landowner, and to pick rare or endangered plant species. But if there is a good population of the species, there is no harm in picking small pieces off for the purpose of identification – a flower on a short stalk, an upper and a lower leaf, a ground-level runner, if any, and, if available, a seed head/pod/capsule. There are usually enough grasses, sedges and rushes to pick a whole stem. Orchids should never be picked.

Some might argue that in these days of digital photography, picking is unnecessary. But photographs cannot show every feature, and not everyone has a digital camera anyway.

[Editor's note: while the basic law is as Mr Pratt says, there could be a theoretical act of trespass if

plants are picked on private land and 'damage' to the landowner's property was deemed to have ensued. In any case, it is good practice, where possible, to gain landowners' permission first. It should also be remembered that digging up plants without permission even on apparently 'public' land, such as road verges, is also illegal. As for the practice of collecting necessary specimens for identification, the Society has always supported this, and in fact encouraged it, as well as the compiling of herbaria to support both further identifications, and verifying existing ones. An important point, though, is to understand which parts of particular plants need to be collected for carrying out proper identification, how much is needed as a useful voucher specimen, and how to preserve them; and this needs some knowledge on the part of the collector. Advice on this is often included in identification texts, and in the recommendations given by referees in the BSBI Yearbook. The Society's 'Herbaria at Home' project (see: the website <http://herbariaunited.org/atHome/>) indicates the long-term value of material collected in this way. T.J.]

What is the British distribution of *Epipactis leptochila* (Narrow-lipped Helleborine)?

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Epipactis leptochila (Narrow-lipped Helleborine) and its close relative *E. dunensis* (Dune Helleborine) have a complex taxonomic history. Once treated as clearly distinct entities, with Narrow-lipped Helleborine confined to southern beechwoods and Dune Helleborine found exclusively on coastal dunes in northern England and on Angles, the situation became complicated with the discovery of inland populations of a similarly self-pollinating *Epipactis* in northern England and southern Scotland. Some of these northern plants were placed with *E. dunensis* and others with *E. leptochila*, with the distinction resting essentially on the shape of the outer part of the lip (the epichile). The discovery of these inland populations was followed, however, by reports that some sites held plants intermediate between the two taxa, and this led inexorably to the conclusion that *leptochila* and *dunensis* were conspecific. Further, *dunensis* was reduced not to a subspecies, but to the rank of a mere variety of the widespread European species *E. leptochila*. This significant taxonomic change (it involved the ‘loss’ of a species, indeed a species endemic to Britain) does not appear to have been fully documented and, indeed, I have not been able to trace any details of the intergradation of *leptochila* and *dunensis* in northern England, apart from two brief reports (Richards 1986, 1989) and a short discussion by A.J. Richards in Stewart *et al.* (1994). Whatever the reason, all the records were mapped as ‘*Epipactis leptochila* Narrow-lipped Helleborine’ by Preston *et al.* (2002), with not a mention of *E. dunensis*. Even more drastically, *E. leptochila* was itself lumped with *E. muelleri* of Continental Europe by, for example, Stace (2004).

Times and techniques move on and, using genetic analysis, Squirrell *et al.* (2002) showed that *E. dunensis* was specifically distinct from *E. leptochila*, and that neither species could be placed with *E. muelleri*. Furthermore, they demonstrated that the population of ‘Dune Helleborine’ on Lindisfarne (now known colloquially as ‘Lindisfarne Helleborine’) was also subtly genetically distinct; that some of the inland populations of Dune Helleborine in northern England, provisionally dubbed ‘Tyne Helleborine’, also showed small but consistent genetic differences from coastal plants; and that these differences may be of taxonomic significance. (‘Lindisfarne Helleborine’ was described as *Epipactis peitzii* subsp. *sancta* by Delforge in 2002 and then recombined as *Epipactis sancta* by Delforge & Gévaudan (2002), while ‘Tyne Helleborine’ has been named subspecies *tynensis* of *E. dunensis* by Kreutz (2007).) Squirrell *et al.* (2002) did not analyse plants from all extant localities, but they did sample remarkably widely, using material from populations of Narrow-lipped Helleborines in the Chilterns and Cotswolds, as well as Surrey, Dorset and south Wales, Dune Helleborine from the coasts of Anglesey, Lancashire and Cumbria, and Tyne Helleborine from three inland sites in Northumberland. The situation seemed, therefore, to have been resolved by Squirrell *et al.* (2002), with *leptochila* once again confined to beech and other ancient woodland in southern Britain and Dune Helleborine a northern plant, growing both on dunes and at inland sites. Nevertheless, the two most recent popular works on orchids (Harrap & Harrap, 2005 and Foley & Clarke, 2005), both of which follow the taxonomy outlined by Squirrell *et al.*, present rather different distribution maps. In

particular, Foley & Clarke (2005) map Narrow-lipped Helleborine for scattered sites in northern England and southern Scotland, as well as for its traditional range in southern England. Not surprisingly, this has led to confusion, not only amongst botanists, but also the conservation powers that be: both Narrow-lipped and Dune Helleborine (the latter a British endemic) are classified as ‘Data Deficient’ in the latest JNCC listing of the conservation status of UK plants.

In view of the continuing confusion, I think it important to re-affirm in some detail the point that *E. leptochila* does not occur in northern England or Scotland. *E. leptochila* is a rather scarce and declining plant that does not occur north of a line from the Chilterns to Shropshire. It deserves significant conservation action. What is the dataset? Apart from the populations from three sites in Northumberland sampled by Squirrell *et al.* (2002), and briefer and less site-specific results published by Hollingsworth *et al.* (2006), it appears that there are no published genetic analyses of populations of *leptochila/dunensis* from inland sites in the north of Britain. Determinations must therefore be made in the old-fashioned way, that is morphologically. Here I must state that I have neither seen any of these populations in life (apart from *tynensis* at one of its classic localities), or examined herbarium specimens, and thus rely on published material. Plants identified as ‘*Epipactis dunensis*’, explicitly or implicitly on the basis of a relatively short, broad and frequently recurved epichile (the distal portion of the lip), have been recorded as follows (there seemed no reason at the time, or now, to suppose that they were *E. leptochila*):

v.c.54 North Lincolnshire: Near Market Rasen in 1978 (under conifers and deciduous scrub, with the note that the epichile was straight in young florets but recurves as the flowers mature, Weston, 1983); Crowle Waste in 1981 (*Watsonia* 14: 431, now apparently gone); at a third, extant,

site at Messingham the plants are morphologically identical to typical dune populations (Sean Cole, pers. comm., 2009).

v.c.61 SE Yorkshire: Skipwirth Common (under trees by stream) in 1985 (*Watsonia*: 17:482).

v.c.70 Cumberland: Engine Lonning in Carlisle in 2002, on old railway sidings under birch and hawthorn and along path sides in tall herb/grassy vegetation (Clarke & Iveson, 2003).

I have traced few specific details for Scotland, and have certainly not been able to find any references specifically to ‘*E. leptochila*’ or ‘var. *leptochila*’ growing in Scotland. Populations stated to be *E. dunensis* are known from v.c. 77 Lanarkshire and more recently v.c.s 84 and 83 West- and Mid-Lothian, on shaley waste from old mines (= pit bings). The population at Almond Bing, Falkirk (c.50-70 plants in the mid 1990s) is the largest in Scotland. It is worth noting that there are significant levels of hybridisation between *E. dunensis* and *E. helleborine* at some of these Scottish colonies (Harris *et al.*, 1996, Hollingsworth *et al.*, 2006).

Potentially more problematic are the plants specifically recorded from northern England as *leptochila* (either as ‘*E. leptochila*’ or as ‘var. *leptochila*’):

v.c.65 NW Yorkshire: Easby in 1967 (where known for over 20 years), under trees and bushes on limestone river shingle; also Richmond in 1967 (*Proc. BSBI*, 7: 399).

v.c.66 Co Durham: No details.

v.c.67 South Northumberland: identified near Williamston in 1973 (where known for some years previously), by the River South Tyne, and subsequently found at several sites along the river eastwards towards Newcastle; and on abandoned lead mine spoil near Hexam (Richards & Swan, 1976).

v.c.70 Cumberland: near Alston, under birch, from 1993 (Halliday, 1997).

Fortunately, the populations along the River South Tyne in Northumberland were sampled by Squirrel *et al.* (2002) and determined as *dunensis*.

Given that these populations of '*E. leptochila*' are *E. dunensis*, and given the similarity in appearance and habitats of the plants in Yorkshire and Cumberland, it seems reasonable to assume that all of the other records of '*leptochila*' in northern England refer in fact to *E. dunensis* (but whether they are all strictly referable to *E. d. tynensis*, the 'Tyne Helleborine', remains to be seen). Morphologically *tynensis* is very similar to Narrow-lipped Helleborine, and it would have been entirely reasonable for recorders to have placed plants with *leptochila*, despite the anomalous habitat, especially once a precedent had been set. It is to be hoped that morphometric studies will now be undertaken that will establish the differences between the various taxa in this complicated group.

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Colonisation of the Ribble Estuary by Sea-lavenders

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Occurrence on the south Ribble

On 11th August 2008, *Limonium vulgare* (Common Sea-lavender) and *L. humile* (Lax-flowered Sea-lavender) were identified by PHS on a salt-marsh at Marshside, Southport, which lies on the south shore of the Ribble Estuary (SD346194; v.c.59: South Lancashire) (see photo, Colour Section Plate 3). The nationally scarce *L. humile* is a new vice-county record, while *L. vulgare* has not been confirmed in South Lancashire since the 19th century, that sighting being on the Mersey Estuary (Savidge *et al.* 1963). Three non-flowering rosettes of putative *L. vulgare* have been photographed on Birkdale Green Beach (SD311154 and SD319164), about 5km south-west of Marshside, in the last two years (PHS & P.S.Gateley), but these have not yet been confidently determined.

Further visits were made to Marshside during August 2008 to count the *Limonium* populations and describe the habitat. Plants were located by crisscrossing the marsh on foot, frequently scanning with binoculars. The darker tones of the Sea-lavender flowers stood out among the *Aster tripolium* (Sea Aster) and could be seen at ranges of up to 50m. Most plants were in full flower, though a few *L. vulgare* had gone over. Ten specimens of *L. vulgare* and three of *L. humile* were found. Grid references (using a hand-held GPS device) and photographs were taken of all the individuals, which were well spaced out over a distance of about 350m, some 70-200m out from the sea-wall. Despite an extensive search, none was found outside this fairly limited area. During September, seed-heads of both species were collected and examined. There appeared to be no production of viable seed.

Vascular plant associates are listed in Table 1 (p. 19). Other species present nearby in much lower abundance included *Festuca rubra* (Red Fescue), *Triglochin maritimum* (Sea Arrow-grass) and *Plantago maritima*

(Sea Plantain). All are common salt-marsh plants on the Ribble Estuary.

Using National Vegetation Classification (NVC) methodology (Rodwell, 2000), five 2 × 2m quadrats were recorded in vegetation supporting *Limonium*. Domin scores are shown in Table 2 (p. 20). These data were analysed using a modified TABLEFIT programme (Hill, 1996) (Table 3, p. 20). There is a 93% agreement with SM13a: *Puccinellia maritima* salt-marsh, typical sub-community. According to Rodwell (2000), this is the most extensive and widespread perennial community of the lower salt-marsh in the British Isles. It is also a frequent pioneer on the sandy marshes of western England. Both *L. vulgare* and *L. humile* are known to occur in SM13a vegetation (Rodwell 2000).

This large area of salt-marsh is almost level, with occasional low hummocks (to c.15cm high), originally formed around patches of *Puccinellia* but now also supporting *A. tripolium*, *Atriplex portulacoides* (Sea Purslane) etc. and, occasionally, *F. rubra*. There are infrequent small pans but no drainage creeks. The substrate is sandy silt with a fairly firm surface.

The salt-marsh vegetation off Hesketh Road, Marshside, where *Limonium* was found, is of relatively recent origin. Analysis of aerial photographs (Newton *et al.*, 2007) shows it began to form between 2000 and 2002, becoming well-established by 2005, when the marsh community was extending south-westwards at a rate of 400m per annum. It is known that *Limonium* was not present in September 2003 when the area was carefully searched by PHS to record salt-marsh vascular plants. When Gateley & Michell (2002) conducted their NVC survey of the Ribble Estuary, a narrow tongue of vegetation extended from Hesketh Road about 500m to the south-west, consisting of SM13 to the east and SM6 (*Spartina anglica* salt-marsh community) to the west. Since then, the

vegetation has expanded considerably over the foreshore and, apart from isolated patches, SM6 has been replaced by SM13.

Rock Sea-lavender was unknown in South Lancashire until June 2007, when a single plant (*L. binervosum* agg.) was found by P.A. Lockwood on Birkdale Green Beach (SD312154). This mosaic of sand-dune and salt-marsh habitats on the outer fringe of the Ribble Estuary (Smith 2007) supported two adjacent plants of *L. binervosum* in 2008 (PHS).

Occurrence on the north Ribble

Both *L. vulgare* and *L. humile* have been known from the north bank of the Ribble Estuary at Lytham (v.c.60 West Lancashire) for some years. The first record of *L. vulgare* was an individual at Granny's Bay (SD344273) in about 1968 (A.E. Ratcliffe) but this species was not well established until 1993 when a colony extending over about 3 × 7m was noted (EFG). By 1997, this patch was 9m in diameter, with another 1m across about 100m away (EFG). In 2005, there were two large patches and one small in Granny's Bay (M.Jones). This species appeared in a small salt-marsh opposite Fairlawn Road, Lytham (SD354267) in 2004 and west of Fairhaven Lake (SD330277) the following year (MJ). These sites are covered by two tetrads.

The first appearance of *L. humile* at Lytham was in about 1996 at the Fairlawn Road site (C.F. & N.J.Steeden), where six plants were counted by M.Jones in 2004. Granny's Bay produced a single plant in 2004, increasing to nine by 2006 (MJ) and to at least fifteen by 2007 (EFG). A possible *L. vulgare* × *L. humile* hybrid was noted there in 2007 (EFG).

L. vulgare was recorded at Lytham during the NVC survey of the Ribble salt-marshes (Gateley & Michell, 2002). It occurred in SM13 at Granny's Bay and in SM6 south-east of Granny's Bay, presumably the Fairlawn Road site. The floristic table for SM6 given in Rodwell (2000) includes *L. vulgare* but not *L. humile*.

L. vulgare is self-incompatible (Stace, 1997), requiring cross-pollination to produce seed. The Granny's Bay population of this

taxon is not known to produce seed, the different patches seeming to originate from a single clone by vegetative propagation. As *L. humile* is self-fertile (Stace, 1997), the scatter of plants at Lytham may have been derived from seed.

Occurrence in Lancashire north of the Ribble

All three Sea-lavenders occur further north in Lancashire (v.c.60). Populations have been known on the Wyre Estuary for at least 160 years, while *L. vulgare* and *L. humile* have also been recorded on the Lune and Keer Estuaries, the latter entering the eastern side of Morecambe Bay (Wheldon & Wilson, 1907). Livermore & Livermore (1987) give *L. vulgare* as uncommon on the Lune and Keer Estuaries, with *L. humile* being described as rare and coastal, mostly near the Lune Estuary. In total, *L. vulgare* has been recorded in 38 tetrads and *L. humile* from 21 tetrads on these northern Lancashire coasts.

Rock Sea-lavender (*L. britannicum* ssp. *celticum*) was first collected in 1843 (BM) at Staynall, on the east side of the Wyre Estuary. This endemic sub-species is confined to North Wales, Cheshire, Lancashire and Cumbria and formerly occurred in scattered colonies around both the Wyre and Lune Estuaries on the upper parts of salt-marshes. In recent times, in v.c.60 it has been confined to a few Wyre colonies, within 1km of each other (two tetrads), where it grows on stone retaining walls and stabilised muddy shingle. The plant is the subject of a Species Action Plan in the Lancashire Biodiversity Action Plan (Jepson, 2001). This highlights possible threats, including inappropriate maintenance of the Victorian sea-defences, other built developments and competition from vegetation.

Discussion

The recent colonisation of the Ribble Estuary by Sea-lavenders raises questions about the availability of suitable habitat and long-distance dispersal of these taxa. The estuaries of north-west England have been silting up for centuries, leading to the development of salt-marshes, which were then progressively reclaimed for agriculture and industry. Early

editions of Ordnance Survey maps show that few saltings existed on the Ribble in the mid-19th century. Those that formed were soon reclaimed (Berry, 1967). A large embayment at Freckleton on the north side of the estuary supported salt-marsh that was grazed by cattle from at least the 14th century (Shakeshaft, 2007) and, as siltation took place, it was gradually embanked. Heavy grazing pressure here and elsewhere on the estuary would have created adverse conditions for *Limonium*, as these species tend to be eliminated by livestock grazing (Davidson *et al.*, 1991). Since the 19th century, there has been rapid salt-marsh formation on the Ribble and, despite extensive reclamations, its area was estimated at 2,184ha in 1981-88 (Burd, 1989). However, most of these saltings have long been grazed, mainly by cattle and, occasionally, sheep. It seems significant that *Limonium* spp. have only appeared recently on newly-formed, ungrazed salt-marshes on the outer fringes of the estuary. Thus, the Granny's Bay salt-marsh dates back to the mid-1960s and the Fairlawn Road site to about the mid-late 1970s, while the Marshside saltings have an even more recent origin, as described earlier.

L. vulgare and *L. humile* were present on the Mersey Estuary in the 19th century (Green, 1933; Savidge *et al.*, 1963) but, by the mid-20th century, both were extinct, probably due to industrial development on both sides of the estuary.

Neither species has been recorded on the nearby Dee Estuary (Preston *et al.*, 2002). Davidson *et al.* (1991) show that some 25-30% of the Dee was reclaimed, mainly in the 18th and 19th centuries. The opening of the "New Cut" in 1737, canalised the river for 7km from Chester to Shotton, enabling reclamation of mud-flats and salt-marsh (Mortimer, 1847). Seaward of Shotton, there was little salt-marsh but Mortimer shows they had started to form along the Wirral shore by 1847. According to Ordnance Survey maps, they had extended a further 6km to Ness by 1912. The Shotton marshes were embanked for industry, the remainder being grazed. *Spartina anglica* (Common Cord-grass) was

introduced to the Welsh side of the estuary in 1925 and, after 1945, salt-marshes dominated by this species spread rapidly along the eastern shore towards the mouth of the estuary at Hoylake (Hubbard & Stebbings, 1967). By the late 1980s, the Dee supported 2108ha of saltings (Burd, 1989). However, the more modern marshes, while ungrazed, are species-poor and seemingly unsuitable for *Limonium* spp.

Further north, in Lancashire, *L. vulgare* and *L. humile* were recorded in the first half of the 19th century. The latter species was noted on the Lune Estuary, at Aldcliffe near Lancaster, in the 1830s, colonising an embankment constructed in the 1820s, and on the adjacent salt-marsh in 1848 (Fielding ms.; Hewitson, 1900; BM). It was found on the Wyre at Fleetwood in 1841 (K), where *L. vulgare* appeared in 1848 (CGE). The largest current Wyre populations of *L. humile* and *L. vulgare* are on Burrow's Marsh, where some limited cattle grazing is known to have occurred up to about 1970, and at Barnaby's Sands, a site that may never have been grazed, perhaps because the creek system made access difficult and dangerous. The grazing history of the Lune salt-marshes is less well known but Colloway Marsh on the west side of the estuary was grazed by cattle throughout the 1960s, while Glasson Marsh on the south side has been sheep-grazed since at least 1965. East of Glasson Dock, the marshes around Conder Green have not been grazed since the mid-1960s (M.E.Greenhalgh *in litt.*, 2008).

It seems reasonable to conclude that, while apparently suitable salt-marsh habitat has been present on the Ribble Estuary for many decades, heavy grazing pressure on most of the saltings has contributed to the absence of *Limonium* until very recently.

Another factor, however, could be the distance of this estuary from the nearest source of *Limonium* propagules. *L. vulgare* and *L. humile* both occur on the Wyre Estuary, about 20km to the north. However, prevailing wind and tidal currents tend to militate against southwards dispersion. Therefore, North Wales would seem to be the more likely origin

of these taxa. Both occur distantly on the shores of Anglesey, about 75km south-west of Marshside, while *L. vulgare* extends a little further east to the Conwy Estuary and Colwyn Bay (Preston *et al.*, 2002). That this area could be a source for the Ribble *Limonium* is supported by the recent invasion of north-west England by the Short-winged Conehead (*Conocephalus dorsalis*), a largely flightless bush-cricket (Tettigoniidae), which appeared at Marshside in 2002 and has subsequently colonised estuaries northwards to the Duddon. Previously, its northernmost locality on the west coast was Newborough Warren, Anglesey. This insect lives in upper salt-marsh vegetation and its salt-resistant eggs are thought to be dispersed in tidal debris (Newton & Smith, 2006; Smith & Newton, 2007).

Further indirect evidence comes from a study by Russell & Felton (in press) of drift-weed washed up on the Sefton Coast. They found that small stones and rock fragments were occasionally attached to, and carried by drift-weed. Their distinctive geology enabled some of these fragments to be confidently ascribed to Anglesey shores. Similarly, although *L. britannicum* also occurs on the Wyre, its nearest locality to Birkdale is Hilbre Island in the mouth of the Dee Estuary, only 30km SSW of the Green Beach. This is the most likely origin of the Birkdale plants.

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Table 1: Vascular associates of Marshside Sea-lavenders.

Taxon	English name	Frequency
<i>Aster tripolium</i>	Sea Aster	f
<i>Atriplex portulacoides</i>	Sea Purslane	o
<i>Glaux maritima</i>	Sea Milkwort	lf
<i>Puccinellia maritima</i>	Common Saltmarsh-grass	a
<i>Salicornia</i> sp.	Annual Glasswort	a
<i>Spartina maritima</i>	Common Cord-grass	o
<i>Spergularia marina</i>	Lesser Sea-spurrey	r
<i>Spergularia media</i>	Greater Sea-spurrey	r
<i>Suaeda maritima</i>	Annual Sea-blite	f

r = rare; o = occasional; f = frequent; a = abundant; l = locally

Table 2: Domin scores in five 2 × 2m quadrats at Marshside supporting *Limonium*, 14th Aug. 2008

Taxon	1	2	3	4	5
<i>Aster tripolium</i>	3	2	2	2	4
<i>Atriplex portulacoides</i>	3				
<i>Limonium humile</i>	1				
<i>Limonium vulgare</i>		1	1	1	1
<i>Puccinellia maritima</i>	5	7	7	7	7
<i>Salicornia</i> sp.	3	5	5	5	5
<i>Spartina anglica</i>	2	3	2	4	3
<i>Spergularia marina</i>	2				
<i>Spergularia media</i>				1	
<i>Suaeda maritima</i>	4	3	3	4	4
Bare ground	6	6	5	5	5
Mean height (cm)	15	15	15	15	20

Table 3: TABLEFIT analysis of quadrat data from *Limonium* habitat at Marshside

NVC Code	Community	Sub-community	Goodness of fit
SM13a	<i>Puccinellia maritima</i> salt-marsh	Typical	93
SM13	<i>Puccinellia maritima</i> salt-marsh		87
SM10	Transitional low-marsh vegetation		73
SM12a	Rayed <i>Aster tripolium</i> salt-marsh	Coastal	68

Isolated populations of ferns in South Devon

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I was particularly interested by John Edgington's (2008) concluding remarks concerning the status of *Asplenium septentrionale* (Forked Spleenwort) and other cryptogams in Kent. There is a parallel in Devon, where *A. septentrionale* and *Cryptogramma crispa* (Parsley Fern) have small, isolated populations in the south of the county, and yet, unlike the Kentish population, are both regarded as native by the authors of the *New atlas* (Preston *et al.*, 2002).

Both species seem to be connected to the core of their ranges in Wales via outliers in North Devon and Somerset (Martin & Fraser, 1939; Green *et al.*, 1997). In the 19th century *A. septentrionale* used to occur plentifully on loose stone walls in the parishes of Culbone and Oare, and less plentifully on loose shale

by a path at Porlock Weir in Somerset. It was last seen in Somerset when 17 plants were seen on an old wall near Porlock between 1916 and 1939. Repeated searches of the Somerset localities in recent years have consistently drawn a blank. There is no information regarding the substrate of either the Lynton or Barnstaple populations in Devon reported in the 19th century. The two populations of *C. crispa* in Somerset occurred on a stone wall at Challicombe between 1840 and 1854, and on scree at Simonsbath between 1956 and 1976.

In South Devon *A. septentrionale* was discovered in 1841 on natural rock in the Teign Valley, where the population has now been reduced to a single plant. I have no doubt the plant is native there. On the other hand

C. crispa was first discovered on Dartmoor in 1968, where there is a very small population growing between the granite blocks of an internal wall of some 19th century quarry buildings in the centre of the moor (see photo, Colour Section Plate 3). Since there are no earlier records of it on Dartmoor, I have always suspected that it was an introduction here. This may have been deliberate, some time following the closure of the quarries. Alternatively, it may have been an earlier introduction, accidentally or even deliberately, by quarrymen coming to work at this site from Wales or the Lake District. On the other hand, this could be a case of ‘natural’ long distance dispersal, and therefore a ‘native’ rather than an ‘alien’, justifying the blue dot in Preston *et al.* (2002). Even in summer, the plants are very small and can easily be overlooked and may have been missed by earlier visitors to the site – (see photo, Colour Section Plate 3).

Within their core range both *A. septentrionale* and *C. crispa* occur on a variety of substrates, including mortar-free walls (Preston *et al.*, 2002), where, unlike the Kentish outliers, such populations tend to be regarded as native as a matter of routine. If isolated populations of plants on walls are to be judged by different standards and accordingly regarded as dubiously native at best,

should we be re-assessing the status of these two ferns in Devon and Somerset, all mapped by Preston *et al.* (2002) as ‘native’? Like Simon Leach (2003), I sometimes wonder about our ability to determine the status of individual plant species or populations such as these. If we are to attempt to distinguish between ‘native’ and ‘introduced’ populations, I would suggest a substrate’s ‘naturalness’ is best viewed in the context of other evidence. In the case of ferns this may include the possibility of long distance dispersal, even though, as if to deliberately mislead us, the spores may have ended up on a wall rather than a ‘natural’ rock outcrop.

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Forensic botany

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I don’t know if anyone saw an article on the female forensic botanist in the *Daily Telegraph Magazine*, 14th February 2009, p. 55. The BSBI gets a mention through Mr V. Jones, the vice-county recorder (v.c.62: North-east Yorks.) helping the police in

2005 find the site of a body north east of York. Mr Jones was able to tell them where the plant assemblage was likely to be, from the pollen found on mud from the car which the murderer used to dump the body.

Northern Deergrass (*Trichophorum cespitosum*) in upper Teesdale

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On 7th June 2008 the author led a party from Carlisle Natural History Society through one of the many calcareous mires on Widdybank Pasture, Co. Durham (v.c.66). The flora associated with the distinctive ‘hummock-and-runnel’ topography included exciting local specialities such as *Bartsia alpina* (Alpine Bartsia), *Gentiana verna* (Spring Gentian), *Juncus alpinoarticulatus* (Alpine Rush), *Kobresia simpliciuscula* (False Sedge), *Primula farinosa* (Bird’s-eye Primrose), *Tofieldia pusilla* (Scottish Asphodel), and others.

We saw some rather depauperate clumps of a deergrass (*Trichophorum*) growing on peaty ground just above the runnels, but were puzzled to spot it unexpectedly (for a plant we knew to be typical of acidic ground) in much richer calciphile vegetation on the hummocks, and then as scattered short wispy stems actually in the runnels. Here it was growing in habitat typical for *Eleocharis quinqueflora* (Few-flowered Spike-rush), and looking not dissimilar, with its loosely-tufted growth, short stems and small heads. Only later did it occur to me that the plants we had seen might be not the abundant and familiar *T. germanicum* Palla (Deergrass), but the scarce – and to me previously unknown – *T. cespitosum* (L.) Hartm. (Northern Deergrass) (see section ‘Note on deergrass nomenclature’, below). This suspicion was heightened by reading in edition 3 of *Sedges of the British Isles* (Jermy *et al.*, 2007) that this much more localised plant grows in evidently similar calcareous flushes on limestone in Perthshire.

On 30th June, it was obvious that the puzzling plants – those in the calciphile communities – were ripening fruits, and so could not be the hybrid between the two species, *T. ×foersteri*, which is said to be completely sterile (Swan, 1999). Stem cross-sections of specimens gathered that day agreed well with the descriptions in Jermy *et al.*, having large substomatal pits and ‘solid’

chlorenchyma (green tissue) with no aerenchyma (air-filled channels). Michael Braithwaite, BSBI referee for the genus, kindly confirmed that specimens from several plants were indeed *T. cespitosum* (L.) Hartm.

On 23rd, 24th and 28th July (on the last date with Mike Porter), I was able to spend time on systematic searches of the calcareous mires of Widdybank Pasture to determine the extent of the *T. cespitosum*. The first-found colony, close to Widdybank Farm (Natural England’s headquarters in the district, (see photo 1, Colour Section Plate 2), had about 45 discrete tussocks, whilst another series of springs and flushes 1.1km to the east had a stronger colony of about 76 discrete tussocks.

However, large areas of apparently suitable ground, both in the extensive mires between these two sites, and beyond them, seemed to be devoid of the plant. Eventually, only three further sites were located, with a mere one, two, and four plants. The five colonies occurred over an altitude range of 380–440m a.s.l. There was no sign of *T. germanicum* anywhere in these mires.

Widespread in the calcareous mire complexes were scattered patches of similarly small and depauperate plants which were completely sterile, the spikelets by late July being largely bare of glumes, and with merely a few traces of whitish filaments and perianth bristles, any remaining nutlets being pale and unfilled. Indeed, the first deergrass patches at the 7th June site mentioned above proved to be sterile, growing around, and just above, patches of fertile plants, on less obviously lime-flushed ground.

Many fertile and sterile plants were sampled, and stem cross-sections prepared. Reassuringly, in every case, the cross-section anatomy confirmed the identification of fruiting plants as the species *T. cespitosum*, and of sterile plants as the hybrid *T. ×foersteri*. The substomatal pits provided a ready differentiating character – these were well-developed in the

species, producing obvious more-or-less rounded cavities at intervals around the circumference, lined with a discrete layer of small clear cells; in the hybrid the cavities were smaller and considerably less deep, often irregular in form, and (as Arthur Chater (AC) pointed out, pers. comm.) sometimes lacking the discrete lining. The dimensions of these pits matched those given in Jermy, *et al.*

By late July the species was immediately separable from the hybrid in the field, since many stems in each tussock were carrying exposed clusters of tiny dark brown nutlets, superficially looking almost black (see photo 2, Colour Section Plate 2). No instances were observed where individual tussocks had only a small proportion of ripe stems or ripening nutlets. Plants had either very many ripe heads (thus the species), or none (thus the hybrid).

Contrary to the suggestion in Jermy *et al.* that the nutlets of the two species are identical, there did appear to be consistent differences between nutlets in Teesdale plants. Nutlets of *T. cespitosum* had means of 1.61 mm × 0.90 mm; whilst those of *T. germanicum* had means of 2.20 mm × 1.04 mm (length included the callus tissue at the base, and was to the base of the style-cone). The nutlets of the former were more glossy and a darker brown, whilst those of the latter had a more obvious greyish bloom and were paler brown. AC commented that the upper leaf-sheaths on Teesdale *T. cespitosum* specimens terminate in openings which are generally somewhat oblique, and hence, importantly, do not show the more transverse openings which have been suggested as a strong initial character for detecting this species. These apparently significant differences require to be tested on a wider range of material both from Teesdale and beyond. I would greatly welcome samples of fully ripe spikelets or shed nutlets of either species, with a few shoots to check the identification, dry or fresh, from anywhere.

In gross morphology, the tussocks of *T. cespitosum* were very much less robust in all respects than the familiar aspect of *T. germanicum*, in size of tussock, number of stems, height and width of stems, size of

spikelet and number of flowers per spikelet. Tussocks were never as dense as those characteristic of *T. germanicum*, and the stems were often interspersed between sedge, rush and grass shoots to a greater or lesser extent (see photo 3, Colour Section Plate 2). Indeed, as already stated, in the runnels and open wet hollows, some plants grew as loose patches of low stems.

Tussocks of *T. cespitosum* occurred on the sides of runnels and on hummocks, within more open areas, with bare wet ground between. In several cases, larger plants actually formed the tussocks. In almost every case plants were clustered near spring-heads and for a few metres downstream. A very few tussocks grew in more closed vegetation, although it was not clear whether these were plants which had grown from seed within pre-existing closed vegetation, or whether initially a seedling had developed in more open vegetation, and only later become surrounded by other colonising species. Nowhere was the plant seen in dense or tall communities.

These particular flushes were all situated within fenced or walled pastures, grazed with cattle and sheep. The site near Widdybank Farm is above a hay-meadow, and is grazed only after the cutting of the lower ground. Further to the west and at higher altitudes on the open eastern flanks of Widdybank Fell, peaty ground was encountered, with an often abrupt transition to more acidophilous heathy vegetation. In places, sterile clumps of the hybrid were again obvious, but looking here considerably more vigorous. Eventually, searches further up the fell revealed *T. germanicum* itself, ripening fruit as with the rarer species. The ripe spikelets of *T. germanicum* had a quite different appearance from those of *T. cespitosum* at the same stage, having more fruits (mostly eight or more in *T. germanicum*; five or fewer in *T. cespitosum*), and, as previously suggested, larger nutlets not becoming as dark nor as glossy as in *T. cespitosum*, whilst the glumes were less prone to being shed until rather later in the season (see photo 4, Colour Section Plate 2).

Somewhat incomplete searches of accessible mires on Widdybank Fell summit itself, further west again at around 500-520m a.s.l., revealed large amounts of the hybrid and *T. germanicum*, but, perhaps surprisingly, no further *T. cespitosum*. In every case, the colonies of *T. cespitosum* located were well-separated from the nearest *T. germanicum* – by at least 200 metres (as in the case of the two smallest colonies), and by about 500 metres (for the two largest colonies).

Discussion

The distinctive ‘hummock’ topography of the calcareous mires is a familiar feature in upper Teesdale, and a few other areas of the north Pennines, such as between Orton and Crosby Ravensworth in Cumbria, and Great Close Mire near Malham in Yorkshire. Such topography may be a very persistent feature in the landscape, as is suggested by the presence of *Bartsia alpina* and other species, in a suite of what are taken to be late-glacial relicts. The plant is an interesting addition to Teesdale’s list of notable relict species. Table 1 (p. 25) gives lists of close associates (within 0.5 m) for the five known colonies of *T. cespitosum*.

The vegetation classifies readily as M10 in the National Vegetation Classification (Rodwell, 1991), with *T. cespitosum* being most associated with the ‘*Briza media* – *Primula farinosa* sub-community’. The preferential occurrence of *T. cespitosum* in this association, and its evident absence from any of the communities on acidic peat formations favoured by *T. germanicum*, provide a striking contrast between the two species in this locality.

An interesting feature noted in the Teesdale locality was the tendency of the hybrid *T. ×foersteri* to occupy the full spectrum of damp habitats between the distinct preferences of its parents. Furthermore, and probably worthy of further research, the vigour of the hybrid appeared to be responsive to pH or soil-type, hybrid plants becoming larger in all respects on increasingly acid soils. Thus hybrid plants growing with or near the *T. cespitosum* parent were similar to that parent, being small in stature, with shorter and

narrower, wiry stems, whilst on the fell-top peats hybrid plants were larger and denser, more vigorous, and had taller and thicker stems, and thus more resembled *T. germanicum*. AC remarked that in his experience of Welsh sites where the hybrid grows in blanket bog and other sites away from raised bogs, it is similarly less densely tussocky, less robust, and tends to grow in flushes. On the raised bogs it is more densely tussocky and the habit is then somewhat more similar to *T. germanicum*.

It is interesting to speculate upon whether this variability in the hybrid might be an expression of genetic variation, conceivably resulting from back-crossing, or, perhaps a more satisfying explanation, given the evident sterility of the hybrid, a response of a more-or-less uniform hybrid gene-type to varying edaphic or other growth conditions.

Conclusion

I hope this note may give readers some hints as to what constitute the distinctive features of this plant in the field, and the sort of places that may be worth searching for it. Professor Swan’s 1999 papers should be read, both for their clarification of this taxon and its hybrid, and the identification of each, and also for the accounts of the species in rather different habitats and communities further north in Northumberland.

Please may I reiterate my request for samples (dried or fresh) of spikelets of either species, ideally fully ripe, with a few shoots to check the identification, from anywhere. I will gladly refund postage. I would also be delighted to receive any comments upon the precise habitat preferences and associates of the rarer species.

Note on deergrass nomenclature

Jermy *et al.* give the two forms of deergrass full species status. This necessitates the restriction of the epithet *cespitosum* to the rarer taxon, called by them ‘Northern Deergrass’. Given the long-accepted and deeply-ingrained usage by UK botanists of the names *T. cespitosum* and *Scirpus cespitosus* for the familiar taxon, now *T. germanicum*,

Table 1: Associates within 0.5m of *Trichophorum cespitosum* at five sites in upper Teesdale

Taxon	Site 1	Site 2	Site 3	Site 4	Site 5
<i>Bartsia alpina</i>	y	y			
<i>Briza media</i>	y		y		y
<i>Carex capillaris</i>	y				
<i>Carex flacca</i>	y	y			
<i>Carex ×fulva</i>		y			
<i>Carex hostiana</i>	y	y	y	y	y
<i>Carex panicea</i>	y	y	y		
<i>Carex pulicaris</i>	y	y	y		y
<i>Carex viridula</i> ssp. <i>brachyrrhyncha</i>	y		y	y	y
<i>Cynosurus cristatus</i>	y				
<i>Dactylorhiza incarnata</i>	y				
<i>Drosera rotundifolia</i>		y	y		
<i>Eleocharis quinqueflora</i>	y	y	y		
<i>Eriophorum angustifolium</i>	y			y	y
<i>Eriophorum latifolium</i>	y	y			
<i>Festuca ovina</i>		y			y
<i>Gymnadenia borealis</i>	y				
<i>Juncus acutiflorus</i>	y	y	y		y
<i>Juncus alpinoarticulatus</i>	y				
<i>Kobresia simpliciuscula</i>	y	y		y	
<i>Linum catharticum</i>	y		y		
<i>Luzula multiflora</i>	y				
<i>Molinia caerulea</i>	y	y	y	y	y
<i>Narthecium ossifragum</i>			y		y
<i>Pedicularis palustris</i>	y				
<i>Pinguicula vulgaris</i>	y	y	y		
<i>Potentilla erecta</i>	y	y	y	y	y
<i>Primula farinosa</i>	y	y			y
<i>Selaginella selaginoides</i>		y			y
<i>Succisa pratensis</i>	y		y	y	y
<i>Tofieldia pusilla</i>	y	y			
<i>Trichophorum ×foersteri</i>	y		y		
<i>Triglochin palustris</i>		y	y		
<i>Valeriana dioica</i>	y				

Site 1: 45 plants, NY837299 etc.

Site 2: 76 plants, NY847304 etc.

Site 3: 1 plant, NY837304

Site 4: 2 plants, NY835303

Site 5: 4 plants, NY842301

there is ample scope for confusion. It might be a valuable step towards minimising potential confusion, and furthermore perhaps encouraging the general recognition of the two deergrasses as full species, if a binomial vernacular name such as ‘Common Deergrass’, rather than merely ‘Deergrass’, were to be coined for *T. germanicum*.

Acknowledgements

I am indebted to Chris McCarty and his staff at Natural England, Widdybank Farm, for access to the Widdybank pastures. Note that access to these sites, none of which are by rights-of-way, must be sought from the Natural England site manager’s office at Widdybank (01833 622374). Michael Braithwaite kindly confirmed my tentative identifications. Arthur Chater and Mike S. Porter provided valuable input to discussion, and the latter contributed a photograph.

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Calamagrostis stricta in Easternness and Caithness

C. JAMES CADBURY, RSPB, *The Lodge, Sandy, Bedfordshire, SG19 2DL*

In August 2003, I carried out an intensive survey of *Carex chordorrhiza* (String Sedge) at the RSPB’s Insh Marshes reserve, Easternness (v.c.96), where it is locally abundant and spreading. A point was made to visit Coul Fen, a site at the northeast end of this large area of northern marsh that floods naturally from the River Spey. It was here that Ruth Meyer discovered *Calamagrostis stricta* (Narrow Small-reed) for the first time in Easternness, and a considerable distance from sites recorded in Caithness (v.c.109), Selkirkshire (v.c.79) and Ayrshire (v.c.75) in the *New Atlas* (Preston *et al.*, 2002). With Carl Mitchell, then Site Manager, and Pete Moore, Warden of this RSPB nature reserve, we found two stands, one 35 × 14m and a second of 19 × 18m at grid ref. NH818037.

In early July 2008, I revisited Coul Fen with Karen Sutcliffe, the current Site Manager for Insh Marshes. As well as the original stands of *C. stricta* that measured 34m (N-S) × 17m (E-W) and 18m (N-S) × 8m (E-W) respectively, we recorded another five in the same general area, but extending to NH818036.

The largest of the additions was 18m (N-S) × 12m (E-W), and the smallest 4 × 4m. The main associated plants were *Equisetum fluviatile* (Water Horsetail) (abundant or frequent in all seven stands), *Galium palustre* (Marsh Bedstraw) (seven, abundant or frequent in four), *Carex vesicaria* (Bladder Sedge) (four, frequent in three), *Caltha palustris* (Marsh Marigold) (four), *Eriophorum angustifolium* (Common Cotton-grass) and *Potentilla palustris* (Marsh Cinquefoil) (both three, frequent in one), *Carex rostrata* (Bottle Sedge) and *Phalaris arundinacea* (Reed Sweet-grass) (both three). The NVC community with which the association had closest affinity was S10b *Equisetum fluviatile* swamp, *Carex rostrata* sub-community; but there was a tendency towards S11 *Carex vesicaria* swamp. In both years the *Calamagrostis* was flowering abundantly (see photo 3 inside back cover). Counts of panicles made in 2003 averaged 41/m² (n=8) with a range of 30-55.

Also in early July 2008, accompanied by David Jones, the warden, and Kirstin Carmouche, I visited the new RSPB

nature reserve at Broubster Leans, Caithness (v.c.109). Much of this is an extensive 170ha swamp that lies in a shallow depression through which the Forss Water formerly ran a meandering course to form a series of ox-bows and lochans. The site has a high water table throughout most of the year, so access even with waders can be difficult. A further survey was carried out by Mark Gurney in late September 2008. The vegetation of the site had previously received the attention of Ian MacDonald in June 1999 and Andrew McBride (Scottish Natural Heritage) in June 2007. *Calamagrostis stricta* was recorded in S27 *Carex rostrata* – *Potentilla palustris* tall herb fen by McBride (unpubl. report, 2007).

We found *C. stricta* abundant over a tract of spongy fen and swamp habitat, flowering prolifically and forming tussocks in rather open swamp vegetation (see photo 4 inside back cover). There were large stands around the edge of drains and natural water courses, but it was absent from the very wettest areas. *C. stricta* was mainly concentrated on the western side of Broubster Leans between grid refs. ND03626040 and ND03616076. The largest stand measured 13m (N-S) × 67m (E-W). In September four patches were found on the east side of the flood plain, at ND040608 and ND041607.

Six of the eight stands sampled for their vegetation community were considered to be S10b *Equisetum fluviatile* swamp, sub-community *Carex rostrata*, in which *E. fluviatile* was abundant in all six, *Menyanthes trifoliata* (Bogbean) abundant in five, *Potentilla palustris* abundant in two and frequent in two. *Carex rostrata* was abundant in one and frequent in another. *C. vesicaria* was abundant in one. This latter could alternatively be classified as S11 *Carex vesicaria* swamp. The other two sampled stands were

probably best assigned to M27 *Filipendula ulmaria* – *Angelica sylvestris* mire, in view of the frequency of these two species and *Carex nigra* (Common Sedge). Though *E. fluviatile* was abundant in both, neither *M. trifoliata* or *P. palustris* were present. At the time of the July visit the *Calamagrostis* stands could be picked out by the purple panicles from a distance of 200 m. The total area occupied by the plant was about 1.3ha.

C. stricta has been recorded from four 10km squares in Caithness since 1987 (www.bsbimaps.org.uk). The endemic *C. scotica* (Scottish Small-reed) occurs with *C. stricta* at one of these sites (Preston *et al.*, 2002) (see photo 2 inside back cover).

The two surveys of Broubster Leans in 2008 recorded a total of 146 species of vascular plants. *Potamogeton obtusifolius* (Blunt-leaved Pondweed) and *Carex vesicaria* apparently had not been previously recorded in Caithness (Preston *et al.*, 2002). In September, the pondweed was frequent in many of the pools out in the centre, which are inaccessible for much of the year. *C. vesicaria* was recorded in July as being locally abundant in the spongy swamp as at ND036605. Other more notable species, for at least Caithness, were *C. aquatilis* (several large stands), *C. diandra* (Lesser Tussock-sedge), *C. dioica* (Dioecious Sedge), *C. disticha* (Brown Sedge) and *Triglochin maritimum* (Sea Arrowgrass), as well as *T. palustre* (Marsh Arrowgrass).

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Calamagrostis purpurea thrives on Speyside

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Calamagrostis purpurea (Scandinavian Small-reed), an apomictic probably derived from *C. epigejos* × *C. canescens*, has been confirmed in Britain from about eight sites, including the Insh Mashes, Easternness (v.c.96) (Stewart & Wigginton, 1999). Though much of these northern flood plain marshes lie within the RSPB's nature reserve, this *Calamagrostis* seems to be confined to Dunachton Fen, just outside, between the River Spey and the railway. I was first shown the site in 1997 by Les Street, the warden of Insh Marshes at the time. The following year, in late September, he and two volunteers located 13 clumps and measured their circumferences, which ranged from 1.5 m to 110m; the largest had dimensions of 49m × 14m.

In early July 2008, I visited Dunachton Fen with Chris Lockyer, a volunteer at the reserve (see photo 1 inside back cover). We recorded 34 stands in approximately the same area around grid ref. NH806032. Twenty-nine of the stands were less than 10m in diameter, and there were two much larger ones of 50m × 14m and 85 m × 22m. *C. purpurea* is a vigorous perennial that is flourishing at Insh Marshes in two areas: one 116m (SW-NE) × 30m (NW-SE), close to the railway; and another 183m (SW-NE) × 30m (NW-SE) to

the east. It would appear that stands expand in size by rhizomes, but fragments are probably spread by flooding, mainly in winter, to form satellite colonies. It is a robust grass with culms up to 1.8m high, and forms dense stands, to the exclusion of most other plants. The best NVC fit appears to be M27 *Filipendula ulmaria* – *Angelica sylvestris* mire. Among the associated plants were *Carex aquatilis* (Water Sedge), *Scutellaria galericulata* (Greater Skullcap) and *Valeriana officinalis* (Common Valerian). In early July, the grass was in full flower and the purplish panicles could be seen with binoculars over 500m away. Aerial mapping would be possible at this time of year.

Calamagrostis stricta (Narrow Small-reed) was discovered at Insh Marshes in 2002, but over one km away from the *C. purpurea* site. *C. epigejos* (Wood Small-reed) is recorded from the Spey valley, but *C. canescens* (Purple Small-reed) does not occur further north than Southern Scotland.

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4-merous *Glaux maritima* on Eriskay

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In 2007, I saw *Glaux maritima* L. (Sea Milkwort) at various locations in the Outer Hebrides v.c.110. I photographed it on Bonnie Prince Charlie's beach on Eriskay, and also near the ferry on Berneray (see photos inside front cover). Looking at the photos, the Berneray plant seems uniformly 5-merous (as expected) but the close-up from Eriskay shows all the 25 or so flowers in the frame as equally uniformly 4-merous. I have also photographed the plant from Gotland, where also it appears to be 5-merous. The literature I have consulted treats it consistently as 5-

merous, with no doubts expressed – except 'Wikipedia' (not my first candidate for an authority) which says, blithely, 'generally pentamerous both in the calyx and the seed capsule'. In an earlier web search (now lost) an Alaskan seemed surprised that it was 5-merous though he did not give the impression of knowing the plant well. All the photos I have found on the Web, including one from Sowerby, are 5-merous. Is *Glaux maritima* sometimes 4-merous? Can anyone shed any light?

Lobelia urens at Flimwell, East Sussex

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Being a Red Data Book species (Dinsdale, 1997), *Lobelia urens* (Heath Lobelia) has attracted a good deal of ecological and plant sociological research, much of which was admirably presented by Dinsdale, Dale & Kent (1997). The nature of each of the six extant sites in southern England was considered in terms of its historical ecology and the dynamics of the species populations. At Flimwell in East Sussex, the plant was first recorded in 1922 growing under rotational *Castanea sativa* (Sweet Chestnut) coppice, and the record accepted as native, in spite of its comparatively late discovery. It remained confined to coppice rides until 1986, and when the trees were felled, it was widespread through the wood, with a population estimate of 200 plants. Unfounded fears were expressed for its survival when planning permission was granted in 1989 for the development of the site as a bird park by local general practitioner, Peter Player, for by 1993 the plant had invaded many areas of the modified landscape and the population size had increased to c. 2500. According to a report in the *Times Educational Supplement* for 27th September 1996, Flimwell Bird Park housed 103 species of wildfowl collected from all over the world, was a popular educational attraction, and visitors, presumably both ornithological and lobelial, were greeted in the tea room by a pair of free-flying cockatiels called Lager and Lime.

The bird park closed two years later and the premises became the short lived Headstart Nursery School, whose 18 children obviously had considerably less impact on the landscape than the vast numbers of wildfowl. The school closed at the turn of the twenty-first century and planning consent was granted in 2002 to a local business for parking, vehicle storage and display for sale of cars in the car park on the A268. Financial problems led to the sale of the former Flimwell Bird Park by the Royal Courts of Justice in August 2003, only for the legality of the sale to be contested in the

Supreme Court Costs Office in March 2004. Described as the former Flimwell Bird Park of approximately 23ha and with 14 artificial ponds, the property is presently on sale (February, 2009) by the Property UK Group. When I ‘viewed’ the site on 31st August 2008, in a necessarily cursory fashion born of the apprehension of and for trespass, I found it overgrown with rank grassland, brambles and invading shrubs, with never a sign of the Heath Lobelia within the 23ha compound. On the eastern margin of the bird park, however, between the peripheral fence, screened by tall bushes of *Rhododendron ponticum* (Rhododendron), and young growths of coppiced *Castanea sativa*, running south along what might be construed as the modern equivalent of a ‘ride’, I came across a small population of *L. urens* of perhaps fifty flowering plants, some in the early stages of fruit.

Had I not known something of the history of its presence here, I would have dismissed it as an introduction. I took a 2m² relevé, and made a list of all companion species. In so doing I could supplement the plant sociological records from Brightmore (1968) and those from Dinsdale, Dale & Kent (1997) for a more or less direct comparison of the communities to which *L. urens* had become adapted through the last forty years of change. The 1968 detail gives cover estimates on the Domin scale for a single 4m² quadrat, and the latter identifies the NVC community M25 *Molinia caerulea*-*Potentilla erecta* mire (Rodwell, 1991) as being the most prevalent at Flimwell – their Twinspan Group D. In the table below, a Constant Group A comprises the seven species recorded in all three years; Group B contains those species recorded in 1968 and 1997, but not 2008; Group C has those species recorded in 1997 and 2008; and a final group lists key indicator species for each of the three years.

Constant Group A: *Lobelia urens*, *Rubus fruticosus*, *Holcus lanatus*, *Juncus effusus*,

Betula pubescens (sapling), *Centaureum erythraea*, *Cirsium palustre*.

1968-1997 Group B: *Erica cinerea*, *Potentilla erecta*, *Pteridium aquilinum*, *Agrostis capillaris*, *Hypericum humifusum*, *Hypericum pulchrum*, *Hypochaeris radicata*.

1997-2008 Group C: *Lysimachia nemorum*, *Epilobium montanum*, *Ranunculus repens*, *Prunella vulgaris*, *Senecio jacobaea*, *Teucrium scorodonia*.

Key Indicators:

1968 – *Succisa pratensis*, *Veronica officinalis*, *Galium saxatile*, *Calluna vulgaris*.

1997 – *Molinia caerulea*.

2008 – *Agrostis stolonifera*, *Poa trivialis*, *Pulicaria dysenterica*.

Three aspects of this comparative analysis are clear. First, whether the quadrats are taken in the same precise spot or not, few species are constantly associated with *Lobelia urens* in the three sample years. Secondly, samples from 1968 and 1997, and from 1997 and 2008 have groups of species in common. Thirdly, in each of the three years there are associates of *L. urens* which are key indicator species of a particular plant community. Thus, Dinsdale, Dale & Kent (1997) could categorically identify the community as an M25 mire through the *Molinia caerulea*-*Potentilla erecta* combination. This was not, however, the case in 1968 when the key indicator species suggest that the plant was growing in a heterogeneous, bramble-dominated grass-heath; nor was it so in 2008 when a closer relationship to MG10 *Holcus lanatus*-*Juncus effusus* rush pasture is suggested by the combination of the two nominal species with *Agrostis stolonifera* (Creeping Bent), *Poa trivialis* (Rough Meadow-grass) and *Pulicaria dysenterica* (Fleabane). The ultimate conclusion is that *Lobelia urens* has a sociologically adaptive capacity across a broad spectrum of

changing environmental disturbance factors. But when Dinsdale, Dale, & Kent concluded that existing populations will only be maintained and expansion of the species distribution occur, if woodland succession is prevented and the ground periodically disturbed, one cannot imagine they had the Flimwell case history in mind. Surely no other Red Data Book species has been faced with such an unusual suite of vicissitudes of existence and there may be more to come. Amongst the potential uses listed in the current sales pitch for the former Flimwell Bird Park is the possibility of negotiating contracts for the tipping of spoil from road works associated with the re-routing of the A21 close to the western boundary of the site. The Heath *Lobelia* may have the capacity to survive such an event, but it may need a little help.

Acknowledgements

The arrangements of Tessa Pollard and Malcolm Smith and the insistence of Sarah Atkinson facilitated the field observations for this note.

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Ruud van der Meijden and some early Dutch herbaria

MARY J.P. SCANNELL, *Formerly Herbarium, National Botanic Gardens, Dublin, Eire*

Briggs (2009) reported the death in 2007 of Ruud van der Meijden of the Rijksherbarium, Leiden, and quotes David Pearman: '[he]...was the leading expert on the European flora.....and editor of four editions of Heukels' *Flora von Nederland* ...'.

Ruud van der Meijden is remembered in Ireland. He was co-author of the publication *Catalogue of the Herbaria of Antoni Gaymans (±1630-1680) and a comparison with the plant-collection of the Leiden Hortus Botanicus in 1668* (Sosef, M.S.M., van Vliet, G., van der Meijden, R., & Scannell, M.J.P., 1987).

Antoni Gaymans, a pharmacist of Velp, near Arnhem, settled in Leiden from 1656 and died there in 1680. He had access to the Leiden Botanic Gardens, then the most important plant collection in northern Europe. Two herbaria exist, in four volumes, comprising some 2,500 specimens known to have been compiled by Gaymans. By great good fortune, one volume came to light in Ireland in 1957 in the library of the Convent of the Immaculate Heart of Mary, Moore Abbey, Monasterevin, Co. Kildare; the second in 1964 in the Biomedical Library of the University of California, Los Angeles, following purchase from a dealer in antiquarian books (Anon., 1965).

The first herbarium, the Dublin volume – a large leather-bound book with spine title: *Herbarium Vivum* – was acquired through purchase in 1957 by the National Museum of Ireland, and was placed in the Herbarium (DBN). In 1970 the Herbarium and Botanic Collection were transferred to the National Botanic Gardens, Glasnevin (Scannell, 1979). Attention was drawn to the inscription in Latin in the handwriting of Thomas Molyneux (1661-1733) on the first page of the volume: 'Dominus Gayman, Pharmacopeus Leydensis ...totumque Herbarium...circa annum Domini 1661', and: 'Dominus Gulielmus Sherard; Amicus mihi...Nomine aptiora...benigne adscripsit; Dublinii anno 1693'. [A translation was provided by Dr Noel Kissane, National Library of Ireland]. The statement established that Antoni Gayman had written the pre-Lin-

naean polynomials beneath each specimen and that 'more suitable names' followed, written by William Sherard and taken from the *Pinax* of Caspar Bauhin (1623). Thomas Molyneux was a student of medicine at Leiden from 1683-1685 and, on his return to Dublin, he established a practice. Later, in 1715, he was appointed State Physician. His brother, William, ordered him 'to buy books at auctions in Holland' (Hoppen, 1970). In his later years his residence was in Peter Street.

In the Rijksherbarium, the two herbaria were compared and contrasted. Specimens were studied in great detail in conjunction with catalogues and literature relating to early Dutch botany. The tracing of the pre-Linnaean polynomials through the literature to present-day taxa as in *Flora Europaea* (Tutin, *et al.* (eds.), 1964-1980) was an arduous task. Ruud van der Meijden helped with the naming of species and with nomenclature. The Gaymans volumes '...represent the oldest known Dutch collections of this kind ... they take a prime position in reconstructing the history of Dutch seventeenth century botany' (Heniger and Sosef, 1989).

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mans (+/-1630-1680) and a comparison with the plant -collection of the Leiden Hortus Botanicus in 1668. Leiden. 131pp.

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Romana Czapik (1929-2008), distinguished Polish cytologist

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Professor Romana Czapik, Department of Plant Cytology and Embryology, Jagiellonian University, Krakow, was born in Krakow on 26 Jan 1929 and died in that city on 21 February 2008. She received her early education in her native city, when Poland lay bleeding and broken, 'in the very difficult circumstances of the Nazi [German] occupation'. In 1948 she enrolled at the Jagiellonian University, studied under Wladyslaw Szafer and in 1953 she was appointed Assistant in the Department becoming Professor in 1979. In 1994 she achieved Poland's highest academic position, professor *ordinarius*. Professor Czapik's main areas of interest were Plant embryology, cytogenetics, the karyology of angiosperms, and especially problems of apomixis in angiosperms. In recognition of her scientific work the Polish government awarded her the Gold Cross of Merit (1981), the Polonia Restituta Chevalier's Cross (1985) and the National Education Commission Medal (1985). The International Embryological Congress in Leningrad awarded her the Navashin Medal in 1990. *Acta Biologica Cracoviensia* (series Botanica) volume 41 (1999) was dedicated to Romana Czapik on the occasion of her seventieth birthday. Dr Andrezej Jankun of the Jagiellonian University provides an account of her life and a list of her publications. From this illuminating tribute many of the facts noted above have been taken.

In the course of her work Romana Czapik visited many foreign countries and centres of research. In 1974 at a Conference in Cambridge she read a paper, 'Apomixis in a sterile hybrid species of *Potentilla*'. The paper was published in 1975 in *Conference Report* No. 15 of the Botanical Society of the British Isles. In 1978 a paper was published in the *Proceedings of the Royal Irish Academy*, on 'The karyology of *Hydrilla* (Hydrocharitaceae) from Ireland and Poland.' The cytological examination (by R. Czapik) proved beyond all doubt that the plant in a lake near Renvyle was

Hydrilla verticillata (L.f.) Royle and not *Elodea nuttallii* (Planchon) St.John.

The tribute to Romana Czapik in *Acta ... Cracoviensis* reveals a remarkable career both as teacher and cytologist. 'Professor Czapik devoted her life to science'. One reflects on the background conditions in Poland in the mid-20th century, when tribulations abounded and there was no space for serenity to study or research.

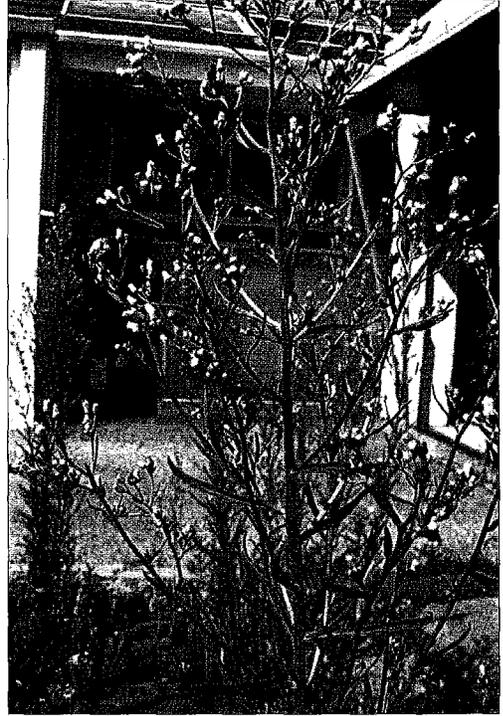
In 1939 the citizens of Krakow became aware that the imposed manager – one Herter – of the Cracow Botanic Gardens, a valued amenity and study centre, allowed the Garden to decline and 'sent hundreds of the most beautiful plant specimens to the residence of Hans Frank . . . for decoration'. (from *Index Seminum ... Cracoviensis Anno 1983*). They were doubtless also aware that 'Sonderaktion Krakau' had overtaken the Jagiellonian University, the oldest university in Poland, and that 183 professors and lecturers were arrested in the Hall of the University and were dispatched to concentration camps 'where many of the most eminent met a martyr's death.' Polish academics were barred and valuable equipment, books and apparatus, was removed. The University however did not yield and some 800 students were instructed underground. (from, Buszko, J. (1975). *The Jagiellonian University, tradition, present and future*. Cracow).

For the citizens there was the daily throbbing sorrow as news trickled through of brutalities suffered at the extermination camp at Oswiecim, a few kms south of the city where persons (including children) were systematically starved and tortured before death in the gas chambers. The memory of the sadism lacerates the mind to this day.

Knowing this, the research of Romana Czapik and others of the Jagiellonian University is truly remarkable.



Polypogon viridis, Cornwall. Photo C. French
© 2008 (see p. 39)



Conyza bilbaoana, Recorder's garden



Lythrum salicaria, roadside gutter, Le Petit Val



Nicandra physalodes, waste ground Water Lanes

All three photos taken in Alderney by B. Bonnard © 2008 (see p. 35)



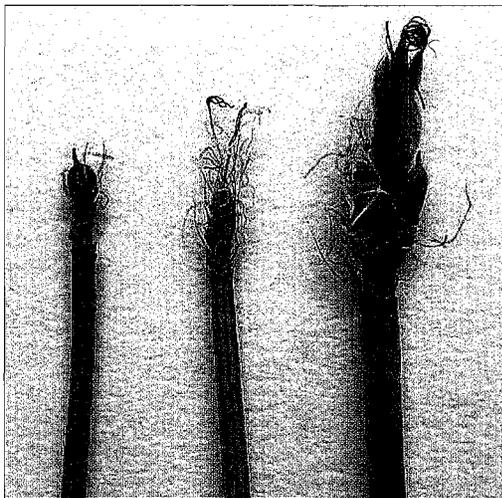
1. Site of *Trichophorum cespitosum* near Widdybank Farm



2. Stems of *Trichophorum cespitosum* showing ripening nutlets



3. Stems of *Trichophorum cespitosum* in loose patches



4. Spikelets of: (left) *Trichophorum cespitosum* with single remaining ripe nutlet; (centre) *T. ×foersteri*; (right) *T. germanicum* with three ripe nutlets visible, and retained upper glumes

Photos all Widdybank Pasture (v.c.66) July 2008. 1-3 © J. Roberts, 4 © M.S. Porter (see p. 22)



Derelict quarry buildings, home to *Cryptogramma crispa*



Limonium vulgare (Common Sea Lavender) on salt-marsh at Marshside, Southport (v.c.59). Photo P. Smith © 2008 (see p. 15)



Cryptogramma crispa growing between granite blocks
Both photos, Dartmoor (v.c.3), R.E.N. Smith © 2008 (see p. 21)



Vicia palaestina at Bransford (v.c.37). Photo P. Garner © 2008
(see p. 41)



Centaurea ragusina, Plymouth (v.c.3). Photo M. Shaw © 2002 (see p. 37)



Melica altissima 'Atropurpurea', Histon (v.c.29) Photo J.D. Shanklin © 2008 (see p.38)

Some observations on the Genus *Symphytum* in the UK

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For over twenty years now I have taken an interest in this genus. I suppose it began when a fellow botanist opined that *Symphytum* \times *uplandicum* (Russian Comfrey) 'was invariably deep purple'. I thought I had seen other coloured plants of that taxon.

S. \times uplandicum, *S. officinale* (Common Comfrey) and *S. orientale* (White Comfrey) (this species always seems to have necrosis on the corolla) all grow within a few hundred yards of our house. The plants that I have cultivated in our garden are, or have been, *S. asperum* (Rough Comfrey), *S. caucasicum* (Caucasian Comfrey), *S. grandiflorum* (Creeping Comfrey) *S. bulbosum* (Bulbous Comfrey) *S. tuberosum* (Tuberous Comfrey) and *S.* 'Hidcote Blue' (Hidcote Comfrey).

S. asperum lasted only a few years. It did not self propagate although I grew my plants from seed. It is unmistakable when you see it. It is very tall, over 2m in our garden. The clincher for identification is that all the leaves are petiolate.

S. caucasicum was another short-stayer. The other plants around it just swamped it. Although not diagnostic, the leaves are grey.

S. tuberosum has remained where I planted it (under an apple tree), and has not been swamped but has slowly increased (vegetatively).

S. bulbosum took a while to feel at home, but now is aggressive, and has to be checked. It is the plant that pushes the others aside, even though it is the first to be 'over'.

S. grandiflorum does not like the other Comfrees and flees to the edges of the plot, but it survives. It, and the others, give *Convallaria majalis* (Lily-of-the-valley) a hard time.

S. \times 'Hidcote Blue' is nearly as rampant as *S. bulbosum*. It is not very blue except early in the season. It is the only one of the Comfrees in the plot that shows any sign of sexual reproduction. Occasionally plants that I would refer to *S. \times uplandicum* appear, which I would suggest might mean that the question mark in Stace (ed. 2) (*S. grandiflorum* \times ?*S. \times uplandicum*) might be redundant.

After twenty years, and having kept honey bees in the garden, I have never observed a hybrid other than the one mentioned above.

An obvious absentee from my list is *S. tauricum* (Crimean Comfrey). If any reader would furnish me with material of this species I would be most grateful. Of course, if any member would like material of the plants I still have, then I will do my best to supply them.

The *Taraxacum* collection at National Museum, Wales (NMW)

TOM HUMPHREY & TIM RICH, National Museum Wales, Cardiff, CF10 3NP

The 'National *Taraxacum* collection', donated to NMW by John Richards last year (*BSBI News* 108: 27), has now been remounted using conservation-grade materials and documented in full, and comprises 3294 specimens. Some European duplicates were donated to Oxford University (OXF). It contains 530 species, and 146 type specimens.

The existing NMW *Taraxacum* collection, which consisted of 2895 specimens representing 249 species, has also been revised and documented, and the two collections have been integrated into one sequence.

The National *Taraxacum* collection has more than doubled both the number of specimens and number of species, and significantly augments and complements the existing NMW collection. The combined total collection is now 6189 spec-

imens representing 560 species. 73% of the material is from Britain and 26% from Europe, with a few sheets from Australia, North America, etc.

The data from the combined collections have been given to Bert Reid for the *Taraxacum* database, and are also available from Tim Rich on request. We also hope to make the data available on the museum website in due course. Anyone wishing to visit the collection will be very welcome, preferably by prior appointment.

The work has taken about 9 months with the help of John Owen, Jacky Owen, Vicky Purewal, Katharine Slade and Sally Whyman, and, of course, John Richards, to whom we are indebted for such a stunning collection and fantastic research resource.

Alderney botanical report, 2008

BRIAN BONNARD, *The Twins, Le Petit Val, Alderney, Channel Islands, GY93UU*

The Alderney Wildlife Trust, of which I was re-elected President in May 2008, continues to flourish and expand its activities and has cleared considerable areas of bracken/gorse/ bramble scrub, to the benefit of the low growing plants, formerly smothered. The Trust has also cleared scrub from several footpaths, especially along the coast, to give access to naturalists and other walkers. We now have two areas designated by the Alderney States as Nature Reserves to maintain. The much larger reserve consists of the east coast, Longis Common, Corblets Quarry and Mannez Hill, where a second bird hide has been installed, this one at Mannez Pond at the south-eastern end of the island. The steep, watered and wooded, Val du Saue (Willow Valley), half way along the south coast, has become the second and scrub cleared and part of the area replanted with native deciduous trees. A third reserve at the Giffoine on the SW tip of the island is under negotiation with The States.

The States Agricultural Team has also revised its mowing and spraying schedules and hopefully some of our frequently mown public open land will bear better crops of our smaller and more special plants as a result, especially the Pyramidal and Autumn Lady's-Tresses orchids. Our single colony of Bee Orchids, which had suffered considerably from mowing over recent years has, as a result, been excluded from the spring and summer mowing schedules and 25 plants in flower were counted here on a single day in July 2007. This year has not seen quite as many but the colony is still there.

The Ramsar site has been re-surveyed for both plant and animal species, and expanded species lists published on the Trust website (www.alderneywildlife.org).

Recording both the flora and fauna has been given considerably more attention this year, and several more new (or only the second record) plant species noted (see below). Literally hundreds of new moth species and several dragonflies have been added to our earlier lists thanks to the recent move to the island of a skilled entomologist, newly retired and the sharp eyes of Lindsay and the students.

A much improved Alderney Record Centre has been set up on the Internet and, in the new States Information Centre and AWT office at 51 Victoria Street, to which we moved on 1st December 2008 (www.alderneyrecordscentre.org). Visitors can add records to the lists via a touch-screen computer set up in the AWT shop, or on-line. Starting as an offshoot of what was then the recently formed Guernsey Biological Record Centre, managed by Dr Charles David and the late Bridget Ozanne, it was soon combined here with the Alderney Society Museum records to form a single biological, historical and archaeological record, also accessible from both the AWT and Alderney Society websites.

Bridget Ozanne, who was for many years the BSBI Recorder for Guernsey, had recently updated the Alderney bryophyte, lichen and fungi records, and her untimely death in July has lost the Bailiwick one of its best botanists. Jennie Page (JP in the older botanical records, now Jennie Grange (JG)) a former chairman of La Société Guerneslaise's Botanical Section, retired from teaching some time ago and moved to Alderney during 2006. She has been of considerable help in expanding the number of recorded sites of some of our rarer plants. Margaret Long (ML), one of the two Jersey BSBI recorders, has contin-

ued her many years of regular visits to Alderney and also noted several new sites for established plants. Dr Charles David has now been appointed as the BSBI Recorder for Guernsey.

During the last two years, Lindsay Pyne, (LP), one of the Trust's busiest volunteers, has spent much time in familiarising herself with the island flora and fauna and has once again drawn my attention to some plant species not previously recorded, as well as noting new sites for several other species. Further details of these will be found below.

Further work on Alderney's Ramsar site has added to the records of both the terrestrial and maritime flora lists and those of various fauna noted in the site area.

A 'perfect-bound' version of my book *The Wildflowers of Alderney* (258 pp., with several maps, including the corrected island map and 95 colour photos) was published in April 2008, printed from a single large .pdf file, by 'print-on-demand'. Available from the Museum, the AWT office, the Bookshop and the Alderney Centre, the whole book can also be read on, but not printed from, my website (flora.org.gg).

New plant records for Alderney 2008

New species.

Orchis mascula (Early Purple Orchid).

BB: 27.3.08, about 15-20 plants under and beside blackberry bushes, by a field gate at Mannez. Only one actually in flower, but the leaf differences seemed conclusive. 1954 and 1957 records of this species in other places have previously been rejected as probably being mistaken for *O. morio*. According to local Garden Services owner Mike O'Gorman, it has been in this spot for at least 15-20 years.

Lythrum salicaria (Purple Loosestrife) LP:

22.8.08. Identified by BB, confirmed by ML.7.9.08 2-300 plants in damp, shady,

corner of a field in Longis Road. Possibly originating from the area being rotavated and sown with a UK 'Wild flower & grass' seed mix 2-3 years previously and then left untended.

Second records and new sites.

Ophrys apifera (Bee Orchid) Finder: Jean Burrows, 14.6.08. Single plant on grass bank above the old harbour. Confirmed and photographed by BB.

Conyza bilbaoana (Hispid Fleabane) BB: 10.7.08 (see photo, Colour Section plate 1). Several new areas around Town, Island Hall Garden, in considerable quantity, where two old houses were demolished, down Longis Road, Chemin du Meunier, Platte Saline etc. Usually in company with *C. sumatrensis* and sometimes *C. canadensis*. This is probably not new but not previously identified separately from the others. Second records.

Carpobrotus glaucescens (Angular Seafig) BB: 21.7.08. Scattered along S. Cliffs from Les Couriaux to Telegraph Bay. Previously assumed to be *C. edulis*. This is also present along this area of cliffs.

New sites.

Lythrum salicaria (Purple Loosestrife)

BB: 12.9.2008 (see photo, Colour Section plate 1). One large plant in full flower in a gutter at the bottom of a steep stone wall in Le Petit Val. Second record.

Nicandra physalodes (Apple-of-Peru) LP:

24.10.08 (see photo, Colour Section plate 1). In waste ground at the bottom of the Water Lanes, probably a garden escape but no obvious source nearby at the time. Second record.

Cyperus longus (Galingale) BB: 27.10.08.

In boggy ground at the lower end of the Fontaine David stream in some quantity. New site.

ALIENS

A tale of two silver knapweeds: *Centaurea cineraria* and *C. ragusina*

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John Poland's *Vegetative key to the British flora* (due April/May, 2009) ambitiously keys out a number of alien species that are currently outside mainstream recording. Some are, perhaps always, planted, others have scarcely jumped the garden fence, but have the potential to spread.

Centaurea cineraria L., usually known by gardeners as Dusty Miller (alas, a name shared by at least four other garden plants, e.g. *Cerastium tomentosum* in D. McClintock's *The wild flowers of Guernsey*, p.77) is one such escapee that is borderline. It is an endemic of the coastal rocks of Italy and Sicily, although the 'endemic' symbol is missing in *Flora Europaea*, 4: 270 (1976). *C. gymnocarpa* Moris & De Notaris from the offshore island of Capraia is, debatably, also best included within the huge variability (there are four subspecies with "many taxa intermediate", according to the *Centaurea* expert, J. Dostál). For this reason, some gatherings from Britain must surely lie in our herbaria without a positive identification, and hence the localities remain unpublished. Recognition of a 'group qualifier' (see *BSBI News*, 108: 34 (2008)) would have prevented this loss of knowledge.

Vegetative plants are remarkably similar to *Senecio cineraria* (Silver Ragwort) in their general habit and dissected, silvery, wintergreen foliage. The *Centaurea* initially has "stems herbaceous" (*Fl. Eur.*, 4: 270), but they become woody at the base (and 30cm or so beyond!), and can form a (hidden) trunk 8cm in circumference after 18 years that can easily withstand -6°C of frosts (pers. obs. of my own garden plant).

The flowers are much like *C. nigra* (Common Knapweed), with the purplish

marginal florets slightly enlarged. A line drawing can be found in Coste's *Flore de la France* (1903) (see *BSBI News*, 109: 80 (2008) for details of a free www download), where it was considered to be a native of the Alpes Maritimes (as well as Italy and Dalmatia). Sell & Murrell's *Flora*, vol. 4 (2006) gives a full description and coins an apt English name of Ragwort Knapweed, but 'Dusty Miller's Hardhead' would have been more evocative.

David Nicolle generously searched the Internet for me and sent me printouts, including one of *C. cineraria* from the free encyclopaedia 'Wikipedia' (<http://en.wikipedia.org/>) – a curious mixture of good science and fiction; e.g. the coloured photo is of an *Artemisia* sp., as is part of the description.

To date, I have discovered recent records for *C. cineraria* in four vice-counties, viz.:

- v.c.0 (Channel Islands). Alderney. Recorded within the time span 1987-1999. BSBI Maps Scheme.
- v.c.1b (Scilly). Bryher (SV88101536), June 2004. C.Pogson, A.Stevenson, *et al.* 1 or 2 plants just outside a garden.
- v.c.11 (South Hants). On beach, at base of sea wall, near the barracks, Portsmouth, June 1969. R.M. Burton, collected as '*Centaurea* sp.' (**Herb. EJC**). It had clearly spread (by seed) across the road from nearby plantings. (Not re-found by EJC some years later).
- v.c.11 (South Hants). Branksome, Poole (SZ066897), Nov. 2005. P. Budd. (**Herb. EJC**). Also seen close by in 2006/2007 by D. Leadbetter, Bill Last, *et al.* In all, some ten plants seen at the bottom of the sandy clay cliffs) (EJC saw

it on the adjacent Bournemouth cliffs some 40 years ago, but I have mislaid the details).

v.c.15 (East Kent). Halfway down chalk cliffs at Viking Bay, Broadstairs, c.1978/1979. K.E. Bull, collected as '*C. dealbata*' (**Herb. EJC**). "A number of plants".

Since the well-known first Jersey record (1925) by Frère Louis-Arsène has been 'disallowed' (see *Watsonia*, **14**: 167-176 (1982)), the earliest record as an escape remains uncertain. More research is required.

There is another, much whiter-leaved knapweed that has very rarely escaped in Britain. It is the beautiful *C. ragusina* L. ssp. *ragusina*, an endemic of the coast of the former Yugoslavia (*ragusina* refers, of course, to the old name for the town of Dubrovnik, and does not refer to the modern city of Ragusa in southern Sicily). The plant is totally covered with thick, white tomentum, with the leaves mostly basal. It is very popular in warm climate public gardens, e.g. in Malta (**Herb. EJC**), where, as elsewhere, it is invariably known as '*C. candidissima*'. It is not the true *C. candidissima* Lam., which has been 'sunk' into *C. cineraria* L. in all modern literature.

I can trace only two British records for the Dubrovnik Knapweed, as I like to call it:

v.c.3 (South Devon). Plymouth Hoe (SX47795375), June 2002. Dr Mike Shaw, initially as '*C. argentea* hort.'. Growing below the dome, on wall below the road; it had self-sown from garden above, and was hanging downwards, presumably as it grows on its native maritime cliffs (see photo, Colour Section Plate 4).

v.c.9 (Dorset). On waste ground, near Weymouth Station, 1993-1997. Dr H.J.M. Bowen, as '*C. c.f. clementei*'. Perhaps a relic of planting, but "a fine shrub 75cm tall, with flowers bright

yellow". Dr A.C. Leslie mentions it in one of his most fascinating series of articles entitled 'Branch report: Parnassus' in *Wild Flower Magazine*, **437**: 16-19 (1996).

I have heard vague rumours that genuine *C. argentea* L. has occurred in Britain, but this plant is not garden-worthy. It has small flowers (involucre only 8-10 × 5-7mm), of a dirty yellow, white or pink colour (depending on its location in the Cretan region, where it is another endemic). But it does have an attractive name! – doubtless one reason why gardening literature has carried the wrong synonymy of '*C. argentea*' (= *C. ragusina*).

Mike Shaw kindly alerted me to the splendid paintings (correctly labelled) of *C. ragusina* and *C. gymnocarpa* that can be found in *La Belgique horticole*, vol. 18, plates 20 and 21 (1868). He also points out that the coloured photograph of '*C. argentea*' on p. 152 of R. Phillips & M. Rix's *Perennials*, vol. 2: *late perennials* (1991) is clearly of *C. ragusina*, although the accompanying text does describe *C. argentea*!

It is somewhat humiliating to notice that, way back in May 1753, C. Linnaeus' *Species plantarum*, pp. 912-913 gave adequate diagnoses under *Centaurea* of the above three species: 16. *ragusina*; 17. *Cineraria* [*sic.*] and 18. *argentea*, enabling any educated person to identify these plants. He quotes for each one all multinomial synonyms known to him. Interestingly, under 16, we find *Jacea arborea argentea ragusina*, published in 1675 (yes!) by G. Zanoni in his *Istoria botanica*, p.107, together with an illustration (t. 43). Who has read this lately?

I have rambled for too long! But who knows of further records for these, or other rare alien *Centaurea* species? *News* is the place to publish them.

***Melica altissima* found in Cambridgeshire (v.c.29)**

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Several clumps of *Melica altissima* L. 'Atropurpurea' were found at the edge of waste ground, by the recently demolished buildings of Unwins seed merchants, Impington Lane, Histon, Cambs. v.c.29 (GR: TL44306344) in November 2008 by J.D. Shanklin, (confirmed by A.C. Leslie) (CGE) (see photo, Colour Section Plate 4).

The species may be distinguished as follows:

A tufted, shortly rhizomatous perennial, with leafy stems 60-150cm tall. Lvs 10-23 × 5-15mm, flat, floppy, rough below and on the sheaths. Flowers in dense, narrowly cylindrical, usually one-sided spikes, 10-20cm long, interrupted below; spikelets numerous, oblong, large (7-12mm long), with one to two fertile florets, eventually nodding; glumes 7.0-10.5mm, sub-acute to obtuse, with broad hyaline margins; fertile lemmas pointed, more-or-less equalling the glumes, hairless but minutely rough; sterile lemmas much smaller.

This appears to be the first British record of self-sown plants of any form of this species, which is a native of central and eastern Europe through to southern Russia and eastern Turkey. It is widely grown in gardens, where it is known as Tall or Siberian Melic, usually in this form, with attractive reddish brown spikelets (rather glossy and deeper coloured at first, but paling with age). It comes true from seed and does sow itself around some gardens, so it is perhaps surprising that self sown plants have not been reported before. In this case it is likely that the plant had been grown by Unwins, and this may be the source of the seed. It is not clear whether such coloured variants are known in native populations as well, but the *Flora of Turkey* (Davis *et al.*, 1985) describes their populations as having ivory spikelets (which is presumably what gardeners call 'Alba'). As well as being

valued for its ornamental effect in gardens, it is an excellent dried cut flower, the heads seemingly everlasting, that is until they get too dusty to be respectable!

As 15th November was a reasonably fair day, I (JS) had decided to have a wander in a part of Cambridge that I had not previously walked around, despite having lived in the area for 35 years, albeit only with a recently revived interest in botany. Although Cambridgeshire is generally being surveyed on a parish basis, I thought that for once I would record a tetrad, but didn't expect to record many species, given the time of year. I vastly exceeded my expectations, with a total for the day of 233 species in the tetrad, including this *Melica*. As I was passing a demolition site, my eye was caught by an odd-looking grass growing on some rough ground by temporary fencing. Not being able to identify it immediately, I took a sample and continued on my walk, finding one or two other plants that I decided needed closer study with reference books. On returning home I started with the grass, but could not immediately find anything in 'Hubbard' or *Illustrations of Alien Plants*. Whilst checking the *RHS encyclopaedia of plants and flowers* to see if one of the others might have been introduced as a garden plant, I stumbled across an illustration of *Melica altissima* var. *atropurpurea*, which looked remarkably similar to the plant that I had found. This species was not listed in the Cambridgeshire flora, nor did it appear in the BSBI atlas, so I asked the county recorder, Alan Leslie if he could confirm it for me. He agreed with my diagnosis, and on visiting the site agreed that it appeared "wild". It just goes to show that botanical walks at unlikely times of the year can repay the effort with some unusual finds.

Polypogon viridis

DAVID PEARMAN, *Algiers, Feock, Truro, Cornwall, TR3 6RA*

IAN BENNALICK, *Lower Polmorla, St Wenn, Bodmin, Cornwall, PL30 5PE*

This is one of the fastest spreading alien plants in Britain, no. 33 in a survey this year coordinated by Kevin Walker with Quentin Groom, and supplied to Defra. It is a perennial grass, spreading, apparently, by stolons, but in reality freely from seed. One of us (DAP) introduced it with excitement into his new Cornish garden five years ago – bad mistake!

The 1962 *Atlas* (Perring & Walters) has it as a casual only on the British mainland, with ten dots, four before 1930. It was marked as established only in Guernsey, where McClintock (1975) notes that it was first recorded there in 1906, by G.C. Druce, new to the British flora. McClintock describes it as common in some parts, probably on the increase. By the *New atlas* (Preston *et al.*, 2002), there were records from 94 hectads in Britain and one in Ireland, and currently, on the BSBI website, there are a total of 292 hectad records (including four in Ireland).

In Cornwall, there were odd casual records from dumps and docks up to 1980, but the next year Keith Spurgin found it in Truro, and Adrian Grenfell by the ferry in Fowey. There were only another four records until 1990, and then it took off, with a total of 20 tetrads recorded by the time of the last Cornish Flora (French, Murphy & Atkinson, 1999). By then it was very much concentrated in the Chinacly area around St Austell, but now it is ubiquitous along pavements and in disturbed ground and bare areas in many towns and villages, especially around ports such as Par, Fowey, Falmouth and Penzance, and must be a weed in every nursery we have been to!

By the end of January 2009 the total tetrad count was 108! We both suspect it is spreading faster than the map shows, but it does not seem to really compete with native vegetation, though it can be a thug in the garden.

DAP adds:

When I was getting to grips with grasses, 30-odd years ago, this was one of the real

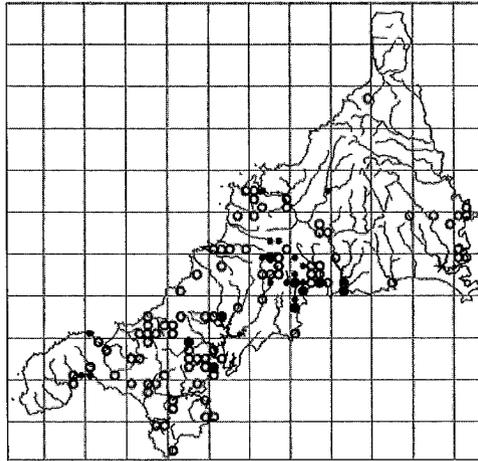
rarities, and to tell the truth, I wasn't certain what I was looking for. It was then masquerading as '*Agrostis semiverticillata*' (Water Bent), but to me, then and now, very little like an *Agrostis* and certainly not an aquatic plant. I never found it until I went abroad and saw that it was a common ruderal plant from France southwards. Andy Byfield first showed it to me in Britain after he saw it out of the train window at a railway station in Hampshire, and dashed out and back before the train departed. I strongly suspect it is still under-recorded, because until one sees it and works out what it is, it might look like a manky *Agrostis*. But the shape of the inflorescence, especially when fresh, with the characteristic whorls of flowers, has an unmistakable jizz. Looking at the national map I strongly suspect it is not being recognised by all recorders, though there is a perfectly acceptable picture in Hubbard's *Grasses*.

Acknowledgements

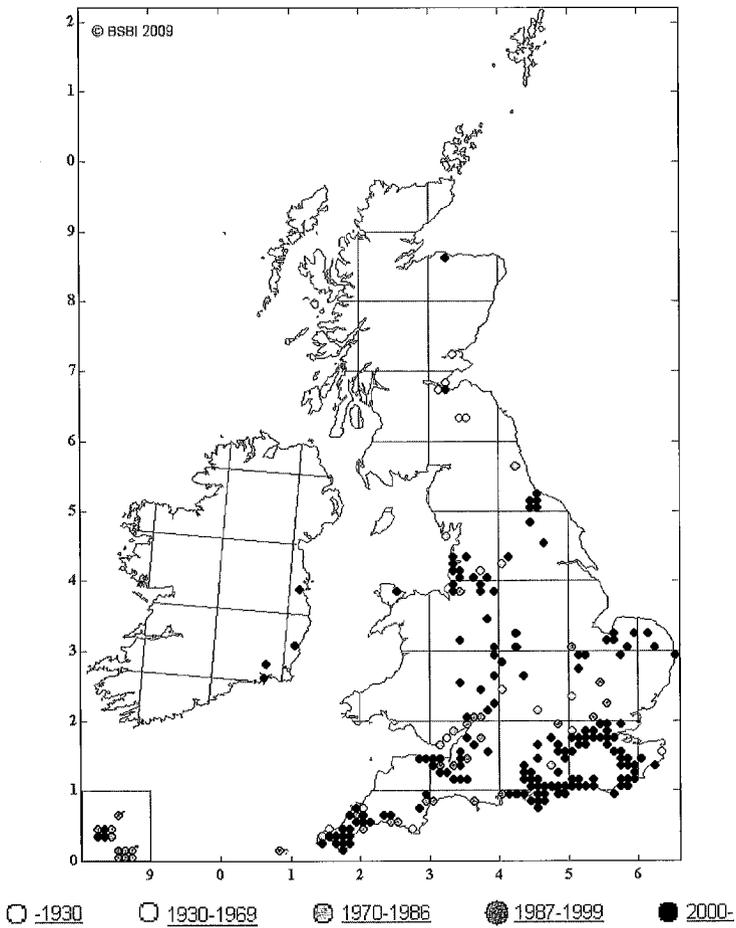
We would like to thank Alex Lockton and Quentin Groom for the current British and Irish distribution map from the BSBI website, and Colin French for producing both the current Cornish map from the *ERICA* database he maintains and the photograph (see photo, Colour Section Plate 1).

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Polypogon viridis in Cornwall before (solid dots) and after (open circles) 1999



Hectad distribution map of *Polypogon viridis* in Britain and Ireland

Vicia palaestina Boiss. in v.c.37

ROGER MASKEW, *Coppice House, Banalls Lane, Stoke Bliss, Tenbury Wells, WR15 8RZ*

In August 2008, Peter Garner showed me a *Senecio* sp. which he had found on some soil heaps at Bransford, near Worcester (v.c.37). After examining the plants, we agreed that it was *S. inaequidens*, a second record for Worcestershire, the first being of a single plant on the Evesham bypass in 1996. On August 20th I visited the site and found that there was a selection of other alien species present, including *Hyssopus officinalis*, new for v.c.37, and two small patches of a *Vicia* sp. which was unfamiliar to me. Its habit and general appearance resembled that of *V. cracca*, although the flowers were smaller, a much darker violet-purple, but with a paler keel, and the legume was short and broad.

After consulting the literature I came to the conclusion that it was *V. cassubica* (Danzig Vetch), and sent the specimen to David Pearman. He confirmed the identification, but asked to retain the specimen to compare with those in E when he visited the herbarium some time in the autumn. However, on his return from Edinburgh, DP informed me that my plant did not in any way compare with the

V. cassubica specimens in the herbarium and, unsure of its exact identity, he had sent it to Eric Clement. EC determined it as *V. palaestina*, which, in the *Flora of Turkey* keyed out on legume width (6-9mm), and suggested it was from a Lentil or Fenugreek packet. This represents the second British record of this species (see Clement & Foster, 1994), an annual from the east Mediterranean, Turkey, Syria, etc., which EC considers could be an overlooked species and is possibly the source of other '*V. cassubica*' records (see photo, Colour Section Plate 1).

It will be interesting to see whether this and other species manage to survive on the soil heaps, which cover an area of approximately two hectares and appear to have been there for at least a few years, although as yet the source is unknown.

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Ranunculus ficaria (Lesser Celandine) with 5 sepals

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The other day I casually looked at a Lesser Celandine flower, and discovered to my surprise that it had five sepals, rather than the usual three. I then looked at all the other open flowers, and the about-to-open flower buds in the clump and saw that they all had the same anomalous number of sepals. A later search in the same area, near the village of Brinklow, Warwickshire, about six miles E of Coventry revealed a few other nearby clumps with the same characteristic. All the other clumps in the vicinity and all the others I have since examined elsewhere, have proved to be completely normal as far as sepal number is concerned. I have enlisted the aid of several other keen botanists I know in my area, but as yet no other anomalies have come to light.

I have never before seen a *R. ficaria* plant with other than three sepals per flower, and have not heard of the possibility before. With such a common plant it is of course impossible to examine every specimen, but one wonders just how widespread the phenomenon is, and if it has in fact been under-recorded through being, understandably, overlooked. All organisms are, of course, variable, and the Ranunculaceae family, being quite 'primitive' perhaps to a greater degree than average. All I can usefully add at this point is that all the anomalous clumps appear to be ssp. *ficaria*. I wonder if it also occurs in ssp. *bulbilifer*.

[This arrived (dated April 1st!) just as I was wondering how to fill a gap, hence it's appearance in this section. G.Ed.]

SMALL PROJECT GRANT REPORTS

Assessment of *Trifolium* spp. across the UK – the importance of outer islands

SERENE HARGREAVES, *School of Biosciences, University of Birmingham, Edgbaston, Birmingham, B15 2TT*

Wild populations of plant species can be subject to hybridisation and consequently gene flow from introduced, taxonomically related plant material, such as widely grown crop varieties. Gene flow from domesticated plants to their wild relatives can lead to a ‘homogenisation’ of the gene pool, stifling local adaptation, a serious concern when the aim is to conserve the genetic diversity of the species. Isolation of wild populations from introduced plants through increasing distance or other geographic barriers can provide some protection against this genetic contamination.

The UK comprises many remote groups of islands, which may act as refuges for genetic diversity. In conjunction with BSBI county recorders, wild populations of *Trifolium pratense* (Red Clover) and wild populations of *T. dubium* (Lesser Trefoil) were collected across mainland UK from Devon, Dorset, East Sussex, Cumbria and Inverness-shire, as well as island populations from the Inner and Outer Hebrides, the Isles of Scilly and Shetland Islands. We compared the genetic diversity patterns observed in *T. pratense*, a native, cultivated species, with *T. dubium*, a species with no known cultivation history in the UK, using molecular marker assessments. Using these measures this project aims to provide: clarification of the role of islands as a key component of UK biodiversity strategies, information on current *Trifolium* distribution across the UK and information on genetic diversity for developing conservation strategies and *in situ* conservation plans for *Trifolium*. The BSBI aided this project by funding the molecular marker assessments of over half the populations assessed in this study.

Initial findings for both *T. pratense* and *T. dubium* show that geographic distance is the largest determinant of genetic distance between populations. Geographic distance is likely to be a clear obstacle to gene dispersal in these species, as pollinators will preferentially travel short distances. However our findings also indicate that distance may not be the sole cause of divergence between these populations. Island isolation in terms of human transfer of individuals also appears to be a significant factor in determining the uniqueness of island flora. Our results indicate that island populations within the UK are crucial for conservation due to their divergence from their mainland counterparts, highlighting the potential for islands to contain and maintain unique diversity.

Acknowledgements:

I would like to thank all BSBI recorders who helped either through site suggestions or through more in depth assistance. Special mention goes to R. Parslow, W. Scott, S. Bungard, R. Pankhurst and R. Smith for all their help. I would also like to thank my supervisors Nigel Maxted and Brian Ford-Lloyd, as well as the Institute for Grassland and Environmental Research (IGER) for assistance in the molecular analysis.

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Root endophytes and mycorrhizas of the carnivorous plants, *Drosera rotundifolia* (Round-leaved Sundew) & *Pinguicula vulgaris* (Common Butterwort)

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The aim of this project was to determine the mycorrhizal status of the native British carnivorous plants *Drosera rotundifolia* and *Pinguicula vulgaris* in the Snowdonia National Park. The roles and importance of carnivorous plant (CP) roots have received very little attention in the botanical literature, and their mycorrhizal associations have never before been investigated. Samples of these two common native plants were collected in early and late spring and summer, and modern molecular techniques, in combination with high-powered microscopy, were used to establish if mycorrhizal fungi were present in their roots. Additionally roots were sterilised and incubated on growth media to encourage the external growth of any other endophytic fungi living inside the root tissue of these plants. Perhaps surprisingly, 17 types of fungi were isolated from

inside the roots (11 from the sundews and 6 from the butterworts). The DNA of these fungi have been sequenced, and results have indicated that our native CPs host a diverse group of fungal species, including the so-called dark septate endophytes. DNA analysis of mycorrhizal colonisation has also provided intriguing results: while mycorrhizas were very rare in both plant species, they were more frequent in the summer than the spring. This is in contrast with fungal endophyte colonisation, which was much greater in the spring than in the summer. These exciting results not only provide vital information for future conservation strategies, but are also crucial for the potential re-establishment of endangered native species, e.g. *Drosera anglica* (the English Sundew).

BOTANY IN LITERATURE – 50

A Slip under the Microscope by H.G. Wells – a question of class – lenticels and *Sambuca* – microscopes clarified

MARGOT É. SOUCHIER, 26A Dryden Avenue, London, W7 1ES

A slip under the microscope by H.G. Wells (see Souchier in: *BSBI News* **104**: 29-31 (2007); **108**: 35-38 (2008)), with its clever *double entendre* of a title, is, like many of Wells's short stories, partially autobiographical, being derived, no doubt, from his time as a biology student which led to his gaining a first class degree in Zoology. The scene is the "College of Science" in South Kensington, London [read The Natural History Museum], where a mixed class of students (unusual for the time, except in America) are studying biology. Most of the story takes place in the laboratory, the first half redolent of matters zoological, such as "freshly killed guinea pigs", "a box of scalpels" sticking out of the protagonist and anti-hero Hill's pocket, "the alisphenoid of a rabbit's skull", "lists of crayfish appendages ... and vertebrate nerves", the second, where the crux of the story lies, and where the extract below is taken from, botanical. As a glimpse of an age where, possibly, stalwarts and students of science, with their volumes of William Morris, Longfellow, Tennyson, Shakespeare, Pope, Shelley, "Eliza Cook and Mrs Hemans", and Browning, were of a more literary mien than of today, the story, with its elements of possible romance, and the 'crime committed', has universal appeal, and, as concerns the continuing debate of social background in respect of education, is of topical pertinence, as much today as it was in Wells's time.

At last came the day of the second examination, and the professor of botany,¹ a fussy, conscientious man, rearranged all the tables in a long narrow laboratory to prevent copying, and put his demonstrator on a chair on a table (where he felt, he said, like a Hindu god), to see all the cheating, and stuck a notice outside the door, 'Door closed', for no earthly reason that any

human being could discover. And all the morning from ten till one the quill of Wedderburn² shrieked defiance at Hill's, and the quills of the others chased their leaders in a tireless pack, and so also it was in the afternoon. Wedderburn was a little quieter than usual, and Hill's face was hot all day, and his overcoat bulged with textbooks and notebooks against the last moment's revision. And the next day, in the morning and in the afternoon, was the practical examination, when sections had to be cut and slides identified. In the morning Hill³ was depressed because he knew he had cut a thick section, and in the afternoon came the mysterious slip.

It was just the kind of thing that the botanical professor was always doing. Like the income tax, it offered a premium to the cheat. It was a preparation under the microscope,⁷ a little glass slip, held in its place on the stage of the instrument by light steel clips, and the inscription set forth that the slip was not to be moved. Each student was to go in turn to it, sketch it, write in his book of answers what he considered it to be, and return to his place. Now, to move such a slip is a thing one can do by a chance movement of the finger, and in a fraction of a second. The professor's reason for decreeing that the slip should not be moved depended on the fact that the object he wanted identified was characteristic of a certain tree stem. In the position in which it was placed it was a difficult thing to recognise, but once the slip was moved so as to bring other parts of the preparation into view, its nature was obvious enough.

Hill came to this, flushed from a contest with staining reagents, sat down on the little stool before the microscope, turned the mirror to get the best light, and then, out of

sheer habit, shifted the slip. At once he remembered the prohibition, and, with an almost continuous motion of his hands, moved it back, and sat paralysed with astonishment at his action.

Then, slowly, he turned his head. The professor was out of the room; the demonstrator sat aloft on his impromptu rostrum, reading the *Q. Jour. Mi. Sci.*;⁴ the rest of the examinees were busy, and with their backs to him. Should he own up to the accident now? He knew quite clearly what the thing was. It was a lenticel,⁵ a characteristic preparation from the elder-tree.⁶ His eyes roved over his intent fellow students and Wedderburn suddenly glanced over his shoulder at him with a queer expression in his eyes.

Notes

1. *professor of botany*: This is Bindon, “a fat heavy man with a white face, who came up from Kew for January and February.” As he comes into the laboratory to teach the “short course on elementary botany that was now beginning”, he is described as “rubbing his hands together and smiling, in silent affability...”.

2. *Wedderburn*: “a pleasant-featured, ruddy young man of twenty, dressed in a well-fitting brown suit; young Wedderburn, the son of Wedderburn the [great] eye specialist.” He comes in “day after day with cuffs unfrayed, neatly tailored, precisely barbered, quietly perfect.” The biology list reads: “CLASS 1: H.J. Somers Wedderburn, William Hill”.

3. *Hill*: “He was a sturdily built young fellow, of the same age as Wedderburn; he had a white face, dark grey eyes, hair of an indeterminate colour, and prominent, irregular features. He talked rather louder than was needful, and thrust his hands deeply into his pockets. His collar was frayed and blue with the starch of a careless laundress, his clothes were evidently ready-made, and there was a patch on the side of his boot near the toe.” The “son of a Landport cobbler”, he “knew neither French or Latin” but “had a considerable gift of speech” and attends the College Debating

Society, unlike Wedderburn who “because – nauseous affectation! – he ‘dined late’”.

4. *Q. Jour. Mi. Sci.*: Wells takes delight, perhaps tongue-in-cheek, in employing the long-time custom of abbreviating scientific journal titles, still done today.

5. *lenticel*: a small (microscopic to c. 1 cm in length), elliptical pore or loose cell in the phelloderm (= secondary cortex or layer) of the periderm of a woody or bark-bearing stem. It is often initially formed beneath stomata in the epidermis, and, like these, permits gaseous exchange, but in the periderm of plant axes.

The periderm, which consists of up to three layers (phellogen (= cork cambium), phello-derm, and phellem (cork)) is a protective tissue of corky (*i.e.* suberised = containing suberin (ex *Quercus suber*, Cork Oak), which renders the tissue resistant to decay and entry of water) cells which are often produced as a response to wounding.

The pattern of periderm formation largely dictates the appearance of the bark of a woody plant. The term ‘bark’ usually denotes all the tissues outside the vascular cambium (*i.e.* phloem, cortex, and periderm), but can sometimes also include it; sometimes, too, the term is applied only to the periderm and outer cortex.

6. *elder-tree*: *Sambucus nigra* L. (Elder (Common Elder, Elder-berry)). Traditionally a member of the dicotyledonous Caprifoliaceae (the Honeysuckle family), of subclass Asteridae, order Dipsacales, subfamily Caprifolioideae, it is a foetid, pithy shrub-*cum*-small tree, widespread in the northern temperate zone, the pith once being used for holding specimens when sectioning botanical material. The fleshy berry-like fruits are still used to make preserves and wine.

However, molecular classification aligns it more closely with the Adoxaceae, largely because the genus lacks a nectary in the corolla, has a short style, fruits with 1-5 stones, small reticulate pollen grains, and large chromosomes. Yet, despite this, it is so far still included with the Caprifoliaceae (but *cf.* the A[ngiosperm] P[hylogeny] G[r]oup II

classification of Euasterids II (Campanulids), Dipsacales).

A cross-section by Rudall of the bark of *S. nigra* shows a broken epidermis with a periderm, where the lenticels lie, forming beneath in the outer cortical layers.

The genus name *Sambucus*, authors of various nomenclatural titles postulate, is derived from the Latin *sambuca*, a type of harp, made from, it is suggested, elder wood. But this Latin word comes from the Greek σαμβύκη (*sambúche*), indeed a kind of harp or trigonon played in ancient Greece, and which resembled in shape the horns of an ox, hence the second syllable of βύ (*bú*, from βοῦς, *boús*, an ox). Hence, this latter fact mitigates against the above. It is more likely that *Sambucus* is the Latin word for elder, and possibly a corruption of the Greek word σαμπούκος (*sampoukos*), which, in Modern Greek at least, means elder [-tree]. The specific epithet *nigra* is the Latin word for black and simply pertains to the perceived colour of the fruits.

7. *microscope*: an optical instrument with one or more lenses used to enlarge objects too small to be seen with the naked eye, and thus common laboratory equipment.

There are now two main categories of microscope, the **light (or optical) microscope**, and the **electron microscope**. Of the light microscope, there are three types: (1) **simple microscopes**, (2) **compound microscopes**, and (3) **stereoscopic binocular microscopes**.

Light (or optical) microscopes

(1) **Simple microscopes**, in the form of magnifying glasses, and consisting of a single lens, were used in ancient Rome, if not earlier. They are little used today scientifically (but *cf.* the hand lens) as they have to be placed close to the eye, have a limited field of vision, and illuminating and mounting of specimens is very tricky.

(2) The **compound microscope**, which is what Wells, in his biological studies, would have been familiar with (and what Conan Doyle's Sherlock Holmes would have used ("Beautiful! beautiful! The old guaiacum test was very clumsy and uncertain. So is the microscopic examination for blood

corpuscles. The latter is valueless if the stains are a few hours old." (S.H. to Watson, *A Study in Scarlet*)), dates from about 1590, and from then until 1930, the definition of 'microscope' was "an instrument in which light was focused by curved glass surfaces (or curved mirrors) to form enlarged images of a specimen". The parts of the compound light microscope normally comprise the tube or the body, in which the lenses are mounted, the objective (lens) being at the base of the tube (there may be several objective lenses of different magnification fitted to a revolving nosepiece) close to the specimen, and the ocular lens (eyepiece, projection lens, a basic type being the Huygenian eyepiece) at the other end, close to the eye (sometimes there is a third lens, the condenser (lens), which is situated beyond the objective), the stand, and the specimen stage. The distance from the top of the objective lens housing to the top of the ocular lens housing is termed the mechanical tube length (*cf.* optical tube length = the distance from the rear focal plane of the objective to the intermediate image).

The specimen stage, which is for the support of the specimen or slip (as in the story), can also, as a special-purpose stage, include provisions for mounting specimens at a chosen angle, for temperature control, and for rotation of the specimen.

The image is focused either by moving the body tube or the specimen stage, the light source being either built-in or having a mirror which reflects light from a lamp. Glare can be reduced by use of the iris diaphragm which limits the part of the specimen that is illuminated.

The basic compound microscope forms a brightfield or positive contrast image in which the details appear dark against a bright background (*cf.* darkfield). The modern compound microscope is used extensively for observing the fine detail of specimens and their sections, which are often stained to increase contrast. The maximum resolution (= the capacity to observe fine detail clearly) is c. 0.35 μm (300 nm)

(*i.e.* it can distinguish points only 0.35 μm apart; *cf.* 80.5 μm for the average human eye). High quality light microscopes have resolving powers of c. 0.25 μm (200 nm). Note: resolving power is a property of the instrument and depends largely on instrument design. It is not unlimited. Resolution is the level of detail viewed of a specimen and not only requires adequate instrumental resolving power, but depends on suitable contrast properties of both the microscope and specimen. Resolving power and resolution are specified in terms of d_{min} = the minimum resolvable distance. ‘High resolution’ = small values of d_{min} . Further aspects of the light microscope are concerned with magnification and calibration, and, for any lens, include lateral magnification (*i.e.* the ratio of image dimensions to object dimensions), and, also depth of field (*i.e.* the axial distance, or depth, in the specimen that appears in focus in the image), and depth of focus (*i.e.* the axial distance above and below the geometric image plane, within which the image appears at an acceptable level of focus).

(3) The **stereoscopic binocular microscope (stereomicroscope)** is used for work requiring lower magnification (up to 200 \times), such as dissection, observation of intact small organisms, or for viewing the detail of comparatively large specimens and similar applications. Conventionally it has two ocular lenses which give a three dimensional image of the specimen, which is usually placed on a contrasting background. The working distance (*i.e.* from the top of the specimen to the first surface of the objective) is important. Illumination is by halogen-lamps or cold-light sources. Zoom optics, attachments for drawing, simultaneous viewing by two observers, photomicrography, TV display, and other features are often available.

Other types of light microscopes innovatively include: (a) the inverted microscope, (b) the differential-interference-contrast microscope (DIC), (c) the interferometer microscope e.g. the Jamin-Lebedoff interferometric micro-

scope which is most widely used, (d) the phase-contrast microscope, (e) the modulation-contrast microscope (MCM), and (f) the mirror-lens (or x-ray) microscope.

Electron microscopes

The electron microscope has its genesis in 1926, when the first electron lenses were described, although it was not until 1932 that a prototype electron microscope was constructed, the first commercial instrument becoming available in 1939. In 1970 the resolving power of an electron microscope was 0.6 nm; by 1990 it was 0.1-0.2 nm, thus making it far greater than that of a light microscope (*cf.* the wavelength of an electron beam being 0.005 nm with c. 600 nm for yellow light).

The principle employed in the development of the electron microscope is the use of electromagnetic lenses to form a parallel beam of electrons by differential electron scattering. In theory objects only 0.0025 nm apart may be distinguishable (*cf.* 200 nm for a light microscope), but in practice lens aberrations (electromagnetic fields), deterioration of the specimen during observation, and other technical difficulties, reduce resolution to c. 1 nm (but this is still 300 times better than using light).

With the realisation of the electron microscope also came a redefinition of the microscope itself; that is as “an instrument that directly provides maps of specimen detail at resolutions superior to those obtainable by direct observation”. In order to function, the electron beam, which is emitted by an electron gun, requires a high vacuum in the microscope column. This is achieved by differential pumping (either by mechanical, diffusion, or ion pumps). The electrons emitted by the gun focus to form a bright spot of light, and may be released from unheated metal surfaces (field emission- or from those which are heated (thermionic) emission). The condenser lens or lenses (= double-condenser lens) refocus the gun spot at reduced magnification, forming an intensely illuminated area of limited dimensions. On the standard stage of an electron microscope, specimen temperatures may reach 100°C under electron

bombardment. However, there are cold stages which are cooled by liquid nitrogen (boiling point 77°K) or by liquid helium (b.p. 4.6°K). There are also tilting stages which commonly tilt $\pm 10^\circ$, but some may tilt as much as $\pm 60^\circ$, and which illumine specimens used in darkfield imaging and for recording stereo pairs, and hot stages which are used in metallurgy. Hence the need for superconducting lenses, especially in biological microscopy, but even so, cool-down times of some hours are required. There are two principal types of electron microscope: (1) the **(conventional) transmission electron microscope (TEM or CTEM)**, and (2) the **scanning electron microscope (SEM)**. A third, which has both facilities *i.e.* scanning to transmission operations, is the **scanning transmission electron microscope (STEM)**.

(1) The **(conventional) transmission electron microscope (TEM or CTEM)**.

During the first three decades of its development it was *the* instrument of choice, and it continues to be the prime light magnification/high resolution instrument despite the development of the SEM and STEM. It functions by focusing or redirecting radiation by lenses of whatever type to illuminate and form images of the specimen.

High-voltage (transmission) electron microscopes (HVEM), as well as **high-voltage scanning electron microscopes**, operate at c. 400 KV, with a current limit of 5 mA, the cost and dimensions escalating with the voltage level. They tend to be experimental instruments for specific applications.

(2) The **scanning electron microscope (SEM)**.

The SEM dates from 1935, but was not commercially available until 1965. In a scanning electron microscope, radiation from the source is focused via lenses to form a very fine probe, which is moved regularly across the specimen. Different types of electrons (secondary, back-scattered, low-loss, Auger) may be emitted depending on the mode of operation. The scanning

microscope exploits the concept that specimens are considered as a collection of point sources of radiation. The probe scans the specimen in a raster pattern by a magnetic deflection device. Each specimen emits an output signal (= the 'picture element' or pixel) of electrons and/or photons as it is irradiated, resolving power being limited by the size of the focused probe. The advantage of this operation is related primarily to image contrast (topographic contrast). It is useful in the biology industry. Resolution is c. 10 nm, thus bridging the gap between the TEM and the light microscope.

In the **STEM (scanning transmission microscope)**, developed in 1963, the output signal is transmitted by a transparent specimen, and not only is the specimen scanned, but this output data is collected for observation or processing via a computer.

Electron microscope innovations include (a) the scanning tunnelling microscope (STM), which stems from the above STEM, (b) the atomic-force microscope (AFM), (c) the tandem scanning microscope (TSM), (d) the photoelectron microscope, (e) the acoustic microscope, (f) the field-ion microscope and (g) the ion, proton, and neutron microscopes.

Summary of abbreviations of microscopes (and microscopy) (microscopy being the direct imaging of individual structures of dimensions no smaller than 1.5-2.0 nm in which detail can be observed by inspection):

AFM	atomic-force microscope
BFEM	brightfield electron microscopy
CTEM	conventional transmission electron microscope/microscopy
DFEM	darkfield electron microscopy
DIC	differential-interference-contrast microscope
EM	electron microscope/microscopy
HVEM	high-voltage electron microscope
MCM	modulation-contrast microscope
SEM	scanning electron microscope/microscopy
STEFEM	scanning transmission energy-filtering electron microscopy

STEM scanning transmission electron microscope/microscopy
 STM scanning tunnelling microscope
 TEM transmission electron microscope
 TSM tandem scanning microscope

(In microscopy there is also darkfield microscopy, cryo-electron microscopy, cryo microscopy, fluorescence microscopy, Fourier microscopy, near-field microscopy, nuclear-magnetic-resonance microscopy, phase microscopy, polarizing microscopy, reflection-interference microscopy, scanning microscopy, and total-internal-reflection microscopy).

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Corrections to Botany in Literature – 49

My apologies once more to Margot for more errors that again 'slipped through my net'.

1. on p. 40 the extract should have been indented on both right and left-hand margins from 'The other day . . . to . . . far-away places.'

2. on p. 40, note 1 – CF. should be lower case.

3. on p. 41, note 1 (contd) – Oder should be Order, apud and et al. should be italicised.

4. on p. 41, note 2 – Wuasterids should be Euasterids.

REQUESTS & OFFERS

Autumn Crocus sites

DIANA DOWNING, 33, *Westhoughton Road, Adlington, Chorley, Lancs.*, PR7 4EU

Crocus nudiflorus grows in Adlington, Lancashire, and Prestwich, Manchester, on sites not obviously “Legacy of the Crusaders” (Allan

Marshall, *BSBI News*, 58: 33). Information about dates and reasons for introductions elsewhere would be of interest.

Spare publications on offer

PATRICIA LOCKWOOD, 13 *Stanley Road, Formby, Liverpool, L37 7AN*;
(patricia.ann01@tiscali.co.uk)

Could a good home be found, please, for these spare publications, (postage only required): *Welsh Bulletin*, 68 (Winter 2000) and 70 - 80 inclusive (2000 – 2007).

Watsonia 24(3-4) (2003); 25(1-4), (2004-2005); 26(1-4), (2006-2007). *BSBI News*, 87 (2001); 91 (2002) and all consecutive copies until 106 (2007).

Watsonia back issues wanted

STUART CAMPBELL, 4 *The Laurels, Moreton, Wirral, Cheshire, CH46 3SU*
(Tel.: 0151 677 7047 – evenings and weekends). (stuartcampbell4@tiscali.co.uk)

I have recently joined the society and Gwynn Ellis has kindly supplied a number of ‘back issues’ (of both *Watsonia* and *BSBI News*), as I prefer ‘hard copies’. Unfortunately a couple

of issues of *Watsonia* (viz. Vol. 23, part 1 and Vol. 24, part 2) are ‘sold out’. Has any member a spare copy of either of these, please?

Perthshire B&B for BSBI members

MRS JOAN BROOKES, *The Smith, Tombane, Trochry, Dunkeld, Perthshire, PH8 0BT*
(joanbrookes@btinternet.com)

My late husband, Brian Brookes, was a member of BSBI for many years, and we ran courses from our home in Perthshire. I intend offering B&B at my new home, which is only

half a mile from my old one. I would offer either B&B or Dinner + B&B, the use of a microscope, reference books and a place to work.

Accommodation offer, The Burren

MARK HELMORE, *Mount Vernon, Flaggy Shore, New Quay, Co. Clare, Ireland*.
(Tel: 00353 657078126; Fax: 00353 657078118; info@mountvernon.ie;
www.hiddenireland.com/mountvernon)

Lovely and very comfortable accommodation available in historic seaside villa in The Burren, Co. Clare, Ireland. Wonderful botan-

ising April – September. Substantial reductions for BSBI members.

Open letter to *BSBI News*: an empirical, deterministic method of modelling rates of change in populations recorded in biological recording schemes

JOHN R. CHARTER M.A. (retired), 16 Spring Wood Close, Dunston, Chesterfield, Derbyshire, S41 8BS (formerly Visiting Research Worker, Animal & Plant Sciences, University of Sheffield)

Compilation of the *New atlas of the flora of the British Isles* (Preston *et al.*, 2002) has led to much analysis of the results by a team appointed by the BSBI specifically funded for the purpose, culminating in the computation of their, the BSBI's, 'relative change index' for each species (Telfer *et al.*, 2002). This 'relative change index' is described as based on a comparison of the proportionate change for each species in their recorded frequency by number of 10-km squares of the UK National Grid between the beginning and end of two recording periods, these proportionate individual changes being combined to somehow be expressed as a 'relative' figure in relation to a 'relative index' for all the species. Comment by Hodgson (2003) in *BSBI News*, and Presland (2006) on Braithwaite *et al.* (2006*) has attracted BSBI responses from Preston *et al.* (2003) and Braithwaite (2007) (sources marked * are not in local libraries).

As no examples are given of details of how the computations were done in a few illustrative species, it is not clear how, if at all, this work might be replicated by the individual enquirer without similar resources in manpower, computer processing, access to a bulk of data, and study time with the literature. There are previous attempts by British authors at such formulations dealing with invasive plants in Britain, all based on Lacey (1957), by Greig-Smith (1957), and as quoted in Harper (1977), Treweek & Wade (1986), Treweek & Wade (1986) in Beerling (1992) and in Charter (2002).

I wish to know what interest there might be in an alternative approach to methods of

quantifying such population change based on testing a deterministic model, derived from the long well-known Verhulst – Pearl (1839, 1920) equation, on the records of individual invasive alien plants/species over their whole life history in the British Isles, regionally in parts of Britain, or in the island of Ireland. Such a model would take account of the limits of British Isles datasets in terms of numbers of 10-km squares, and might be expected to have some predictive use.

Historically, there is a background in which the total numbers of 10-km squares recorded and mapped for each species was inexplicably unpublished in the 1962 Atlas, and up to 47 years later in the latest official publications on individual species, such as, Defra's 'The Invasive Non-Native Species Framework Strategy for Great Britain, 2008' and 'Centre for Ecology & Hydrology Science Review 2007' there are no species' formulations of their rates of population change.

I am thinking of computing the rates of spread of some of the Environment Agency's 'headline' species, such as Japanese Knotweed, Himalayan Balsam, etc., (or as may be, the rates of decline of declining species) in a discrete geographical area, comparatively not over-diverse environmentally, such as the island of Ireland.

As is known, analyses of such modelling appear under multiple authorships for obvious reasons, and, as I am long-retired, I wish to invite involvement of interested active co-authors.

Survey of British and Irish Plant-lore

ROY VICKERY, *Department of Botany, The Natural History Museum, London, SW7 5BD.*
(R.Vickery@nhm.ac.uk)

The Survey of British & Irish Plant-lore has grown from the Folklore Society's 'Survey of Unlucky Flowers', which was conducted in the early 1980s. It now holds over 11,000 items of information from approximately 1,050 contributors, and a large number of press-cuttings, off-prints, photographs, and other material.

The Survey covers all aspects of the folklore and traditional uses of plants, and although previously published sources are of interest, the emphasis is on contemporary (*i.e.* current and remembered) beliefs and practices.

Therefore information is sought concerning:

- traditional beliefs concerning plants (for example, the belief that certain flowers are 'unlucky' if they are taken indoors).
- local names of plants.
- plants and plant materials used in traditional customs or religious festivals.
- herbal remedies.
- sayings, riddles, tales and legends concerning plants.

- traditional times for sowing and harvesting crops, and practices associated with the cultivation of plants.
- plants used for foretelling the future.
- children's games and pastimes which use plants.
- wild plants gathered for food.
- other traditional uses of plants.

Information on the plant-lore of the various ethnic groups settled in the British Isles, and comparative material from overseas – particularly from the English-speaking world and Europe – is included in the Survey, and would be greatly appreciated. Any information, no matter how widespread and well-known it might be, will be gratefully received.

A copy of all the material received will eventually be placed in the care of the Botany Library of The Natural History Museum.

Please send information and other correspondence to: Roy Vickery at the address above.

NOTICES

Exhibition of botanical illustrations: Sir Harold Hillier Gardens, near Romsey, Hants., 20th–30th April 2009

P.L. MITCHELL, *Institute for Analytical Plant Illustration, 22 Redcar Road, Sheffield, S10 1EX*

The original plates used in a forthcoming flora (*Collins Flower Guide* by David Streeter) will be on show at the Hillier Gardens, two miles north-east of Romsey, from Monday 20th to Thursday 30th April 2009. The plates are for sale along with other work by the illustrators who are Audrey Hardcastle, Lizzie Harper, Christina Hart-Davies and Felicity Cole. For some of the exhibition, one or more of the illustrators hope to be

present and drawing so this will be an opportunity to see how botanical illustrators go about their work. Lizzie Harper belongs to the Institute for Analytical Plant Illustration which is an institutional member of BSBI. The full location details are: Sir Harold Hillier Gardens, Jermyns Lane, Ampfield, near Romsey, Hampshire, SO51 0QA; website: www.hilliergardens.org; telephone (Visitor Services) 01794 369317.

Annual Exhibition Meeting, London, Change of Date to 21st November 2009: ‘Floras of Small Areas’

ROY VICKERY, Chairman BSBI Meetings Committee, 9 Terrapin Court, Terrapin Road, London, SW17 8QW; vickery330@btinternet.com

We regret that Baden Powell House, which has hosted our London Exhibition Meetings for many years, is not available on the last Saturday in November this year. We have investigated alternative venues, but they are much more expensive. Therefore we will meet at Baden Powell House, but have changed the date of the meeting to Saturday 21st November. We apologise for any inconvenience this might cause.

As an experiment, our 2009 Exhibition Meeting will have a theme: ‘floras of small areas’. Are you involved in producing a flora of your parish, a local churchyard, park or community wood? Do you involve the local people? What are your plans for publication?

If you are engaged in producing a flora of a small area, we would welcome an exhibit relating to it. We also hope that you will be available to talk about your work and answer any questions. Needless to say, we shall also welcome other exhibits relevant to the Society’s interests, and entries to our annual photo competition.

The Meetings Committee welcomes members’ views on what they want from our Exhibition Meetings and other events. If you have any ideas please contact me, and fill in the questionnaire from John Bailey enclosed with this mailing.

St. Aubyn herbarium online

Plymouth City Museum and Art Gallery will be launching the St. Aubyn herbarium online, with images, on the 20th March 2009. The collection was previously owned by Sir John St. Aubyn (1758-1839) who had interests in both mineralogy and botany. His botanical pursuits were first recognised in 1795, when he was elected a Fellow of the Linnean Society.

With funding from the Esmée Fairbairn Foundation and Renaissance South West, the Museum has finally been able to scan all the specimens, allowing them to reveal its 200 year old secrets to the public. It contains not only plants that have been collected locally, but also specimens which have been collected from early plant nurseries and important gardens (see photo, front cover). Adjacent to many of the specimens are notes about the flowering and fruiting times, as well as the uses of the plant. On a sheet containing *Salix alba*, Sir John discusses its effectiveness in

treating fever, and describes its administration. If you would like to discover more about this 18th century collection, please visit this online herbarium: www.plymouth.gov.uk/museum/staubyncollection

Plymouth Museum is still on the look-out for anyone who may have some information about this herbarium. If you think you may have a St. Aubyn specimen or you have any information about the history of this fascinating collection, please contact Plymouth City Museum and Art Gallery on 01752 304774 or email us at: st.aubyn@plymouth.gov.uk

[We make no apology for using a rather fine picture of an 18th century herbarium specimen from this collection on our front cover. It has retained an amazing amount of colour, considering its age, and it just goes to show that herbarium specimens need not look like so much straw, if well pressed, dried, and curated. Eds]

FIELD MEETING REPORTS: 2008

Reports of field meetings are collated by Dr Alan Showler, and copy for these should be sent to him direct, not to the editors of *BSBI News*. His address is: 12 Wedgwood Drive, Hughenden

Valley, High Wycombe, Bucks., HP14 4PA (tel.: 01494 562082). Copy for day meetings should generally be up to 500 words, and for weekend meetings, up to 1000 words.

Thurso, Caithness (v.c.109) 18th - 21st July

KEN BUTLER

The coolness and showers did not faze the 14 members and 2 non-members who attended the whole or part of the Thurso meeting. On Friday one party surveyed the rich lightly-grazed machair at Greenland Links near Dunnet and also undertook the *Gentianella campestris* (Field Gentian) survey there – recording 837 plants in 17 colonies – and 128 species including *Glyceria maxima* (Reed Sweet-grass) as a new v.c. record. A second party searched the west side of Dunnet Head, which is very exposed peatland and maritime heath. They recorded 83 species, including a post-2000 record of the known *Salix repens* × *herbacea* (*Salix* × *cernua*) and a new site for *Arctostaphylos alpinus* (Alpine Bearberry). A third party worked on the east side of Dunnet Head. This area had recently been taken over by RSPB as a nature reserve and the warden came along, and was rewarded with a good list of the plant species on his patch. One intended task was to record exact locations and numbers of *Arctostaphylos alpinus* in an area where it was known to occur, but not one plant could be found! Several showed up a month later when the new season shoots became prominent – so maybe it gets missed a lot in July. This side of Dunnet Head is more varied in terrain and 175 species were recorded including *Botrychium lunaria* (Moonwort), the most northerly *Osmunda regalis* (Royal Fern) and the most northerly *Meum athamanticum* (Spignel), plus large numbers of *Listera ovata* (Twayblade) and a surprisingly large collection of farmyard weeds at the spot where the Highland cattle are kept for tourists to photograph.

There were three parties on Saturday in the Lybster area. One party surveyed the harbour

and surrounding cliffs, being rewarded with 192 species, including *Poa compressa* (Flattened Meadow-grass) (a new v.c. record), *Euphorbia cyparissias* (Cypress Spurge) (a new v.c. record), and the most northerly *Geranium sanguineum* (Bloody Crane's-bill). A second party went north of the harbour and looked at cliffs, fields and roadside. 158 species were found including *Circaea* × *intermedia* (new v.c. record), *Rosa* × *dumalis* (new v.c. record) and *Hypericum androsaeum* (Tutsan). The third party set off down the wooded and steep-sided Lybster Gorge, wading through the burn and dodging rock to rock until eventually stopped by a vertical waterfall. 169 species were recorded including *Viburnum opulus* (Guelder Rose), *Salix phylicifolia* (Tea-leaved Willow) and *Juniperus communis* (Juniper). They did not re-find *Juncus alpinoarticulatus* (Alpine Rush) nor *Elymus caninus* (Bearded Couch) ssp. *donianus*, previously recorded there.

On Sunday, at the Munsary peatland reserve, owned by Plantlife, nobody volunteered for an 'easy' day, so one party took a long elliptical walk out to the site of *Saxifraga hirculus* (Marsh Saxifrage), taking in a burn valley on the way there and a blanket bog on the return. They recorded 108 species, including *Carex limosa* (Bog Sedge), *Carex pauciflora* (Few-flowered Sedge), *Carex curta* (White Sedge), and a new site for the elusive *Vaccinium microcarpum* (Small Cranberry). A second party set off along another burn and into a large basin peatland with dubh lochs and pools, returning over blanket bog. They found 96 species, including *Carex curta*, *Carex* × *fulva*, *Drosera* × *obovata* and *Eleocharis multicaulis* (Many-stemmed Spike-rush).

There was one party on Monday, visiting the Knockinnon and Achavrole area just north of Dunbeath. This is an area of thin peat covering mineral-rich rock with springs and flushes. There were unlocalised records of *Pyrola media* (Intermediate Wintergreen) and *Primula scotica* (Scottish Primrose) to be found. 151 species were recorded, including *Primula scotica*, *Gentianella campestris*, *Utricularia minor* (Lesser Bladderwort) and

Gymnadenia borealis (Heath Fragrant-orchid). *Pyrola media* failed to show itself, despite much searching, which was important, because it had been selected as one of the sites for the Threatened Plants Project. Fortunately our activities set the locals talking, and a week later I was shown a site by Neil Batchelor, outside our search area, with a few leaves of *Pyrola media*.

Llyn Eigiau, Dolgarrog, Caernarvonshire (v.c.49) 2nd August

WENDY MCCARTHY

The weather forecast for the day of this meeting was poor, as it had been for much of the summer, so we were pleased to find ourselves in sunshine at the start. Ten of us set off for the longish walk to the lake, passing on the way the huge gap in the wall left by the deluge of water when the dam gave way in 1925, resulting in the drowning of 25 people in the village below. Today the water level of the lake was unusually high, due to almost non-stop rain for three months, and we were disappointed not to find *Subularia aquatica* (Awlwort), despite a thorough search. *Potamogeton natans* (Broad-leaved Pondweed) was abundant in the lake, and *Littorella uniflora* (Shoreweed) had survived the inundation. There was also an abundance of *Wahlenbergia hederacea* (Ivy-leaved Bellflower) in full flower, and as a bonus there was an Adder curled up at the path side, which remained just long enough for all of the party to admire it.

Leaving the lake, we followed the path uphill into the valley of Cwm Eigiau, noting on the way the stream banks which held several ferns, including *Oreopteris limbosperma* (Lemon-scented Fern) and *Phegopteris connectilis* (Beech Fern). In the flushed grassland at the path sides we saw *Pinguicula vulgaris* (Butterwort), *Anagallis tenella* (Bog Pimpernel) and sedges, including *Carex dioica* (Dioecious Sedge) and *C. hostiana* (Tawny Sedge), and *C. × fulva*, the hybrid between the latter and *C. viridula* ssp. *oedocarpa* (Common Yellow-sedge). The typical eyebright here, *Euphrasia scottica*, was of interest and was new to several people. Lunch was taken by the

tiny remote Cwm Eigiau cottage, at one time a shepherd's summer dwelling, and now a mountain club hut.

After lunch, we continued to a former quarry, where we found *Cryptogramma crispa* (Parsley Fern) on the ruined walls and spoil heaps, and *Lycopodium clavatum* (Stag's-horn Club-moss), and in the marshy grassland there was *Eriophorum vaginatum* (Hare's-tail Cotton-grass), *Drosera rotundifolia* (Round-leaved Sundew), *Agrostis canina* (Velvet Bent), *Carex pulicaris* (Flea Sedge) and *Selaginella selaginoides* (Lesser Club-moss). We had now reached the foot of the steep cliffs of Craig yr Ysfa, but as we began the long ascent up the scree path, several of the party decided to remain at the bottom, as it had become slippery after the brief shower at lunchtime, and also the midges had decided to make an appearance. Two of the more agile participants set off for the cliffs, while the rest of us botanised along the stream, finding *Eleocharis palustris* (Common Spike-rush), *Festuca vivipara* (Viviparous Fescue) and *Empetrum nigrum* ssp. *hermaphroditum* (Crowberry). It was just possible to positively identify the mountain form of *Juniperus communis* ssp. *nana* (Juniper) on a distant cliff ledge, with binoculars. On their return, we were able to add *Arabis hirsuta* (Hoary Cress), *Crepis paludosa* (Marsh Hawk's-beard), *Cystopteris fragilis* (Brittle Bladder-fern), *Oxyria digyna* (Mountain Sorrel), *Saxifraga hypnoides* (Mossy Saxifrage), *Sedum rosea* (Roseroot), *Thalictrum minus* (Lesser Meadow-rue) and *Trollius europaeus* (Globe-

flower) to the species list. Returning along the Afon Eigiau, we found *Veronica scutellata* (Marsh Speedwell), *Pedicularis sylvatica* (Lousewort) and some very impressive specimens of *Pedicularis palustris* (Marsh Louse-

wort), which kept the photographers happy. Thanks to Alex Turner and Peter Owen for venturing up the cliffs and returning with the additional species list.

Glenshee (v.c.89) 9th – 12th August

MARTIN ROBINSON & JACKIE MUSCOTT

Saturday 9th August

Our party of twelve had convened on the Friday night at the Log Cabin Hotel, Kirkmichael, which was to be our comfortable base for the meeting. With the addition of Russell Leavett, we set out on Saturday morning to brave the elements. On account of the all-pervading rain we settled for some lower ground nearer to base and tackled the two tetrads NO15E & J. These encompass the small hills of Wester Bleaton, with their two disused quarries, one of which is limestone, and the damp strath of Soilzarie, where it joins the Black Water, which becomes the Shee Water further upstream. The southern part of the area is moorland, rising up to 425 metres. We split into groups, led by Martin and Jackie respectively, doing one tetrad each. Martin's group headed straight for the eastern quarry, seeing *Gentianella campestris* (Field Gentian), *Pimpinella saxifraga* (Bumet-saxifrage), a few leaves of *Trollius europaeus* (Globe-flower) and some fruiting spikes of *Coeloglossum viride* (Frog Orchid) and *Gymnadenia conopsea* s.l. (Fragrant Orchid) in the increasingly calcareous grassland on the way. The walls of the quarry were sheer and quite featureless, but the floor was covered by a shallow pool of clear water full of *Chara vulgaris* var. *longibracteata*, a distinctly localised plant in this part of the country. Some *Arabis hirsuta* (Hairy Rock-cress) grew in the rocky jumble at the base of the quarry walls, and the woodland around the access track supported a good colony of *Listera ovata* (Common Twayblade). John Edgington demonstrated *Dryopteris cambrensis*, which we were later able to compare with *D. borrieri*. After lunch in a rather uncomfortable farm building we set out

in the opposite direction to the one that we had taken in the morning. We climbed a steep hill up to the back of the other quarry, finding, to our surprise, a large stand of *Phalaris arundinacea* (Reed Canary-grass) up there. The quarry was lacking in any interest but the moorland to the south contained a few flushes with *Carex dioica* (Dioecious Sedge), *Saxifraga aizoides* (Yellow Saxifrage), *Triglochin palustre* (Marsh Arrowgrass), among others. Most remarkable though was the density of *Listera cordata* (Lesser Twayblade) in the heather, which was about as high as any of us had ever seen on moorland. Jackie's group botanised tetrad NO15J and started off in the rain towards some grazed, rocky hummocks, where they were rewarded with *Viola lutea* (Mountain Pansy), *Trientalis europaea* (Chickweed Wintergreen) and *Phegopteris connectilis* (Beech Fern). The flushes there, however, presented some difficulties particularly with sedges, as most of the flowers had been eaten. After a damp lunch squashed in the car they decided to head for a stretch of the Shee Water, beside the A93, where they picked up some riverside and roadside plants, including a good patch of *Puccinellia distans* (Reflexed Saltmarsh-grass) growing with *Spergularia marina* (Lesser Sea-spurrey) on the verge. Afterwards they returned to a substantial marsh by the road over to Kirkmichael. The rain had stopped and a few butterflies put in an appearance, but as their clothing dried out their feet got steadily wetter. There were plenty of fruits on the sedges here, and there was *Isolepis setacea* (Bristle Club-rush), *Helictotrichon pubescens* (Downy Oat-grass), and *Ranunculus hederaceus* (Ivy-leaved Crowfoot) in mud.

Sunday, 10th August

This was a far better day, still cool but clearer with showers. We set off for the higher ground at the head of the glen, once again splitting into two groups, this time finding ourselves sexually segregated more by accident than design. Martin's group started from the ski car-park and followed the vice-county boundary up Meall Odhar. The main objective was to re-find *Carex rariflora* (Mountain Bog-sedge). It had clearly not been a good year for it at the site we visited, as the few fruiting spikes we found were barely recognisable; or else we were too late. However, there were several small colonies of *Veronica alpina* (Alpine Speedwell) in grassy flushes in the same general area, and also *Carex capillaris* (Hair Sedge), *Sibbaldia procumbens* (*Sibbaldia*), *Gnaphalium supinum* (Dwarf Cudweed) and *Luzula spicata* (Spiked Wood-rush). Skirting the ridge southwards towards Creag Leacach, we found another site for *Carex rariflora*, with *C. curta* (White Sedge), just before leaving the tetrad NO17N. As we entered the next tetrad, NO17M, John Edgington and Mark Tulley got *Juncus trifidus* (Three-leaved Rush) and *Diphasiastrum alpinum* (Alpine Clubmoss) higher up, whilst the others, lower down, found a nice series of stony and mossy flushes containing *Epilobium alsinifolium* (Chick-weed Willowherb), *Saxifraga oppositifolia* (Purple Saxifrage), *S. aizoides*, *Tofieldia pusilla* (Scottish Asphodel) and a *Cochlearia* sp. (Scurvygrass) that didn't have any fruits well enough developed for identification. Some drier flushes contained *Sagina saginoides* (Alpine Pearlwort) and *S. ×normanniana* (Scottish Pearlwort). We all converged in a north-west and north-facing grassy corrie, where there seemed to be acres of base-rich flushes and flushed grassland. There were fine stands of *Carex capillaris* and lots of vegetative *Carex vaginata* (Sheathed Sedge). The flushes contained more *Epilobium alsinifolium* together with *E. anagallidifolium* (Alpine Willowherb), *Thalictrum alpinum* (Alpine Meadow-rue),

Juncus triglumis (Three-flowered Rush) and *Sagina nodosa* (Knotted Pearlwort). There were patches of *Salix herbacea* (Dwarf Willow), *S. repens* (Creeping Willow) and one that looked like *S. myrsinites* (Whortle-leaved Willow), with very glossy undersides to its leaves, but which may have been a hybrid between that and *S. herbacea*. A bit was taken by Les Tucker to grow on and identify once it has catkins. Some *Salix phylicifolia* (Tea-leaved Willow) was found too, as was *S. ×tetrapla*, its hybrid with *S. myrsinifolia* (Dark-leaved Willow), though the latter species was not present. We descended via the Allt Coire a'Bhathaich, finding lots of *Equisetum pratense* (Shady Horsetail) and one small, low bush of *Salix lapponum* (Downy Willow). Jackie's group headed for the tetrads H and I in NO17, south west of the Cairnwell. Starting from the car park by the old military road they set off in sunshine (even seeing some Dark Green Fritillaries on the wing) to follow the river uphill, soon finding most of the common alpinses as well as *Lycopodium clavatum* (Stag's-horn Clubmoss) and *Rubus saxatilis* (Stone-bramble). The party split after a while, some members heading for the higher ground, while the rest continued up river, soon entering an attractive gorge with *Carex capillaris*, *Saxifraga oppositifolia*, *Helianthemum nummularium* (Rock-rose), *Galium boreale* (Northern Bedstraw) and *Helictotrichon pratense* (Meadow Oat-grass). Unfortunately it chose to rain heavily at that point. The sun soon came out again – but so did several million midges, and they were trapped! Further up, they began to encounter a little *Rubus chamaemorus* (Cloudberry), which the higher-level party had found in some quantity. The whole group came downstream together at an intermediate level, finding a number of rich flushes with *Eriophorum latifolium* (Broad-leaved Cotton-grass), *Saxifraga stellaris* (Starry Saxifrage), *Epilobium anagallidifolium*, *E. alsinifolium*, *Thalictrum alpinum*, and a single plant of *Botrychium lunaria* (Moonwort) on a rock.

Monday, 11th August

Another cool day with some heavy showers and no midges. We had lost Mark and Russell but gained Jim McIntosh. We all started off at the Dalmunzie Hotel and then Martin's group crossed the Taitneach Burn bridge to work our way up the gully on the north side of Ben Gulabin. This started to get interesting at about 550 metres, when we hit some calcareous flushes containing *Carex capillaris* and *Equisetum variegatum* (Variegated Horsetail). From the bottom of Coire Shith we then went south-eastwards over a saddle of bog. This was the start of the highlight of the whole meeting. First of all Paul Bartlett found a nice stand of *Betula nana* (Dwarf Birch), extending along the edge of a peat bank. Then things then became even more intriguing. On a slope covered with damp, flushed grassland and heathland we started seeing *Pyrola* leaves, most of which had leaf venation intermediate between *P. media* (Intermediate Wintergreen) and *P. minor* (Common Wintergreen), though some were clearly *P. minor*. Then when we found a couple of flowers, it became clear that we had stumbled on a colony of *P. rotundifolia* (Round-leaved Wintergreen), only the second one to be discovered in the vice-county. The mixed colony continued uphill for about 100 metres, very densely in places. There must have been thousands of plants. There was also a group of <12 small plants of *Salix lapponum* and some *Lycopodium annotinum* (Interrupted Clubmoss) in the same general area. The summit of Ben Gulabin yielded a small amount of *Loiseluria procumbens* (Trailing Azalea) before we negotiated the steep descent back down to the bridge. Jackie's group had stayed on the west side of the Taitneach Burn to cover tetrads NO07W and X. Again the party split after a time, with one group remaining close to the river, while the second group headed for the rocks on Creag a'Chaise, joining the others for lunch and then taking off again for the cliffs and rock jumbles of Creag Dhearg. The latter cliffs were uninteresting except where

flushed by waters from above. The dry rocks had little but heathers, but the wet areas had plants like *Saxifraga oppositifolia*, *Potentilla crantzii* (Alpine Cinquefoil), *Carex capillaris*, *Galium boreale*, *Botrychium lunaria* and *Oxyria digyna* (Mountain Sorrel), as well as a fine display of *Heracleum sphondylium* (Hogweed) on some herbaceous ledges. There were plenty of ferns on the cliffs and on the rocks below: *Asplenium viride* (Green Spleenwort), *Polystichum lonchitis* (Holly Fern), *Cystopteris fragilis* (Brittle Bladderfern), *Dryopteris expansa* (Northern Bucklerfern), *Gymnocarpium dryopteris* (Oak Fern), masses of *Phegopteris connectilis* and a fair amount of *Huperzia selago* (Fir Clubmoss). At lower levels the most exciting finds were *Lycopodium clavatum* (Stag's-horn Clubmoss), *Eriophorum latifolium* and alpinines (*Oxyria*, *Saxifraga* spp.) washed down the river. There was also a small patch of *Sphagnum* sp. with *Vaccinium oxycoccos* (Cranberry) crawling over it.

Tuesday 12th August

Today Martin's group headed for the Spittal of Glenshee, in order to cover the extensive north-facing grassy corrie to the SW known locally as Spittal Hill. The next corrie to the west has *Kobresia simpliciuscula* (False Sedge) and one of the day's objectives was to see whether its distribution might extend into this corrie. In the event we found a lack of the open stony flushes that it prefers and so we drew a blank. The flushes were more closed, with mossy spring heads containing a lot of *Epilobium alsinifolium*, together with *E. anagallidifolium*. Some *Carex capillaris* was found, and some *Eriophorum latifolium* in the more base-rich areas. We split up in the afternoon, Jim and Martin exploring more of the same tetrad and finding a colony of *Meum athamanticum* (Spignel) stretching for about 30 metres in grassland near the road and a lot more species along the roadside. The others carried on into NO06Z and Les Tucker found some *Carex vaginata* on his way down. It was a short day for Jackie's group, who had

to depart at about 3.00 pm. They surveyed an unexplored but 'dull-looking' area around Dunmay Farm (tetrad NO16N). It turned out to be less dull than expected, producing nearly 200 species in a single monad, with a good selection of marsh plants in flushes to the north of the track, weeds around the track and farm, and meadow plants in an unimproved strip by the Shee Water. Common alpine species such as *Saxifraga aizoides*, *Persicaria vivipara* (Alpine Bistort) and *Selaginella selaginoides* (Lesser Clubmoss) turned up in the flushes, while meadow plants included *Cirsium heterophyllum* (Melancholy Thistle), *Geranium sylvaticum* (Wood Cranesbill), *Helictotrichon pratense*, *Pimp-*

inella saxifraga and a good deal of *Meum athamanticum*, along with *Galium boreale*. *Meum* and *Pimpinella* turned up elsewhere, but here they were unaffected by grazing. Apart from some very heavy showers it was a good end to the meeting. Altogether we recorded approximately 387 taxa in 13 tetrads. A lot of very good plants were seen, but the main surprise was the huge mixed *Pyrola* colony. This was probably only found because we were 'tetrad-bashing'. Normally botanists might have gone up the gully nearby and missed this area.

Botanical Cornwall annual indoor meeting

COLIN FRENCH, 12 Seton Gardens, Weeth Road, Camborne, Cornwall, TR14 7JS

A very well attended meeting was held at the end of January at the Cornwall Wildlife Trust. 2008 proved to have been a record year for biological recording in Cornwall, with 211,000 biological records added to the *Erica for Windows* database (the principal database in use in Cornwall), of which 147,000 were flowering plants and ferns. The *Erica for Windows* database now holds 1,890,000 biological records for Cornwall, of which 1,159,000 are vascular plants.

The Botanical Cornwall Group is systematically re-surveying the whole of Cornwall in order to produce the next *Flora of Cornwall*. Every 1km square is being surveyed (3,878 squares), and GPS devices are being used to improve geographic accuracy. This re-survey is approaching the halfway stage, with much recording yet to be done, including 568 1km squares that have not been visited since 1999 (the date of the last *Flora*). In 2008 this recording process was boosted by a modest grant from the County Council, which assisted with travel expenses. This enabled more than 700 under-recorded 1km squares to be targeted, and increased total recording effort by a third.

During the annual meeting a talk was given by Dr Loveday Jenkin about the Great Tree Project and a discussion was held as to how the group could interface with that Project. Reports were also given about recording activity in Cornwall by the VCRs Colin French and Ian Bennallick, and for the Isles of Scilly by Rosemary Parslow. Nicholas de Sausmarez briefed the Group about bryophyte recording, David Pearman described BSBI initiatives and Rosaline Murphy gave a detailed account of the forthcoming BSBI Fumitory Handbook. It was also reported that the three VCRs for Cornwall and the Isles of Scilly are busy helping to finish the forthcoming *Red Data Book for Cornwall and the Isles of Scilly*. Once that is published they will compile Rare Plant Registers. A fern atlas for Cornwall should also be published in 2009 and a new *Botanical Cornwall* journal (no. 14: 2009), is in preparation and should be available by the spring. The meeting ended with a discussion of a programme of events for 2009. The finalised programme will appear on the group's website (www.floracam.co.uk/bcg/). Any BSBI member wishing to attend a meeting should contact Ian Bennallick beforehand (ianbennallick@btinternet.com).

BOOK NOTES

Authorship of *The vegetative key*

ERIC J. CLEMENT, 54 Anglesey Road, Gosport, Hampshire, PO12 2EQ

The long-awaited *The vegetative key to the British flora* will be published in April/May 2009. Alert eyes will, by now, have noted that a co-author (EJC) has sneaked onto the cover of John Poland's work. This requires an explanation! It was JP's wish that I should be added, in recognition of the many (45) years that I have been dreaming of such a volume, and have been assembling notes on the topic.

I did, finally, write a skeleton key, and, with enormous help from Debbie Allan, the draft was computerised. John Norton made some improvements. It was then that I met John Poland, and he rapidly became utterly enthused over the project. He soon found that some of the keys needed major re-writing, and much more morphological detail was desirable. In particular, he looked at

fresh material of all the species (often from botanical gardens), spending much time studying the 'gross anatomy', especially the vascular bundles and stomatal distribution. He hunted for alternative characters, where I had chosen at an early stage the textbook 'annual' versus 'perennial' separation.

John Poland has invested five long years of his youth (now 29 years of age) in this *magnum opus*. I hope that all members will buy a copy to reward him. If any profits accrue, none will gravitate to EJC! The exceptional value of the pre-publication price (£20, incl. p. & p.) **will remain valid until May 1st**, if you have not already ordered a copy. Rush to www.bsbi.org.uk and download an order form.

A Field Key to the Grasses of the East Midlands

by BRIAN N.K. DAVIS, published by the Hunts. Fauna & Flora Society, printed by Just Digital Ltd, Ellington, Cambs. Second edition February 2009

This book covers the 4 vice-counties of Beds, Cambs, Hunts and Northants. and has details of 105 species found in this area. There is a general section which deals with the technical aspects of grass structure, followed by the key itself, and photocopied images of the grasses themselves. It is a very

useful aid to grass identification in this region of England, but will also be of value to students of grasses in other regions as it covers most of the commoner species.

It is available from Barry Dickerson, 27 Eynesbury Road, St Neots PE19 2QE, price £7.50. Add £1.50 for p&p.

OBITUARY NOTES

MARY BRIGGS, *9 Arun Prospect, Pulborough, West Sussex, RH20 1AL*

With regret we report the loss of two past Vice-county Recorders who have died recently, **W.H. Tucker** from Devon and **B.W.R. Fowler** from Staffordshire.

Bill Tucker of Torrington, Devon joined the Society in 1959, and in 1983 he was appointed as Recorder for N. Devon, V.c.4. and served in that capacity until 2001.

Bryan Fowler of Wolverhampton, joined the Society in 1972 and became Recorder for Staffs., v.c.39 from 1986 until 1998.

Bryan was a familiar figure at BSBI meetings in Wales and the West Country, always arriving on his motorbike. He was also a cheerful companion on alpine holidays, with his interests not only in alpine plants and photography but also in Swiss transport engineering.

Also with regret we report the death of **Mr J.A. Field** of Longfield, Kent who had been a BSBI member for more than half a century, having joined in 1955.

RECORDERS AND RECORDING

Panel of Referees and Specialists

MARY CLARE SHEAHAN, *61 Westmoreland Road, Barnes, London SW13 9RZ;*
mc_sheahan@hotmail.com

Ken Trewren (*Dryopteris*) has said that he will be away from 13th June, and asks that no specimens should be sent to him before 9th August. There is also a correction to the entry for *Dryopteris*, which should read:

Dryopteris (except *D. affinis* complex): Mr K. Trewren; ripe spores needed if hybrid suspected. Please contact before sending, as Mr Trewren is often abroad.

D. affinis complex: Mr A.C. Pigott; ideally a fresh frond c.70-100cm long (sent folded) cut to the very base, with mature sori, and the basal pinnae intact.

Prof. R.M. Bateman and Dr I. Denholm have asked that their entry in the *BSBI Yearbook* should be amended to read:

Orchidaceae

General (except *Epipactis*, but including *Dactylorhiza* and *Gymnadenia*): Dr I. Denholm (esp. S. and Central England and Wales) and Prof. R.M. Bateman (esp. N. England, Scotland and Ireland). Minimum requirement: images of whole plants plus close-up of inflorescence, ideally with scale, supported by notes on size, locality, habitat and other species of the same genus present

(essential if hybridisation is suspected); emailed images are acceptable, but Dr Denholm requests that images should not exceed 1Mb. Supporting specimens are advisable for especially problematic plants: no whole plants; fresh material encouraged. A single fully open flower and the subtending bract in an airtight vial or similar (do not include moss or cotton wool), plus the longest sheathing leaf. Pickled flowers supported by colour notes are less satisfactory (note: living material cannot legally be collected from species protected by Schedule 8 of the *Wildlife and Countryside Act*).

Finally, there are three changes to referees' addresses:

Patrick Acock (*Equisetum*) has a new email address: pat.acock@btinternet.com

Richard Bateman's postcode should be changed to TW9 3DS, and his email address to r.bateman@kew.org.

Dr Denholm's address should be updated to: Denholm, Dr I., Head, Department of Plant & Invertebrate Ecology, Rothamsted Research, Harpenden, Herts., AL5 2JQ; ian.denholm@bbsrc.ac.uk

Panel of Vice-county Recorders

DAVID PEARMAN, *Algiers, Feock, Truro, Cornwall, TR3 6RA*; 01872 863388

New Recorders

v.c.9 (Dorset): Mr R.M. Walls, 10 Old Brickfields, Broadmayne, Dorchester, Dorset, DT2 8UY. Mr D. Pearman and Mr B. Edwards retire.

v.c.96 (Easternness): Mr A.M. Ross retires (Ms S. Smyth & Mr J. Waddell continue as before).

NOTES FROM THE OFFICERS

From the Scottish Officer – JIM MCINTOSH

Royal Botanic Garden, 20A Inverleith Row, Edinburgh, EH3 5LR; Tel: 0131 2482894;
j.mcintosh@rbge.ac.uk

Scottish Officer

The Scottish Officer project began its second term in November 2008. In addition to the main funders BSBI and SNH, Royal Botanic Garden Edinburgh is also supporting the post – by way of an in-kind contribution of office facilities. The post holder, Jim McIntosh, will continue with a similar remit to deliver major conservation initiatives such as Site Condition Monitoring, the Threatened Plant Project and Rare Plant Registers as well as to support the BSBI Scottish membership – particularly the Vice-county Recorders.

Threatened Plant Project in 2009 in Scotland

As in 2008 the species selected for survey fall into three categories in Scotland. The relatively widespread Heath Cudweed (*Gnaphalium sylvaticum*), Frog Orchid (*Coeloglossum viride*) and Maiden Pink (*Dianthus deltooides*). The more local Wood Bitter-vetch (*Vicia orobus*), Narrow-leaved Helleborine (*Cephalanthera longifolia*), Tubular Water-dropwort (*Oenanthe fistulosa*) and Opposite-leaved Pondweed (*Groenlandia densa*). Three of the species do not occur in Scotland – Rare Spring-sedge (*Carex ericetorum*), Copse-bindweed (*Fallopia dumetorum*) and Crested Cow-wheat (*Melampyrum cristatum*) – so this should make the task a little easier. However, Scottish vice-counties are big and recorders might like to ask local members to help with the survey, perhaps after some field training. Or conversely local or

visiting members might like to volunteer! Details of this year's project are available on the BSBI website (including the list of sites to be surveyed) but if you would like more information please don't hesitate to get in touch with me.

Site Condition Monitoring

The BSBI continues to make a significant contribution to Scottish Natural Heritage's vascular plant Site Condition Monitoring programme. Our volunteers are planning to undertake surveys at a further eight sites across Scotland in 2009 from the coast at St Cyrus (near Montrose) to high mountain sites such as Carn Gorm & Meall Garbh in Glen Lyon, near Killin.

Rare Plant Register Workshop: April 2009

Rare Plant Registers, or local red lists, are a great way of making our records and botanical skill useful to conservationists and land managers. They also help promote recording activity. So by the time you read this, we hope to have held a very successful residential weekend workshop for Scottish Vice-county Recorders on the theme of *Rare Plant Registers – how to make a start*. There are also sessions on MapMate, the Computerisation Project and Site Condition Monitoring. We plan to write up the workshop's key points, questions and answers and publish them in a report to be distributed to all Scottish Recorders.

Computerisation Project

Over the past year 250,000 Scottish Vice-county Recorders paper records have been digitised by this project, which aims to make them more widely available, to the BSBI, BRC Vascular Plant DataBase, the NBN Gateway and to the Vice-county Recorders themselves of course! Scottish Recorders were consulted on the outstanding paper record sets they held, and the results were collated, analysed and used to draft a work programme for the final two years of the Project. A huge tranche of work involving 400,000 records in Argyll, Clyde Isles & Kirkcudbright and relating to *The Changing Flora of Glasgow* has just been given to contractors. They will work closely with Recorders to complete the task.

Meantime details of the Nationally Scarce and Rare plant populations monitored during the first six year cycle of SNH's Site Condition Monitoring – along with their associate species – have been digitised in a separate but similar project. This data will be invaluable for Rare Plant Registers.

Beyond the Computerisation Project

With the Computerisation Project nearing completion, we are now looking for volunteers to help with the ongoing computerisation of new field records that are collected. A number

of Scottish BSBI Vice-County Recorders need help to enter their plant records into computers. This aspect of Recorders' work is becoming increasingly important in order to make plant records more widely available to conservationists, botanists, land-managers and researchers. Help is required in the following vice-counties: Angus, Fife & Kinross, the Lothians, Mid-Ebudes (Mull, Tiree & Coll) and Peebles – amongst others.

Knowledge of the flora, and geography of the Vice-county obviously helps enormously, and that often comes with living in or near the area. Therefore an advert has been placed in the Scottish Newsletter and on the BSBI website. However botanists elsewhere in the British Isles may be equally well-qualified and interested. If so please see the advert on the BSBI website.

Scottish Annual Meeting 2009 in Perth

Just a quick reminder that you will find a warm welcome north of the border at the BSBI Scottish Annual Meeting on Saturday 7 November 2009. The event is held in conjunction with the Botanical Society of Scotland, and is always very lively and enjoyable. It will be held at the Queen's Hotel, Perth which is very easy to get to being right beside the main bus and railway stations. Put the date in your diary now and watch out for the flier!

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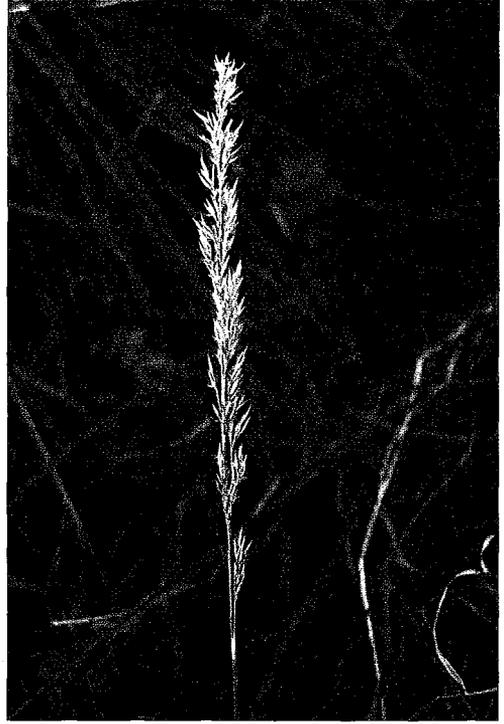
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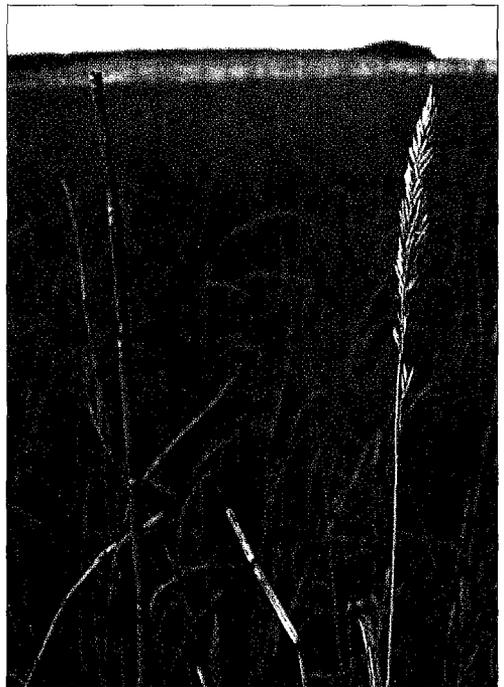
1. *Calamagrostis purpurea* habitat, Dunachton Fen, Speyside (v.c.96). Photo J. Cadbury © 2008 (see p. 28)



2. *Calamagrostis scotica*, Loch of Duran (v.c.109). Photo M. Gurney © 2008 (see p. 27)



3. *Calamagrostis stricta* Insh Marshes (v.c.96). Photo J. Cadbury © 2008 (see p. 26)



4. *Calamagrostis stricta* Broubster Leans (v.c.109). Photo M. Gurney © 2008 (see p. 27)



Alpine ferns site near Bridge of Orchy 1995. Photo H. McHaffie © 1995 (see p. 7)



Alpine ferns site near Bridge of Orchy July 2005. Photo H. McHaffie © 2005 (see p. 8)