

BSBI News

September 2008

No. 109



Edited by Trevor James & Gwynn Ellis



1. Close up of *Galium murale* on old pathway



2. Drift of *Galium murale* on old pathway



3. Shingle vegetation



4. *Gazania rigens* on shingle

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IMPORTANT NOTICES

BSBI Subscriptions – new rates from 2009

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At the Annual General Meeting subscriptions for Ordinary members from 2009 were increased by £5 per annum with pro rata increases for other classes of membership. The last increase was in 2000.

In December I will be writing to all members individually (including those who pay by Direct Debit) to advise them of what they are due to pay in January. The new rates are:

Class	£	€
Ordinary UK & Ireland	25.00	37.00
Ordinary Overseas	27.00	40.00
Family UK & Ireland & Overseas	3.00	5.00
Junior UK & Ireland	10.00	16.50
Junior Overseas	11.00	18.50
Senior UK & Ireland	18.00	27.00
Senior Overseas	20.00	33.00
Institutional UK & Ireland	25.00	37.00
Institutional Overseas	27.00	40.00

Biological Records Centre

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

With effect from 1st September The Biological Records Centre is moving from Monks Wood to:

Centre for Ecology and Hydrology
Maclean Building
Benson Lane
Crowmarsh Gifford
Wallingford
Oxfordshire
OX10 8BB

All of vascular plant archives are being transferred, in one form or another. Requests for cards and maps should still be addressed to Monks Wood for the rest of this year, and any new arrangements will be outlined in the 2009 Yearbook or in News.

I would like to wish them well in their new home, and to thank the staff at Monks Wood that have supported us in general, and me in particular, over so many years.

EDITORIAL

GWYNN ELLIS & TREVOR JAMES

Our thanks to all contributors who helped make this a bumper issue with several long but very interesting notes, and our apologies if some administrative and other notices appear in strange places this time – we ran out of space and had to squeeze them in where we could! Apologies also to those members

whose notes have had to held over until next time. Please continue to send your notes to Trevor with photos if available. We may not use all we get sent but it is nice to have a good selection to choose from.

Water-starworts (*Callitriche*) of Europe – BSBI Handbook No. 11 is now with the printers and should be published in October.

Birkbeck, University of London, in conjunction with the Ecology and Conservation Studies Society, have organized a series of seven free public lectures for the Autumn of 2008 on the theme 'What is Land for?': *Have we enough? Can we reconcile competing demands?*

Seven prominent speakers in this series will provide new insights and suggest possible solutions for the management of this key

resource. All lectures are from 6.30pm to 8.30pm on seven consecutive Fridays from 17th October to 21st November. Doors open at 6.00pm. Admission is free, but booking is essential. For free tickets and venue details, contact tel: 020 7679 1069, or e-mail: environment@fcc.bbk.ac.uk

Goronwy Wynne has been 'spring-cleaning' his library and has many botanical books available at knock-down prices. Phone him on 01352 780689 preferably around 9.30am or 6.00pm for details.

NOTES

Bladder Sedge (*Carex vesicaria*) and the Antarctic connection

ROD CORNER, *Hawthorn Hill, 36 Wordsworth Street, Penrith, Cumbria, CA11 7QZ*

Recently I attended a lecture by the renowned polar traveller Geoff Somers, who, amongst a multitude of polar exploits, recently re-created a journey with three companions to the South Pole using equipment and supplies similar to that used by Scott and Shackleton during the heroic age of polar exploration. Amongst the skis, boots and clothing they used, he produced a hank of sennegrass which, when teased out, was used as padding around the feet when reindeer skin boots were worn. Geoff had sourced the sennegrass from Lapps living 200 miles west of Kirkenes in Finnmark in the north of Norway.

I examined the sennegrass Geoff produced and I immediately thought it looked more like a sedge than a grass and wondered what it could be. It was only later and by chance when browsing in Lid (1963) I was surprised to see that the Norwegian name for *Carex vesicaria* was sennegrass. I hadn't considered it to be an especially boreal species, although it is given Circumboreal Boreo-temperate status by Preston and Hill (1997). It is much commoner in the south of Norway, where it ascends to 1000m in Hardangervidda but scattered in the north.

It was only after I had written this note that Gwynn Ellis drew my attention to a very relevant article in *BSBI News* by Mary Briggs on sene-

gras or 'shoe-hay' which I had missed (Briggs 1987). Mary describes in great detail the gathering and separation of sennegrass explaining how the best sennegrass comes from *C. vesicaria* growing in willows in semi-shade by water. Plants growing in open water in full sunlight are useless as the increase in lignin makes the blades too brittle when dried. Mary visited Swedish Lapland where the combing process producing sennegrass from the sedge leaves was demonstrated by a Lapp lady, shown in an accompanying photograph. Mary was able to try her hand at producing sennegrass herself. As a postscript she made the depressing point that the Lappish way of life was desperately threatened by the fallout from Chernobyl.

The Lapps must have found by trial and error that the dried leaves of the bladder sedge provided a relatively soft, absorbent insulating material superior to any other sedge or grass indigenous to Lapland. Not having access to wool, they wrapped the leaves round their bare feet before putting on their Finneskos (reindeer skin boots).

Fridtjof Nansen (1890) led the first expedition to cross the Greenland ice-cap. The party, including two Lapps, used sennegrass which Nansen knew was derived from *Carex vesicaria*. He reported that when used inside reindeer skin gloves 'they are exceedingly

warm.’ At the start of the expedition, the Greenlanders, having noticed that the Lapps were using sennegrass, offered them a ‘sennegrass’ to barter for needles. This was accepted, but with a tin of meat only, as needles were needed in case they had to overwinter. The Lapps were not impressed with this Greenland grass saying ‘it had been gathered at the wrong time of year, being winter grass taken with the frost on it, instead of being cut fresh and then dried in accordance with the practice of rational beings.’ As *Carex vesicaria* does not occur in Greenland it is a matter of conjecture which plant species from south east Greenland was used as the ‘inferior’ sennegrass. Nansen (1897) again used sennegrass during the epic journey on his attempt at the North Pole after leaving the Fram. He stated that it can be dried during the night by being worn inside the coat or trouser leg. In the morning it will be about dry and can be pressed into the boots again. Little by little it will be used up and if it is to last a long journey a good supply must be taken.

Shackleton (1910) described how the grass absorbs the moisture given off by the skin and prevents the sock freezing to the sole of the boot, which would be difficult to remove at night. The grass is pulled out at night, shaken loose and allowed to freeze. In the morning the frozen moisture can mostly be shaken away before the grass is replaced in the footwear. Scott (1905) used two pairs of socks inside the Finneskoes and only used the grass to pad out the toes and sides. The grass is used up on the march and although it is necessary to take a fairly large supply it is very light and takes up little room. Shackleton took fifty kilos of it from Norway. Interestingly Amundsen (1912) makes no mention of sennegrass when he discusses the important topic of foot wear on his highly successful expedition to the South Pole.

Under extreme conditions sennegrass can be put to other uses! Priestley (1914), in his account of one of most remarkable tales of survival during an Antarctic winter under appalling conditions, mentions that, when the small amount of tobacco they had was

finished, they were reduced to smoking tea leaves and wood shavings, but the ‘climax was reached when the would-be smokers were reduced to burning the senna-graes which we used to keep our feet warm in our fur boots.’

The Lapps have no need to use sennegrass now and it is only used for ‘show.’ It is worth remembering that anyone else from Britain planning to replicate Scott or Shackleton’s polar journeys need not travel to Norway for sennegrass, as a relatively plentiful supply could be sourced locally from the many sites where the sedge occurs in the British Isles. However the collection and preparation of *Carex vesicaria* is far from straightforward and advice from the Lappish Museum mentioned in Mary’s article should be sought first. Badly prepared and inferior sennegrass could result in frostbite! After Geoff’s lecture, I shall always associate the unremarkable Bladder Sedge with the heroic exploits of the early polar explorers.

Acknowledgement

I wish to thank Geoff Somers for his very informative and stimulating talk without which this note would not have been written.

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Arenaria norvegica ssp. *norvegica* re-discovered in Ireland after 47 years

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STEPHEN WARD & SHARON PARR, 14 Ballyvaughan Cottages, Green Road, Ballyvaughan, County Clare, Ireland

The only Irish record of *Arenaria norvegica* was made by John [Jack] Heslop-Harrison in June 1961 during a visit to the Burren, County Clare (v.c.H9), with a party of botany students from the University of Birmingham (Heslop-Harrison, Wilkins & Green, 1961). Plants were discovered in 'shallow crevices and solution hollows on an area of limestone pavement' at 800ft (244m) on 'the south slope of Gleninagh Mountain overlooking Caher Lower' (Heslop-Harrison *et al.*, 1961). Unfortunately Heslop-Harrison only realised the significance of the find later and he, nor any of his students ever returned to confirm the precise locality. This is very unclear from his description and although many have tried, no-one has refound it on Gleninagh or any other Irish mountain. This has led to suspicion that it may be extinct or that the original determination was erroneous (Webb & Scannell, 1983; Curtis & McGough, 1988). However, there is no question over its identity: a specimen was shown to Geoffrey Halliday, who germinated seed from it and counted the chromosomes ($2n = 80$).

In May this year two small colonies of *A. norvegica* ssp. *norvegica* (Arctic Sandwort) were discovered at a much lower altitude (80-100m) on the adjacent mountain of Carnsefin, a few km to the west of Gleninagh, near to Black Head. The first colony, of around 10 plants, was confined to limestone exposures in the middle of the 'green road' (photo 1, see Back Cover). Here plants were growing with *Minuartia verna* (Spring Sandwort) over a short distance of track in shallow soil and gravel-filled solution hollows, in an almost identical habitat to *A. norvegica* ssp. *anglica* (English Sandwort) in Yorkshire (Walker, 2000). A second larger population of 30 flowering plants was located close by, growing

in shallow solution hollows on limestone exposures (photo 2, see Back Cover).

The Irish plants (photo 3, see Back Cover) resembled ssp. *norvegica* in having small flowers (<10 mm), 4 styles and obovate leaves (in contrast to ssp. *anglica* which has flowers >11 mm with 3 styles and narrowly ovate leaves). The leaves were characteristically succulent, glossy-green and with a few basal cilia (in contrast to *A. ciliata* ssp. *hibernica*). However, they appear to flower a month or two earlier than ssp. *norvegica* in Scotland, as some Irish plants were already in fruit. In addition, the flowers were noticeably smaller and the leaves more obovate than Scottish plants.

The 2008 discovery therefore confirms the presence of this rare arctic-montane species in Ireland at its most southerly station in the world (53°N). The reason why it has evaded so many botanists for 47 years remains a mystery. A more thorough examination of the adjacent slopes is planned for next spring and will hopefully reveal a more extensive population.

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***Fraxinus excelsior* (Ash) as cattle food – and more**

DAVID BLOOMFIELD, *Hortons, Mascalls Lane, Brentwood, Essex, CM14 5LJ*

I have been a farmer all my life in this area. I am aware that cattle were of necessity, by descent, creatures of woodland. They will eat nearly every type of tree foliage. I am also aware that, early last century, it was reported that over half the food of cattle throughout the world was of tree origin. We often see today, in film from the under-developed world, whole landscapes, in drier parts mostly, cut in various ways, presumably for ruminant feed. We are all also aware of the browse line in cattle grazed areas. Present day cattle farming seems not to rely on tree products for feed. Roy Vickery is right in mentioning that cattle eat Ash leaves from fallen branches, or any other tree material, as well as stripping most of the bark. Stories of feeding this material to cattle and sheep in dry years are common. The amount of material available is, in most circumstances, finite, and the effort involved very great. With today's stock numbers, it is not really feasible. The work of Oliver Rackham, especially, covers this subject thoroughly.

For several years I have been researching shredded elms for winter feed. This involved taking all the side branches, almost to the crown, every three or four years; tying them into bundles; drying them; and storing them inside for later use. The only clear reference I have is Evelyn's *Sylva*, copied a few years

later by Worlidge. I have no later reference, but I keep searching. I have copies of early photographs showing this to be a dominant landscape feature, often seen in paintings and etchings of all periods.

My father was born here in 1913. When he was young he knew of families in which the first child home from school was given the job of taking the house cow to graze on the roadside. These people had little land. The effort of keeping a cow was considered worthwhile for the milk and butter. This was undoubtedly the type of person who would have latterly practised shredding. If they were able to write, they were unlikely to have left a record, and I have found no local folk memory. The landscape photographs are clear. Although good forestry practice, I feel it is unlikely to be the only reason.

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Ash as cattle food

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In response to the question raised by Roy Vickery regarding Ash as cattle food, in *British Wildlife* 19: 4, there is an article by Helen J. Read on pollarding of trees that covers this practice from a European perspective and includes fodder pollarding, which is/was not uncommon throughout. Elm is said to have energy levels equivalent to good

quality hay, and Ash to be equally nutritious, the latter being most commonly used in upland areas. Other leaves were also used, and as to the question of Holly, I believe that New Forest ponies find it particularly palatable. The article comments that the feeding of leaves as fodder is currently still practiced in the Spanish Basque country and Romania.

Ash as cattle food

JOHN P. MARSHALL, 54 Oak Avenue, Todmorden, OL14 5NT

Roy Vickery (*BSBI News*, 108) wonders if Ash leaves were ever fed to cattle. I would suggest it is only our practice of confining cattle to fields that obliges them to eat a diet mainly of grass. Ian D. Rotherham, in his chapter from *The Medieval Park*, says: ‘most livestock, wild or domesticated, will take leaf fodder or browse, if offered, in preference to grazing’. Similarly Frans Vera says: ‘References to cutting leaf fodder for livestock can be found in written sources as early as those dating from Roman times. The Elm (*Ulmus*) was considered the best fodder,

followed by Rowan (*Sorbus aucuparia*) and Ash (*Fraxinus excelsior*’. As for Holly, it was commonly fed to animals in this part of England, a practice acknowledged by the numerous farm names of ‘hollins’.

References:

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- LIDDARD, R. (ed.). (2007). *The medieval park: new perspectives*. Windgather Press, Oxford.

Cattle Food

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

In response to Roy Vickery (*BSBI News* 108: 25), I remember having reason to cut off a branch of Sycamore in my garden in the drought summer of 1976. It fell over the hedge into a pasture where the grass had dried

up. As soon as it hit the ground the resident small group of heifers raced across the field to it. Within two or three minutes every green leaf had been consumed.

[Several other communications along the same lines were received from various people. It is obviously a subject that has caught the interest of readers! *Ed.*]

White *Centaurea scabiosa*

MICHAEL ARTHERN, 279 Wendover Road, Aylesbury, Bucks., HP21 9PB

JILL GRAVES, 137 Windsor Road, Pitstone, Leighton Buzzard, LU7 9GG

White-flowered plants of *Centaurea scabiosa* (Greater Knapweed) (see Colour Section, Plate 2) were noticed by Jill Graves, growing on the bank of the former Pitstone Quarry, Buckinghamshire (v.c.24), during 2007. There

are about six of these plants this year. We wonder how common these white flowers are. They are not mentioned in any of the books we have so far consulted, and would be interested to know of others’ experiences.

Earlier flowering season

GEORGE STEELE, *The Cottage, 51 Pegasus Court, Rochdale, Lancs, OL11 4EA*

In the Global Warming Debate, one of the evidences offered is that of flowering seasons being earlier. I have been keeping regular records of my wild flower sightings since 1981 and I examined them for a particular location which I often visit during April – Eaves Wood, near Silverdale, Lancashire.

The following table shows the date and the number of species in flower.

Although the later the date there are generally more species in flower there is no general evidence over the 20 years period of a significant increase in species in flower during April.

Table 1 Flower sightings in Eaves Wood (54.18° N; 2.78° W)

	17/4/88	14/4/91	30/4/93	1/5/94	26/4/97	1/5/99	23/4/00	13/4/03	1/5/04	20/4/08
<i>Ranunculus ficaria</i>	*	*	*	*	*	*	*	*	*	*
<i>Helleborus foetidus</i>	*									
<i>Anemone nemorosa</i>	*	*	*	*	*	*	*	*	*	*
<i>Dentaria bulbifera</i>							*		*	
<i>Hesperis matronalis</i>					*					
<i>Meconopsis cambrica</i>			*			*				
<i>Alliaria petiolata</i>		*	*	*	*	*	*		*	
<i>Viola riviniana</i>	*	*		*	*	*	*	*	*	*
<i>Viola reichenbachiana</i>		*	*	*			*			*
<i>Stellaria media</i>			*	*	*					
<i>Stellaria holostea</i>			*	*						
<i>Stellaria graminea</i>					*	*	*		*	
<i>Geranium robertianum</i>									*	
<i>Oxalis acetosella</i>		*								
<i>Ulex europaeus</i>						*				
<i>Prunus spinosa</i>	*				*			*	*	
<i>Prunus avium</i>	*			*	*		*			
<i>Prunus cerasus</i>		*								
<i>Potentilla sterilis</i>	*	*	*	*	*	*	*	*	*	*
<i>Fragaria vesca</i>			*							
<i>Saxifraga tridactylites</i>	*						*			
<i>Erophila verna</i>							*			
<i>Circaea lutetiana</i>			*							
<i>Mercurialis perennis</i>	*	*	*		*	*	*	*	*	*
<i>Anthriscus sylvestris</i>						*				
<i>Acer pseudoplatanus</i>									*	
<i>Fraxinus excelsior</i>	*									
<i>Salix sp</i>	*									
<i>Primula vulgaris</i>	*	*	*	*	*	*	*	*	*	*
<i>Primula veris</i>	*		*	*	*	*			*	
<i>Primula vulgaris</i> × <i>veris</i>					*	*	*			
<i>Primula farinosa</i>	*									
<i>Veronica montana</i>			*			*		*		
<i>Myosotis sylvatica</i>	*		*		*		*		*	
<i>Myosotis arvensis</i>				*						
<i>Glechoma hederacea</i>		*	*	*	*	*	*			
<i>Ajuga reptans</i>			*			*				
<i>Galium odoratum</i>			*	*						
<i>Cruciata laevipes</i>						*				
<i>Bellis perennis</i>	*		*				*		*	
<i>Taraxacum officinale</i>	*		*	*	*	*	*	*	*	*
<i>Hyacinthoides non-scripta</i>	*	*			*	*	*		*	*
<i>Paris quadrifolia</i>				*		*				
<i>Arum maculatum</i>	*		*			*	*	*	*	
<i>Allium ursinum</i>			*	*						
<i>Orchis mascula</i>			*		*					
<i>Carex caryophyllea</i>				*		*				
<i>Carex sylvatica</i>						*				
<i>Total species</i>	19	11	24	18	19	23	21	10	18	9

Is there a limestone dry stone walls community?

JOHN PRESLAND, 175c Ashley Lane, Winsley, Bradford-on-Avon, Wiltshire, BA15 2HR

Introduction

Dry stone walls are the dominant field boundaries where rocky outcrops are common, the soil is thin and the climate is too harsh for hedgerows. They host an interesting variety of plants, fungi and lichens, yet very little has been found on the subject in existing literature. An earlier article in *BSBI News* (Presland, 2008) lists existing sources and explains that it was to make a start on detailed description of the flora that a survey was undertaken of the limestone walls in the West Wiltshire parish of Winsley, which is at the southern end of the Cotswolds. The findings raised questions as to whether the flora described there for dry stone walls represents a distinct type of plant community specific to these walls, or whether it is better regarded as relating to a community of walls in general, or even of a wider range of stone-based environments. These issues are addressed below.

Comparing different walls

The first question to ask when trying to relate the local dry stone wall flora described by Presland (2008) to wider plant communities is whether it is typical of dry stone walls or just a conglomeration of plants which happen to grow in this particular locality. The first step here might be to consider how far the Winsley community is typical of Cotswold or Mendip dry stone walls. This is difficult because of the scarcity of relevant studies.

Two studies of walls in Malmesbury, a North Wiltshire town also in the Cotswold area (Wiltshire Trust for Nature Conservation, 1986; Oliver and Wall, 2004), make little of the distinction between dry stone and mortared walls. However, all the flowering plants found on Winsley dry stone walls were recorded on the Malmesbury walls, except for *Geranium pyrenaicum* (Hedgerow Crane's-bill). All the ferns were also duplicated except for *Polypodium interjectum* (Intermediate Polypody), but distinguishing this from *Polypodium vulgare* (Polypody), which was listed for Malmesbury, can be problematic. Of

the six Winsley lichens, only *Caloplaca aurantia* and *Lecanora* (now *Aspicilia*) *calcareae* were recorded at Malmesbury, and of the nine Winsley bryophytes, only *Grimmia pulvinata*. But these groups did not receive as much attention in the Malmesbury survey, so at least some of the others were probably overlooked. The high level of correspondence between dry stone wall flowering plants and ferns in the two localities suggests the existence of similar communities, but the Malmesbury dry stone walls would need to be looked at specifically to be sure about this. Likewise, Grose (1957) lists much the same vascular plants on limestone walls in Wiltshire, without distinguishing dry stone walls or the Cotswold area. More generally, a publication of the Cotswold Area of Outstanding Natural Beauty (undated), though describing the flora only by reference to Pennywort, Stonecrop, Crane's-bill, Ivy, Spleenwort, Polypody and Wall-rue, suggests that the flora is very similar to that observed in Winsley. The 2008 article also compared the Winsley findings with those of Payne (1989) in the Mendips, which provided further support for the notion of a limestone dry stone wall community. However, whether the Winsley walls are typical of Cotswold and/or Mendip dry stone walls generally cannot be demonstrated with so little relevant data. The same applies to comparisons with calcareous dry stone walls in other areas.

The 2008 article goes on to look at whether dry stone walls and mortared walls made of limestone host distinct communities. The Winsley study found the floras were very different, and some support for this was reported from Payne's study. There is also the question of whether the findings apply to all dry stone walls or only those made of limestone. The only study located of dry stone wall flora on acid walls was in the Shetlands (Williams 1988). It also noted differences between dry stone and mortared walls, but the lists of plants are completely different from those recorded in Winsley. Furthermore, there

was only one species (*Sedum rosea* (Roseroot)) which is characteristic of rocky substrates, all the others being invaders from other habitats. Clearly it is not the community found in Winsley or on dry stone walls studied elsewhere in the Cotswolds or in the Mendips. It is likely that other studies of acid dry stone walls would produce similar results, though there is a need to check this by surveys elsewhere.

To summarise the argument so far, it is a reasonable hypothesis that limestone dry stone walls host a flora which is different from that of limestone mortared walls and different from that of any kind of wall made from acid rocks.

Is there a distinctive plant community on limestone dry stone walls?

Even if the flora of dry stone walls is different from that of mortared walls, and the flora of limestone dry stone walls is different from that

Table: Comparison of species on Winsley dry stone walls and Rodwell Communities

Winsley	OV39b	OV41a	OV42
Habitat: Tops and upper sides of dry stone limestone walls in sunny positions in the moderate altitudes of the Cotswold area	Habitat: Sunny crevices in lime-rich bedrocks and wall-mortar at low to moderate altitudes, particularly in western Britain	Habitat: Sunny crevices and ledges in walls and on rock faces in quarries and natural cliffs in the warmer and drier southern lowlands of Britain	Habitat: Sunny crevices among the stone- and brick-work of boundary walls and buildings throughout the lowlands of Britain
Constant species: <i>Homalothecium sericeum</i> <i>Tortula muralis</i> <i>Grimmia pulvinata</i> <i>Bryum capillare</i> <i>Geranium lucidum</i> <i>Schistidium apocarpum</i> <i>Sedum acre</i>	Constant species: <i>Asplenium ruta-muraria</i> <i>Asplenium trichomanes</i> <i>Porella platyphylla</i> <i>Homalothecium sericeum</i> <i>Festuca ovina</i> <i>Thymus polytrichus</i> <i>Arenaria serpyllifolia</i> <i>Sedum acre</i> <i>Koeleria macrantha</i> <i>Helianthemum nummularium</i> <i>Hypnum cupressiforme</i> <i>Fissidens cristatus</i> <i>Cladonia pocillum</i> <i>Tortella tortuosa</i> <i>Weissia controversa</i> <i>Encalypta streptocarpa</i>	Constant species: None	Constant species: <i>Cymbalaria muralis</i>
Frequent species: <i>Orthotrichum anomalum</i> <i>Saxifraga tridactylites</i> <i>Porella platyphylla</i>	Frequent species: <i>Medicago lupulina</i> <i>Sanguisorba minor</i> <i>Saxifraga tridactylites</i> <i>Calamintha acinos</i> <i>Tortula ruralis ruralis</i>	Frequent species: <i>Homalothecium sericeum</i> <i>Tortula muralis</i>	Frequent species: <i>Homalothecium sericeum</i> <i>Schistidium apocarpum</i>

Constant species occur in 61% or more of samples of the community.

Frequent species occur in 41% or more of samples of the community.

of their acid counterparts, it does not follow that the limestone dry stone wall flora is unique. It could still be regarded as part of a wider community type not necessarily confined to walls, but including other rocky environments. Unfortunately, this has been little investigated. The detailed classification of British plants communities accomplished in recent years (Rodwell, 2000) has not identified an association for this environment. Is it possible, though, that it could be encompassed by communities or sub-communities identified by Rodwell for rocky environments? There are three possibilities – OV39b, OV41a and OV42, all of which have walls and, at least by implication, mortar mentioned as among their habitats, though there is no reference to dry stone walls. Each is compared in the Table and associated text below with the Winsley dry stone wall flora, using Rodwell's criteria for identifying constant species of the community (occurring in 61% or more of samples of that community) and associated common or frequent species (41% or more samples). The percentages of sites for species on Winsley walls are not totally comparable to Rodwell's percentages, but it is not clear how the latter could have been applied locally, and the comparison is still useful in relative terms.

OV39b - This has *Homalothecium sericeum* and *Sedum acre* (Biting Stonecrop) as constants, as does the Winsley dry stone wall community. *Porella platyphylla* is another constant and is frequent in Winsley. *Saxifraga tridactylites* (Rue-leaved Saxifrage) is frequent in both communities. This leaves twelve constants and four frequent species of OV39b neither constant nor frequent on Winsley dry stone walls. Five Winsley constants and one frequent species are neither constant nor frequent in OV39b. Plainly, there is a small overlap in the defining species, but there are marked differences between the two communities and no clear common element in the habitat apart from calcareous rock. It is significant that *Asplenium trichomanes* (Maidenhair Spleenwort), constant in OV39b, is locally frequent on mortared walls in Winsley but has not colonised the dry stone walls at all.

OV41a - This has no constant species, whereas Winsley dry stone walls have seven. Of these seven, only *Homalothecium sericeum* and *Tortula muralis* are frequent species in OV41a. None of the three Winsley frequent species are either constant or frequent in OV41a. The two communities seem to have little in common. The only common element in the habitats is rock, which apparently does not even need to be calcareous in OV41a.

OV42 - The only constant is *Cymbalaria muralis* (Ivy-leaved Toadflax), which was not observed at all on the Winsley dry stone walls. The two frequent species are *Homalothecium sericeum* and *Schistidium apocarpum*, both constant in Winsley. This leaves five Winsley constants and three Winsley frequent species neither constant nor frequent in OV42. The differences between the two communities are marked and the only common feature in the habitats is walls, which, in OV42 do not have to be calcareous and do not have to be dry stone walls - indeed, there is an implication that the OV42 walls are mortared. *Cymbalaria muralis* is extremely common on mortared walls in Winsley, but has not appeared at all on the dry stone walls.

To sum up these comparisons, the Winsley dry stone wall community does not fit the descriptions of any of the three Rodwell communities compared with it. Some plants characteristic of those communities have not colonised the dry stone walls even though available in the area to do so, so can be regarded as not part of the Winsley dry stone wall community. It looks, therefore, as though a new community type is needed to accommodate the latter. The possibility that it could be a new sub-community of one of the OV communities cannot, however, be dismissed.

Implications

The data above point in the direction of the existence of a distinctive plant community on limestone dry stone walls. This contrasts with Darlington's (1981) claim that it is difficult to envisage a wall as a plant environment without taking into account what happens in the surrounding area and especially in the

immediate vicinity, and it might be better to regard walls as specialised features of larger environments. However, he shows little awareness of dry stone walls, and the flora of those in Winsley shows hardly any relationship to the flora of the surrounding area, apart from occasional invasion of *Geranium pyrenaicum*, and appears to be an ecological entity in itself.

In view of the paucity of evidence, at this point it can be only a hypothesis that there is an identifiable plant community which is characteristic of limestone dry stone walls but not of other habitats. The Winsley survey could be the first attempt to describe such a community in detail. On the basis of its findings, it is a reasonable hypothesis that Cotswold and Mendip limestone dry stone walls have a plant community consisting of crustose lichens (including *Caloplaca aurantia*, *Caloplaca citrina*, *Lecanora campestris*, and *Aspicilia (Lecanora) calcarea*), *Homalothecium sericeum*, *Tortula muralis*, *Grimmia pulvinata*, *Schistidium apocarpum*, *Bryum capillare*, *Geranium lucidum* (Shining Crane's-bill), *Saxifraga tridactylites*, *Sedum acre*, and *Porella platyphylla*, with occasional *Geranium pyrenaicum*, *Orthotrichum anomalum*, *Rhynchostegium confertum*, *Polypodium interjectum* and *Xanthoria parietina*. Other species might be regarded as occurring less commonly under particular conditions - such as *Encalypta vulgaris*, *Erophila verna* (Common Whitlowgrass), *Sedum rupestre* (Reflexed Stonecrop), *Galerina pumila*, *Ceterach officinarum* (Rustyback), *Phyllitis scolopendrium* (Hart's-tongue), *Umbilicus rupestris* (Navelwort), and *Cladonia pyxidata*.

How far the pattern described here applies throughout the Cotswolds and to dry stone walls more widely depends on a great deal of further investigation. Similar investigations elsewhere could reveal different combinations of plants on dry stone walls in different districts or constructed of different kinds of stone. Similar communities might occur in habitats other than dry stone walls. A range of

surveys of different dry stone walls and other possible habitats would be needed for confident views on these matters. The information which such surveys accumulated would, hopefully, allow more informed discussion of how the plant communities of dry stone walls fit into the National Vegetation Classification.

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The topic can be studied further on the website www.dry-stone-wall-flora.co.uk

Leaf arrangement; an alternative approach to phyllotaxy

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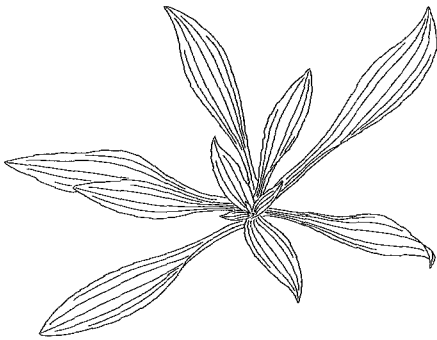
Leaf arrangement (phyllotaxy) is a major character which underpins vegetative identification. In the impending *Vegetative key to the British flora* (expected March 2009), a distinction between 'leaves opposite' and 'leaves alternate' is required early in the keys. This is very obvious when the leaves are on a stem but perhaps many botanists are unaware of a simple method of recognising the arrangement in rosette leaves.

For example, rosettes of *Succisa pratensis* (Devil's-bit Scabious) may occasionally be confused with *Centaurea nigra* (Common Knapweed). As readers will be aware, *Succisa* (Dipsacaceae) has opposite leaves whilst *Centaurea* (Asteraceae) has alternate leaves. But how does one differentiate this from a basal rosette? Easy. The opposite rosette leaves of *Succisa* can be paired off (i.e. the

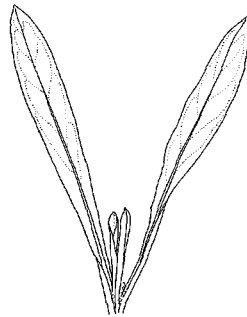
leaves are of equal length because each pair grow from the same node), whilst the leaves of *Centaurea* cannot be paired as none of the leaves are of equal length. Simple!

It is well known that opposite leaves are often decussate (i.e. each successive pair of leaves are perpendicular to each other) on stems, and that alternate leaves are usually spiraling (demonstrating the famous Fibonacci series). Leaves of rosettes are no different. Opposite-leaved species often give a neat cross-like appearance. Alternate leaves are typically spirally arranged, giving rise to a more untidy rosette.

Two common rosettes showing classic examples of phyllotaxy are *Plantago lanceolata* (Ribwort Plantain) and *Lychnis flos-cuculi* (Ragged-robin) and have been drawn by Rosalind Bucknall below.



Plantago lanceolata (rosette of alternate leaves)



Lychnis flos-cuculi (rosette of opposite leaves)

both del. R. Bucknall © 2008

Phyllotaxy can change along the length of a stem. Lower leaves can be opposite, whereas the upper leaves are alternate. The reverse situation never occurs, partly due to the fact that the pair of cotyledon leaves are normally

opposite (although in some tuberous plants, such as *Conopodium majus* (Pignut), one cotyledon is suppressed). Interestingly, no British species with whorled leaves forms basal rosettes.

Diagravitropic *Salicornia* by the River Medway

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Salicornia prostrata Pallas was illustrated by Florence Strudwick in Butcher and Strudwick (1944) - a companion to Bentham & Hooker (1937), then in its 7th edition. In this companion volume 'the British varieties *prostrata*, *ramosissima* and *pusilla* of *S. herbacea* L.' were illustrated. Later, Clapham, Tutin & Warburg (1952) recognized *S. prostrata* agg., split into three species. Most, if not all, prostrate *Salicornia* plants have much in common with species firmly identifiable as diploids. They have short flowering spikes with bulging fertile segments. Some may even be genetically indistinguishable from erect specimens, although this remains an apparently unsupported assertion. The prostrate habit is not even mentioned in current floristic literature, nor is it mentioned in the only comprehensive ecological study of British *Salicornia*: Davy *et al.* (2001). This is indeed curious, considering the considerable attention it once received.

This note relates to my own observations of *Salicornia*, and its departures from the vertical. In it I introduce some hypotheses concerning plant habit, genetics and ecology, and I shall try to reconcile my original identifications of *Salicornia* taxa found on the estuary of the River Medway in the early 1950s with the latest published accounts. As Rose (1989) suggested, 'good photographs form perhaps the only satisfactory method of permanent record' of *Salicornia* specimens. I therefore illustrate* my account(s) so that other field botanists will know what most of the plants I saw looked like. Representational line drawings have their uses but are less adequate. I hope to return to this theme in a subsequent note.

It seems, intuitively, that the erect habit is ancestral in the genus *Salicornia*, and the universally decussate arrangement of the shoot would support this conclusion. Specimens that depart from the erect habit are variously described as prostrate, procumbent or decumbent. Where sharply distinct genetic

variants exist in any proportions within a single interbreeding population (even if such interbreeding is facultative) in a given area they may be regarded as 'morphs'. Where out-breeding is limited, as in *Salicornia*, any given morph produced by a cross-pollination event may, as a result of selection and attainment of homozygosity through inbreeding, produce a distinctive uniform local population. As Davis & Heywood (1963) commented, the recognition of inbreeding helps the taxonomist to understand the variation pattern but does not tell him what should be recognised and named.

There are undoubtedly prostrate or decumbent phenotypes, but procumbent (see definition in Stace, 1997: *i.e.* trailing along the ground?) seems somewhat inappropriate, suggesting a passive rather than an active response of the shoot axis to gravity. How do these phenotypes originate? Any *Salicornia* plant, especially if luxuriant, may fall over (becoming prone) through the action of tide and/or wind; or, plants may be trampled to the ground. 'There's your prostrate *Salicornia*', one botanist is said to have remarked as his boot descended (this is apocryphal of course). There is a suggestion (in Clapham *et al.*, 1987) that *S. ramosissima* may become prostrate on hard stony mud. 'Pseudo-prostrate forms', *produced* (my italics) where plants are subject to trampling or high velocity currents, were mentioned by Davis & Heywood (1963). This, I suggest, is accidental, not heritable and not adaptive.

It has been implied, rather than demonstrated, that the prostrate habit described in Bentham & Hooker (1939) as 'lying even closer to the ground') is not necessarily genetically controlled; *i.e.* that it can be a plastic response to local conditions. Cultivation produces atypical phenotypes of *Salicornia* species, with plants flowering precociously at a few weeks old (Davy *et al.*, 2001). The impossibility of maintaining plants in representative form is noted by

Ingrouille & Pearson (1987). This is evidently why one does not come across any experimental studies of *Salicornia* that might clearly demonstrate whether either the prostrate or the decumbent habit has a Mendelian genetic component. I hope to justify my opinion that non-erect forms are usually genetically mediated, and distinct both from each other and from archetypal, erect, *Salicornia*. Further, I suggest, that different selective forces act to promote survival of some recombinant genotypes produced by an out-breeding event, and that certain, possibly linked, characteristics, such as 'long flowering spikes and quadruple branching' can be fixed to give similar 'morphs' in quite distinct species or aggregates (Fig. 1, p. 16).

The word prostrate is not used in descriptions of *Salicornia* in recent British floras. The nearest term implying departure from upright is 'procumbent', used in the description 'erect to procumbent' in relation to one diploid species (*S. ramosissima*) and one tetraploid species (*S. dolichostachya*) by Stace (1997). The decumbent ('procumbent but with the apex turning up to become ascending or erect') character of the last species was indicated by Florence Strudwick (see above) and by Sybil Roles (no. 403 in Clapham *et al.*, 1957). These drawings each show a short (2 - 5cm) horizontal, branchless basal region of the main shoot axis comprising the expanded hypocotyl, and a few internodes. The illustrations and my photograph (Fig. 1, p. 16) show the decussate branching typical of non-prostrate *Salicornia* specimens, although this is obscured in Strudwick's drawing (no. 308) of *S. dolichostachya*, as alternate branch pairs have been reduced to stumps. The drawing was probably of a specimen trimmed for pressing. Her drawing also shows the bushy habit and the quadruple branching at the upper nodes that seems particularly associated with decumbency in *Salicornia*.

Such branching, low down on the main axis, occurs in decumbent species distinct from the tetraploid *procumbens* aggregate. This is illustrated by three specimens from a distinctive population from Grain (Fig. 1b, p.

16). These must be presumed diploid, *i.e.* belonging to the *S. europaea* agg., despite their overlong (*dolicho-*) spikes (some up to 70mm.). The Stace description of the diploid (reddish purple) *S. ramosissima* Woods (maximum spike length 40mm.) gives the nearest approximation to their colour (at maturity) and habit. Convergent evolution from tetraploid and diploid archetypes must be invoked to explain the similarities.

That procumbency is now enshrined in a 'lumping' specific name, *S. procumbens* Sm. agg. (Stace, 1997) suggests that there is a genetic predisposition to a sub-erect habit among the tetraploids. There is no such acknowledgement for the prostrate habit of some British diploids, despite this having been well-illustrated in the older literature. I here pose a (rhetorical) question: is *Salicornia* ever a passively *trailing* plant (as perhaps is *Sarcocornia perennis*)? Could not departures from an erect architecture in *Salicornia*, depend on an active diagravitropic response during specific phases of growth?

Prostrate taxa do not appear in recent general works on the British flora, although Clapham *et al.* (1987) lumped three prostrate species in *S. ramosissima* Woods. The latter is 'erect to procumbent', according to Stace (1991). A specimen (Fig. 2a, p. 18) that I identified in 1951 as *S. prostrata* Pallas. var. *appressa* Dum. illustrates the prostrate habit. According to the latest accounts it would key out as the diploid ($2n = 18$) *S. europaea* L. agg. It grew in the wall dyke at Middle Stoke (TQ8575). Not only are its major branches sub-equal, but the ancestral decussate arrangement of secondary branches and the flowering apical shoots are superficially compromised. At all vegetative nodes both branches of each pair *curve downwards* (Fig. 2b, p. 18). It may be hypothesized that almost the entire vegetative region of the shoot system of such a plant is diagravitropic, whilst this condition is modified in the short flower spikes, allowing them to grow upwards – the whole system representing, perhaps, a single gene effect. Here it should be noted that Davis & Heywood (1963) 'found genetically

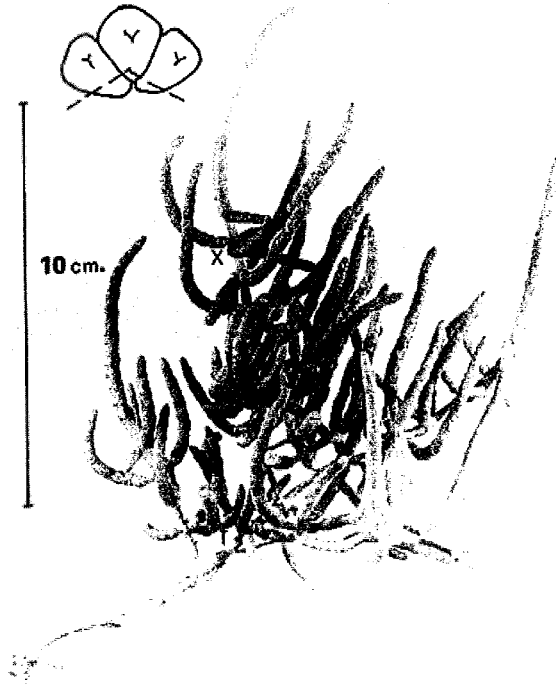


Fig. 1a

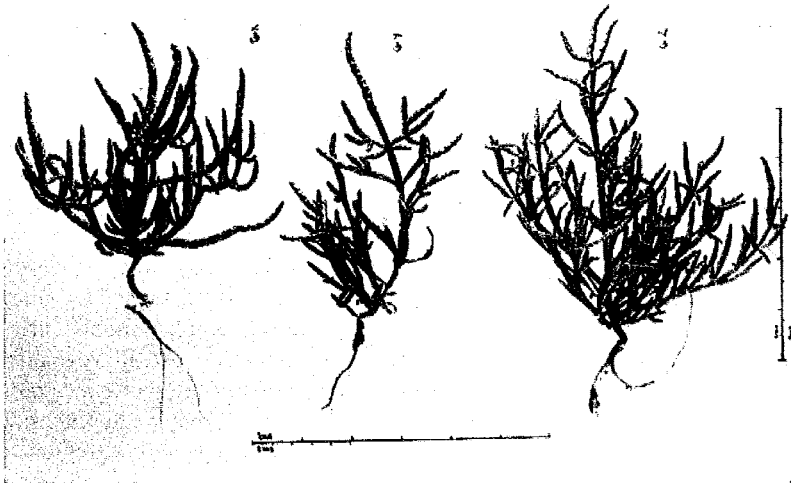


Fig. 1b

Fig. 1. (a) *Salicornia dolichostachya* Moss (*S. procumbens* Sm. agg.): Long-spiked Glasswort. Colonist at the lowest tide-scoured levels of the marshes; present at many sites on the Medway estuary. Inset: a flower-group. 'X' marks a single node with four flowering spikes typical of the species. (b) dark-reddish shiny decumbent *S. ramosissima* plants from the blocked Yantlet Creek, Grain (shown in Fig. 6a).

prostrate', and erect plants in an F₁ population of *S. ramosissima*.

The attitude of lateral branches arising on an erect plant axis is adjusted by a programmed response to gravity. Where the axis is prostrate, the 'dorsiventral' orientation of the growing branch, is inoperable. This results in loss of mechanisms that produce upward curving branches or a strict habit. Wide-spreading branch pairs are thus characteristic of prostrate plants.

Although Jefferies & Gottlieb (1982) suggest that both *S. europaea* and *S. ramosissima* 'appear to consist of different homozygous lineages', outbreeding and therefore genetic segregation must occur sometimes in nature, even in these predominantly cleistogamous species. If any out-breeding event produces plants homozygous for an allele, promoting either the erect or the prostrate habit, subsequent self-pollination may carry this trait onwards 'through hundreds of generations' (Davis & Heywood 1963, quoting G.L. Stebbins). Human activity has ensured a succession of temporary open habitats, where the prostrate habit could be no disadvantage, behind sea walls, since medieval times. A genetically mediated prostrate habit would obviously be disadvantageous for plants in a tidal habitat with deposition of silt. Juveniles with a prostrating genetic imperative, would be eliminated in such a habitat.

Davy *et al.* confirm from their perusal of the literature that crowding of *Salicornia* induces it to react with etiolation. This plastic response is illustrated (Fig. 3, p. 20). The large decumbent specimen on the left seems to have *begun its life*, with its shoot axis horizontal. The two obviously etiolated specimens also show this basal feature. The completely prostrate specimen (Fig. 2, p. 18) from the same population grew in an open community, on firm ground, which merged with more luxuriant plants (in wet and crowded conditions, and shaded by *Phragmites australis*), where upwards growth could have been the only eventual 'option'. This, in turn, passed into a *Phragmitetum*,

where upward growth, with no branching, was the only physical possibility. My conclusion, at the time, was that the *prostrate habit was the norm here*, and that the decumbent and erect phenotypes were produced through plasticity.

Those tetraploid 'forms' with greatest exposure to waves, tide and mud generally possess long, green relatively flexible (often quadruple at a node) flowering branches (Fig. 1, p. 16). These belong to the *S. procumbens* Sm. agg. (even though some of the constituent species are erect) recognized by Stace. The combination of low profile and flexibility seems like an evolutionary adaptation to tidal shear. It is not often found in the flowering branches of diploid species (but see Fig. 1b, p. 16). Polyploidy, as an event in plant evolution, has often been associated with colonization of open habitats, less hospitable to the ancestral diploid. The decumbent habit, with crowded yet flexible, erect flowering spikes, might be particularly adaptive in the lowest parts of salt marshes where tall erect shoots would be less stable. I suggest that the plants illustrated in Fig. 1b represent a convergent diploid lineage selected, many generations ago as Yantlet Creek was cut off from the Medway.

Of the four diploid species acknowledged by Stace (1997) none is described as prostrate, and only *S. ramosissima* shows any leanings towards the ground; *i.e.* it is described as 'erect to procumbent'. Have all the prostrate plants we find become this way through traumatic contact with boots? Or has some unidentified environmental influence been at work on plants programmed to be upright. The hard stony mud habitat of prostrate *S. ramosissima*, described in Clapham *et al.* (1987), occurs in places along the River Medway (Fig. 4, p. 20), whilst the other typical habitat of this phenotype recognized by these authors is bare, rather firm mud and behind sea walls. This habitat is illustrated in Fig. 5, p. 21, which shows erect and prostrate plants, similar in other respects, growing very close together. The prostrate plants here were identified, in 1951, as *S. prostrata* Pallas var.

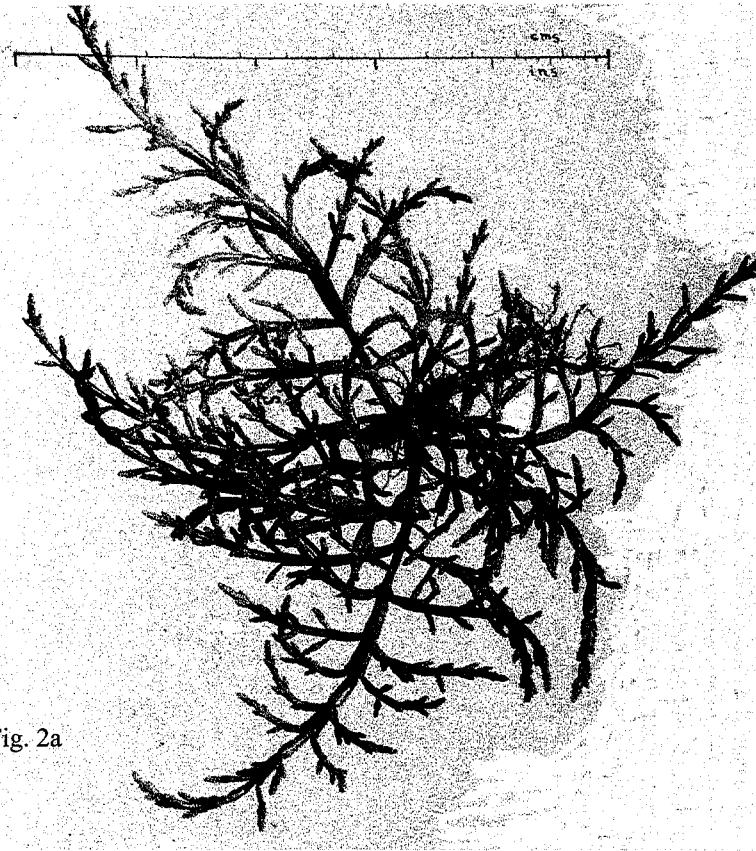


Fig. 2a

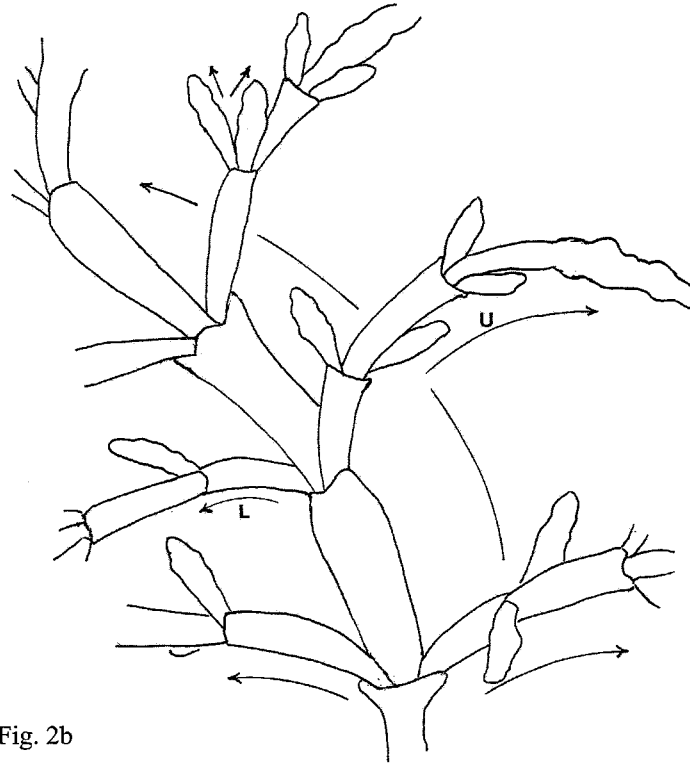


Fig. 2b

Fig. 2. (a) A prostrate specimen, from Middle Stoke (TQ8575) identified, in 1951, as *Salicornia prostrata* Pallas var. *appressa* Dum., but keying out in modern literature to *S. europaea* L agg. (b) An interpretation of part of the shoot system of the same plant showing down-curving of terminal branches, and the wide angle between opposing branches of each pair. 'U' = 'uppermost', 'L' = 'lowermost' member of a pair genetically constrained to grow a single plane.

appressa Dum., as they agreed closely with Strudwick's drawing (no 312). The erect plants appear to be conspecific, with similar segmentation and coloration, and could only be regarded as an 'elegant form' of *S. ramosissima* ('ramosissima' = with many branches!).

A ground-hugging habit allows any plant to avoid disadvantageous conditions such as desiccation or mechanical damage associated with wind - as might be expected in the bare firm habitat of Fig. 4, p. 20. It might also, under other circumstances, be advantageous. On 27th September 1951 I investigated a polymorphic *Salicornia ramosissima* population straddling the dyke behind the modern sea wall on the Isle of Grain. Here, the wall, built in the early 20th Century, had cut across Littlechalk Fleet (Fig. 6a, p. 22). This once joined Colemouth Creek of the Medway estuary. The site of this population is illustrated (Fig. 6b, p. 22). About 69% of individual plants here were prostrate. Of all the plants examined, 34% were decapitated by grazers, but whereas more than 60% of the sub-sample of erect plants were damaged in this way, fewer than 30% of prostrate plants were affected (Fig. 7, p. 23). From this (although no statistical significance is claimed for the figures) it seems that the erect habit might sometimes be disadvantageous to individuals in the face of grazing pressure; reflecting perhaps the preferences of hares (abundant here) for the more elevated apices of *Salicornia*. Grazing pressure, over many generations, may well have contributed to fixation of a 'prostrating gene' in some *Salicornia* populations. Polymorphism, however, cannot be 'balanced' in a population with recurring trends towards homozygosity.

Grain (Fig. 6a, p. 22) may be taken as an example of an estuarine terrain providing a long term succession of transient habitats for prostrate plants. It was once an island with a network of channels, causeways and walls, some dating back to the 13th Century. Saline dykes behind sea walls have, for centuries, provided sheltered, hare-grazed, habitats for *Salicornia* phenotypes unable to survive on

tide-washed mud. Transient polymorphism following out-breeding events within local populations of diverse *Salicornia* taxa constitutes the only likely explanation for the sometimes co-existence of morphs with negatively gravitropic and diagravitropic shoot axes. A resumption of inbreeding and selection for habit (or for any other characteristic) results in a locally distinctive population.

Conclusions

It is generally accepted that the diploid/tetraploid division of the genus *Salicornia* is fundamental to its evolution and taxonomy. Phenotypes assignable to each division that may be described as erect, prostrate or decumbent were all present along the Medway Estuary in the 1950s, often as local populations uniform in habit, but unique in other respects. Although plasticity may cause some confusion, erect and non-erect phenotypes in both divisions are characterised by their genetically mediated gravitropic responses. Diagravitropism of the lower part of the shoot only, produces a decumbent plant, whilst diagravitropism of almost the entire shoot produces a prostrate plant. The decumbent habit, with elongated and tapering fertile spikes, is associated with quadruple branching in both divisions. Pleiotropy, of a single gene, or a close linkage group, might be invoked to account for this.

Decumbent and prostrate morphs are, I suggest, selected by entirely distinct environmental circumstances, and do not appear to represent a continuum. The suggestion by Jefferies & Gottlieb (1982), that 'some populations of *S. ramosissima* containing plants ... genetically distinct for habit (prostrate v. erect) should now be re-studied, and genetic segregations demonstrated', may not yet have been taken up. An investigation of the Mendelian genetics and adaptive nature of diagravitropism in *Salicornia* might be profitable.

An explanation

It will be obvious that this article is based on field observations made over half a century ago. It is to be hoped that it, and further notes to be

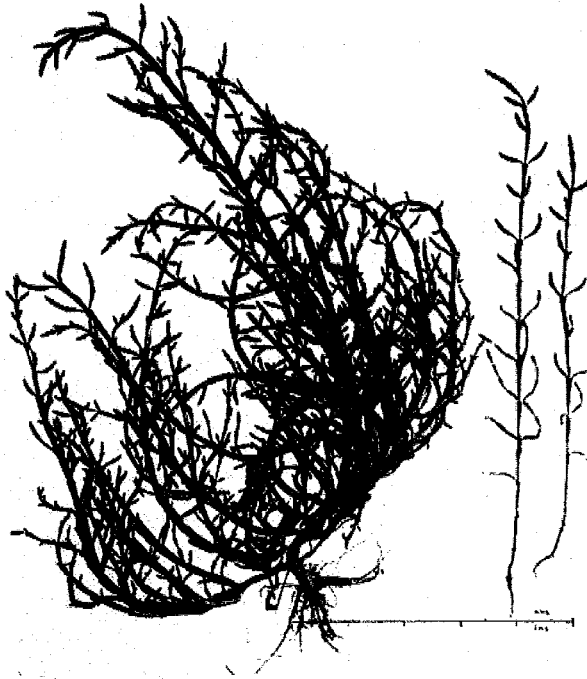


Fig. 3. Plasticity: sub-erect to erect habit induced by crowding and shading. Specimens from the same *Salicornia europaea* L. agg. population as the completely prostrate plant of Fig. 2. The decumbent specimen on the left was crowded amongst others of similar appearance. The specimen in the centre was from very densely crowded conditions: that on the right was from the adjoining *Phragmitetum australis*. From the wall dyke, Middle Stoke TQ8575. Photographed: 22 Aug. 1951.



Fig. 4. Whitewall Creek (TQ7569). Stony waste ground, above HWOT, with abundant prostrate *Salicornia* that was identified in 1951 as *S. smithiana*. Photographed 21 Aug. 1951.



Fig. 5a

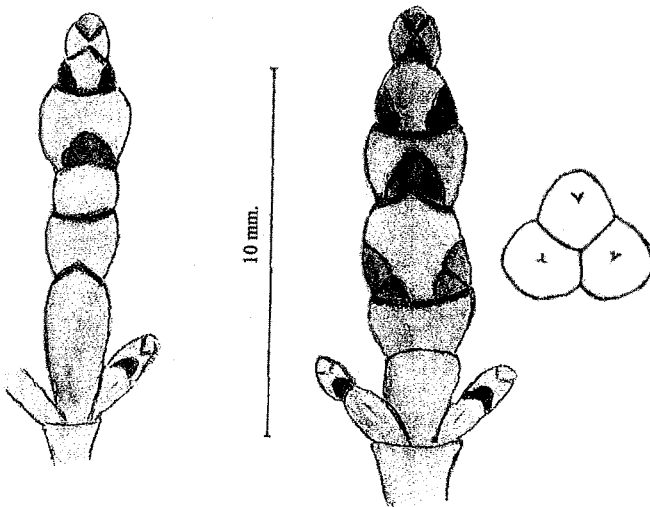


Fig. 5b

Fig. 5. (a) Erect and prostrate *Salicornia* growing marginal to the wall dyke at Bayford (TQ8368). *Triglochin maritima* (top left, not in focus) and dark diatom films accompany the *Salicornia* on this firm substratum next to the wall. The inland bank, a metre to the left across shallow water, was dominated by *Juncus maritimus*. (b) fertile shoot apices of a prostrate plant, left, and an erect plant, right with an enlarged sketch of a flower group.

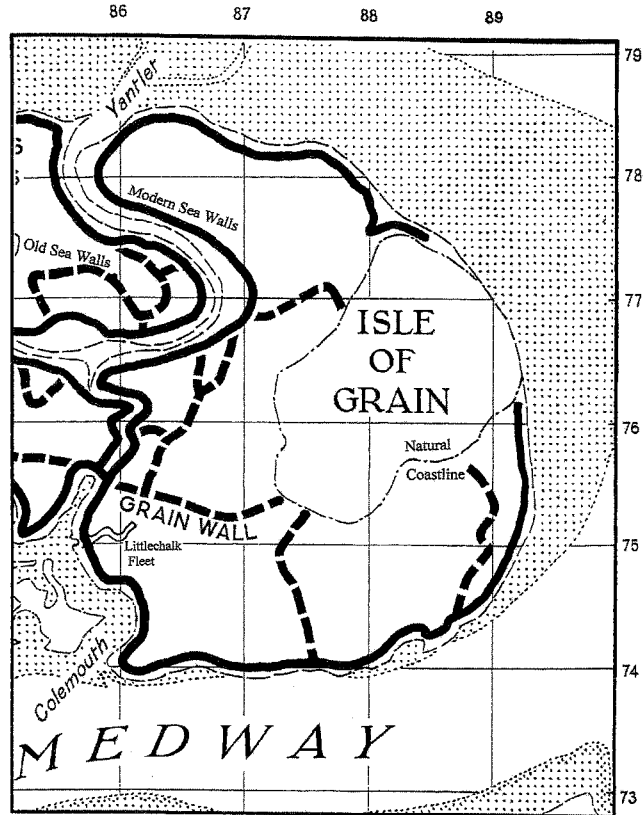


Fig. 6a

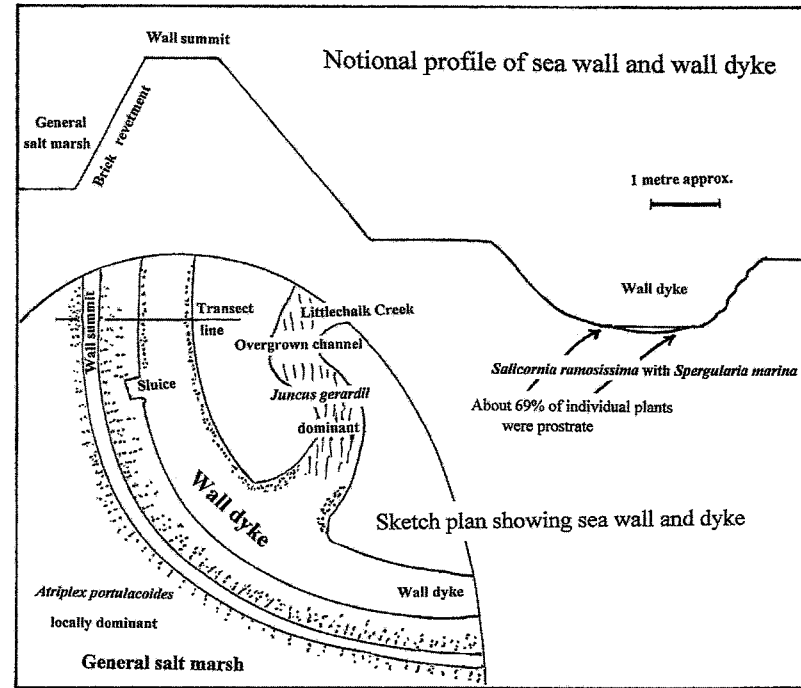


Fig. 6b

Fig. 6. (a) Evidence of long-continuing modification of an estuarine landscape. Detail, modified, from an unpublished map (c.1950) by the late John H. Evans FSA. (b) The habitat of prostrate and erect *Salicornia* c.f. *ramosissima*. Top: profile of the sea wall bounding Colemouth Creek on the Medway estuary. Bottom: sketch map showing the borders of the wall dyke colonised by *Salicornia* (stippled).

written-up, might stimulate general interest in a difficult genus where most people 'give up'.

*My photographs are monochrome, and were taken in 1951, in daylight, with a 2¼' × 3¼' plate camera on Ilford orthochromatic film. Specimens were supported on a sheet of non-reflective glass to avoid shadows. With less-clumsy modern equipment Francis Rose's suggestion regarding photographic recording may usefully, and more-easily, be taken up.

Acknowledgement

I am indebted to my friend, the late John H. Evans, who kindly supplied me with a copy of his unpublished map showing the marshes and sea walls of the Lower Medway and Hoo Peninsula.

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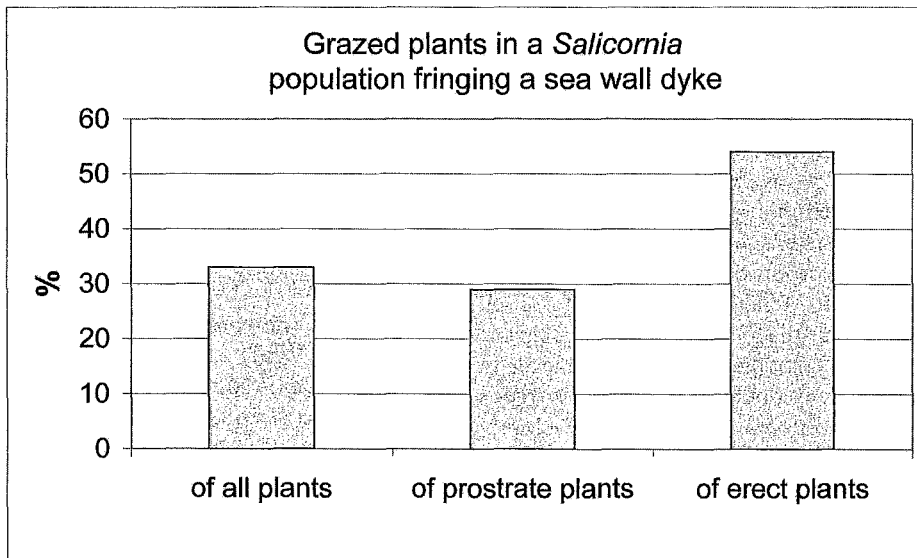


Fig. 7. A possible preference for erect plants by hares: not statistically significant. Grain, 27 Sept. 1951

Local Sycamores (2): vigour, progeny and unpredictably variable leaf-shapes and colours

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Green (2005) disposes of the three arguments against *Acer pseudoplatanus* (Sycamore) being native to Britain, although pre-Roman populations may have been decimated by fungal diseases. Sycamores have sprung back, and a local Wiltshire tree at SU150675, with special characteristics, may be even more prolific than the familiar Sycamore with palmate leaves.

In this vicinity, all the mature Sycamores, including the mutant tree (and the one producing healthy samaras at 120cm tall) (Oliver, 2007) have green leaves. Many are trimmed in hedgerows, but about 12 flowering and fruiting trees are within easy cross-pollination range of the mutant. Most seedlings have ovate-cordate juvenile leaves, with weakly and irregularly crenate-serrate margins. Four veins radiate from the base, but the distal venation is pinnate (seedlings of *Acer platanoides* (Norway Maple) are similar, but with smooth margins). It is in the second to tenth year saplings that unusual features start to occur.

The mutant parent tree looked normal for its first 15 years, but from then, in each successive year onwards, the proportion of normal, palmately-lobed leaves gradually diminished. By 2008, its 28th year, less than 25% of its leaves have the normal, palmate venation. In May 2008, 75% were pinnately veined, and often ovate-elliptic or elongated; but with some sub-hastate, sub-triangular or asymmetric, ranging from Hornbeam-like, through Whitebeam to Wild Service-shaped. Pink pigment is conspicuous in the infructescences (Oliver, 2007), but there is no hint of purple in the leaves at any time of the year. The tree is vigorous, overtopping the large, closely adjacent Horse Chestnut, Beech and Ash trees.

Naturally seeded 2nd – 10th year saplings: leaf colours

Saplings more than 50m away from the mutant tree are green-leaved. Nearer to the mutant,

there are five categories, in very roughly equal proportions:

- a) Normal green leaves.
- b) Clear, intense lilac-purple leaf undersides from 3rd-7th year onwards (cv. *atropurpurea* or f. *purpurea*).
- c) Weaker pigmentation (f. *cuprea*).
- d) Seasonal leaf-pigmentation, some purpling in early summer, some late summer.
- e) Some green-leaved saplings, when truncated, switch to purple leaves in the same and subsequent years (truncated green parent Sycamores re-sprout green leaves).

A sixth category, with cream/pink/green-variegated juvenile leaved seedlings does not survive in the wild.

Seed direct from mutant Sycamore

Residual seed collected in 2007 and neglected in a polythene bag showed 100% germination *in situ* in March and April 2008, with 260 seedlings from 130 double samaras. From previous years, the proportion of purple-leaved progeny seemed similar to those indicated in the above categories. In respect of leaf shape, I am now doubtful that even half the progeny will become normal trees. This is because some of the 2nd – 4th year plants that seemed normal, in the 5th year, unexpectedly and randomly have begun to produce a few alien shoots. On these, the leaf shapes may be as described above for the parent mutant tree, but also include other leaf shapes, e.g. irregularly sub-ternate or ternate forms.

Comments and conclusions

More & White (2003) illustrate some Sycamore leaf colour variants, several of which have been seen in progeny of the mutant tree. Bean (1989) describes these, saying that purple-leaved forms of Sycamore can arise naturally and breed true. This local, green-leaved mutant is, however, both vigorous and prolific, with vigorous and varied green or purple-leaved progeny.

Assuming that cross-pollination occurs, diminished control over leaf shape and colour appears to be transmitted by dominant inheritance. Expression of whatever the mysterious genotype(s) are involved, the phenotypes (for leaf colours and shapes) are clearly influenced by age in both the parent tree and its first generation progeny, but also by environmental factors. Shoots chewed off by Muntjac or Roe Deer can change the leaves from palmately lobed to aberrant, or vice-versa. The switching from green leaf undersurfaces (in the progeny of the mutant tree) to the beautiful intense lilac-purple, or the lesser coppery hues (categories b – e above) can be age-related (b) or environmentally-induced (d and e). The same applies to the switching from palmately-lobed to alternative leaf shapes with different venations – age and unknown environmental

triggers. It would need a Gregor Mendel or a modern plant geneticist to interpret what is going on in the progeny of this unique and strange Sycamore.

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Rye Brome in West Yorkshire Park

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Centre Vale Park in Todmorden, West Yorkshire, is owned by Calderdale Council for the benefit of the public. Until about 1820 the River Calder flowed through this Park, but was subsequently moved and channelled to slightly higher ground 50m away by the former owner of the Centre Vale estate. As a flood prevention measure for Todmorden, the Environment Agency has created an area within the park which can be deliberately flooded by diverting water from this river and creating a temporary flood plain. Earth was moved within the park to make bunds to contain the water. Last year, when the park was re-opened to the public, I noticed large areas of these bunds were covered by hundreds of flowering culms of a brome grass, which was identified by Dr Tom Cope in August 2007 as *Bromus secalinus* (Rye Brome). The mystery is where it has come from. As far as I am aware there has been no import of soil to make the bunds, these being built up from excavated soil from within the Park, although queries to the Environment Agency team in order to confirm this have proved fruitless. It is highly unlikely that this amount of Rye Brome would be contained

within an amenity seed mix. I am also led to believe that no seed mix of any kind was applied to these bunds. The amenity seed applied to the level areas inside the bunds did not contain any brome. Centre Vale Park in 1820 was managed as a riverside hayfield and could well have contained Rye Brome (last recorded in Todmorden in 1842, but no station given). Could the seed have lain dormant for this length of time only being stimulated to germinate by all the movement of earth? Normally I would say it was not possible for a grass seed to remain viable for this length of time but the Park in Todmorden is unusual because the moving of the river in 1820 left the Park at a lower level than the bed of the river, leaving a high water table and often standing water. If the Rye Brome seed was stratified in these moist and often muddy soils, could this explain its dormancy? One hears of so called 'mummy wheat' having germinated after long dormancy; how about 'mummy rye'?

Reference:

- STANSFIELD, A. & NOWELL, J. (1911). *Flora of Todmorden*. Privately published.

Unusual Midland Hawthorn

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Growing out of a quarry face in Todmorden, West Yorkshire (SD934243) (v.c.63), are two separate stems of what appears to be *Crataegus laevigata* Midland Hawthorn (see inside Back Cover). The glossy leaves and two styles certainly point this way, but I have looked in a number of floras and none illustrate leaves with such a lack of lobes, many of my hawthorn leaves being nearly entire. The shrubs are difficult to age but appear quite old

and are in close proximity to a line of *Crataegus monogyna* Common Hawthorn, which was planted as a hedge early in the 19th century. The Midland Hawthorn does not grow locally and is listed as rare in the West Yorkshire Plant Atlas.

Reference:

LAVIN, J.C. & WILMORE, G.T.D. 1994. *The West Yorkshire Plant Atlas*. City of Bradford Metropolitan Council, Bradford

Fraxinus excelsior ‘pendula’ and ‘diversifolia’

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The recent question from M.J.P. Scannell (*BSBI News* 108: 53) regarding the form ‘pendula’ of Ash highlights the surprising gulf that exists between field botanists and tree recorders, something of which I notice a good deal in Warwickshire, where I maintain a database and catalogue of trees, but also work closely with local botanists. The answers to the questions reside in the excellent *Collins Tree Guide* (Johnson & More, 2004) available in most good book shops. ‘Pendula’ is the ‘Weeping Ash’, often seen in older gardens, parks and cemeteries. They are fairly common in Warwickshire, and we even have one in the car park of our St John’s Museum, here in Warwick. ‘Diversifolia’ is a much scarcer variety, known as the ‘Single-leaved Ash’, generally with a single large and undivided leaf blade, or occasionally with three leaflets. The first time I saw one, at Brueton Park, Solihull, I scratched my head for some 30 minutes and took lots of digital photos, before the sooty black buds suddenly shook me to my senses. ‘Diversifolia’ never ‘weeps’, to the best of my knowledge. It is a totally different variety from ‘pendula’. Another variety is the Golden Ash ‘jaspidea’, which has a rather compact, non-weeping character, with yellowish shoots and a fine show of yellow autumn foliage. It is quite

frequent in parks here too. Things get rather complicated with *Fraxinus angustifolia* (Narrow-leaved Ash), because there are a number of varieties. Very old ones tend to be grafted onto Common Ash and grow into very large trees, the upper graft usually outgrowing the stock. But there are also various non-grafted clones, much in vogue with municipal plantsmen at the moment, notably Claret Ash ‘Raywood’, which is very neat and produces a beautiful vinous-purple autumn colour. There is also a form with undivided leaves that is equivalent to the Single-leaved Ash, though the smaller and browner buds will allow separation from *F. excelsior* (the only Ash I know with sooty black buds).

I think that it is important that all field botanists have the *Collins Tree Guide* to hand, not just because it is an excellent publication that makes almost any town, city, park or cemetery a voyage of discovery, but because I suspect that some spurious tree data infiltrates the BSBI datasets through confusing native/naturalised and exotic trees, perhaps especially within genera such as *Crataegus*, *Populus*, *Acer* and *Quercus*.

Reference:

JOHNSON, O. & MORE, D. (2004). *Collins tree guide*. HarperCollins, London.

Sporulation of *Lycopodium annotinum* L. in winter

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In 1995, I (BS) published a short communication on double sporulation in *Lycopodium annotinum* L. (Sonnberger, 1995). Observations performed between March 1991 and March 1992 at 'Fuchsberg', north of Eisenburg in Unterallgäu (Germany, South-west Bavaria) had revealed that, besides the regular fructification time between August – September there was a second one shifted by 6 months to February – March. Although the article found its way even into the literature list of the American Fern Society (*Annual Review of Pteridological Research*, 696 (1995)), I never got any response and therefore did not pay further attention to the phenomenon in subsequent years. In autumn 2007, during ecological studies on *L. annotinum* populations on the Cracow-Częstochowa-plateau in southern Poland (Sliwinska-Wyrzychowska & Kieres, 2007), we (AS & MB) noted the development of numerous young sporophorous cones obviously going to ripen in the middle of the coming winter. This was taken as a reason for comparing the behaviour of the plant in Bavaria with that in Poland, and with the observations 16 years previously.

Most notable is the complete convergence of the phenomenon in the two areas lying 600km apart from each other, regarding both the seasonal development and the morphology of the winter shoots (compare pictures 1 and 3, 2 and 4, see Colour Section, Plate 3). While, 16 years ago, the sporophorous cones developed more or less regularly, they now looked somewhat 'disturbed'. Many of them did not reach maturity, but started to get dry from their tips after an initial period of normal development (picture 4, see Colour Section, Plate 3). In contrast to sporophorous cones which had 'regularly' died back after sporulation, their

sporophylls remained closely appressed to the cone axis, instead of bent back (picture 5, see Colour Section, Plate 3). This may affect complete cones, or only parts of them (picture 2, middle section of the right-hand cone). Others were deformed or very short (a few mm), but occasionally developed vegetative shoots at their tips (picture 6, see Colour Section, Plate 3). In any case, vegetative growth seemed to take place during the whole winter, and the forming of sporangia, peaking in February, was luxuriant. On 9th February 2008, on site 1, more than 1500 cones were counted, of which *ca* 10%, in frosty, sunny, winter weather, were freely sporulating (picture 2, see Colour Section, Plate 3).

We are somewhat reluctant to follow the modern trend to ascribe every unusual botanical observation to global warming. At the beginning of the 1990s and even afterwards there have been several 'true' winters in Bavaria, with longer periods of frost and snow, which did not inhibit the forming of winter sporangia. They were observed for the first time in the winter of 1989/90 (Sonnberger, 1995), and had certainly occurred already in previous years. The failure to detect earlier may have mainly been owing to psychological reasons, as nobody expects to make discoveries in winter and therefore does not do any field work. As this is clearly an overall-European phenomenon we would be interested to learn if there are similar observations in the British Isles.

Site 1. Germany, Bavaria, Unterallgäu, 660 m, 48° 1' 37" N, 10°, 12', 19" E; N-exposed flat slope at the edge of a middle aged mixed spruce-beech-stand (*Picea abies* & *Fagus sylvatica*).

Site 2. Poland, Cracow-Częstochowa-plateau, Zrębice SE Częstochowa, 322 m, 50° 43' 37" N, 19° 20' 41" E.

Site 3. ditto., Julianka E Częstochowa, 261 m, 50° 45' 39" N, 19° 25' 44" E.

Site 4. ditto., Kolbark NE Olkusz, 364 m, 50° 21' 25" N, 19° 25' 44" E.

Site 5. ditto., Sokole Góry E Częstochowa, 353 m, 50° 43' 20" N, 19° 17' 48" E.

All Polish populations grow in pine forests (*Pinus sylvestris*)

References:

- SLIWINSKA-WYRZYCHWOSKA, A. & KIERES, A. (2007). The condition of *Lycopodium annotinum* L. in selected stands at the Olkusz Upland. *Botanika w Polsce – sukcesy, problemy, perspektywy* (abstracts of lectures and posters presented during the 54th Conference of the Polish Botanical Society (PTB), 3- 8 Sept. 2007). Szczecin.
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Some interesting finds for Northamptonshire

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Since the deadline for sending records for the Rare Plant Register for Northamptonshire was due in late July, I thought I had better see what I could find for the county this year. The county has not let me down! The biggest find of the year for me was rediscovering *Misopates orontium* (Lesser Snapdragon) for the county. I last saw this while working in St Andrews Hospital in Northampton as a gardener there back in 1995. However it only appeared for a year or two by one of the buildings, in a gravel strip, before disappearing again from the county. It came as a total shock for me to find it in a locked up allotment site in Duston in Northampton this year (see Colour Section, Plate 1). About 10 plants were found in a weedy plot in one corner of the site. Excellent! However another unexpected find was of *Lavatera cretica* (Smaller Tree-mallow), of which four plants were growing by a concrete path in yet another locked up allotment site near Kingsthorpe in Northampton. Yet another total shock! In July I also found four new sites for *Mercurialis annua* (Annual Mercury), ranging from Bainton village in the north of the county to yet another allotment site at Harpole to the west of Northampton. Here at Harpole, where I got permission to look for weeds, a member of the parish council is an amateur botanist and he told me recently he is letting the Annual Mercury grow in his plot. This species is rare here in Northants. but if it

is anything to go by it may be pulled out of the register due to me finding too many sites for the species, which has already happened to *Plantago coronopus* (Buck's-horn Plantain) and *Filago vulgaris* (Common Cudweed), thanks to me.

Regarding arable weeds, a field near Pitsford Reservoir had the best display of *Chrysanthemum segetum* (Corn Marigold) I have seen in the county for a long time, with thousands of plants. The field edge also produced *Legousia hybrida* (Venus's-looking-glass), but also fifteen plants of *Stachys arvensis* (Field Woundwort), a plant last recorded in the county around 1994 in the Soke of Peterborough, and a species not found further south in the county since Druce's Flora 1930. Dallington Heath, by Harlestone Firs, to the north of Northampton, turned up trumps with plant species for the Rare Plant Register coming one after another. This sandy grassland site has been helped by the number of youngsters on motorbikes opening up the ground and giving certain species a chance such as *Spergularia arvensis* (Corn Spurrey), *Anthriscus caucalis* (Bur Chervil), *Trifolium striatum* (Knotted Clover), *Aphanes australis* (Slender Parsley-piert) and *Papaver argemone* (Prickly Poppy), all to be added to the register. It seems the sand belt in the county is producing some rather good records at the present time for us. I just don't know what I am going to turn up next.

A vegetative key to *Salix*

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Readers may be pleased to see a draft extract from the forthcoming *Vegetative key to the British flora* (less the illustrations), which was recently trialled at the BSBI Welsh AGM at Gregynog. I hope the layout is easy to follow, but do be aware that the keys are not always dichotomous, and some of the keys incorpo-

rate ‘spot characters’ (marked by ❶ or ❷). Spot characters are unique characters, often species specific, which act as a shortcut to identification, or avoid the need to include unnecessary couplets.

Thanks to everyone who has contributed specimens, information and illustrations so far.

Group SAL – *Salix*. Lvs deciduous. Petiole short. Stipules persistent or soon falling (rarely absent). Twigs round or angled, usu. flexible, with circular pith in TS (unlike *Populus*). Buds usu. adpressed to twig, ovoid, usu. obtuse, with 1 scale, the terminal bud often absent or poorly developed, often 2 co-lateral buds on 2nd yr. twigs. Many hybrids occur – only some of the more frequent ones appear in this key.

Tree or tall shrub $\geq 1\text{m}$, not rooting at nodes. Lvs usu. $> 3\text{cm}$

Lvs $\leq 3\text{x}$ as long as wide, suborb. to oblong. **SAL A**

Lvs $> 3\text{x}$ as long as wide, elliptic to linear. **SAL B**

Low shrub $< 1\text{m}$, rooting at nodes. Lvs usu. $< 3\text{cm}$ **SAL C**

SAL A – Tree or tall shrub $> 1\text{m}$, never rooting at nodes. Lvs $< 3\text{x}$ as long as wide, usu. $> 3\text{cm}$, suborb. to oblong, with stomata below only.

Lvs densely hairy (or with sparse rusty hairs) at least below.

Lvs broadly ovate to suborb. ($\leq 1.5\text{x}$ as long as wide). Buds spreading from twig.

Lvs often obtuse, rounded to \pm cordate at base, \pm undulate, thick, dull green. Petiole 0.8-1.5(2.5)cm, hairy, not or hardly channelled. Twigs greenish, sparsely minutely hairy when young, \pm round, without striae on wood. Buds 5mm, shiny yellow or reddish, soon hairless.

Lvs 5-12 \times 2.5-8cm, shortly hairy to \pm hairless above, shortly crisped grey-hairy to woolly below, weakly glandular crenate-serrate. Stipules 8-12mm, auricle-like, \pm cordate at base, soon falling. Tree or shrub. *Goat Willow* ***Salix caprea* var. *caprea***

Lvs 3-7cm, silky-hairy both sides, entire, with brownish blotches. Stipules absent or soon falling.

Small gnarled shrub. Mtns., N. Eng, Scot. *Gangrene Willow* ***Salix caprea* var. *sphacelata***

Lvs usu. obovate to oblanc. (usu. $\geq 2\text{x}$ as long as wide). Buds adpressed to twig.

Lvs usu. $> 3\text{cm}$, occ. rugose when young, usu. with flat or revolute margins, with hairs below turning rusty-brown at maturity.

Lvs 2-8(16) \times 1-3(5)cm, rarely \pm orb, often (\pm) acute, occ. obliquely twisted at apex, cuneate at base, revolute when young, shiny green above, slightly glaucous below, soon hairless above, shortly hairy below, minutely serrate. Petiole to 1cm. Stipules usu. small, auricle-like, often persistent. Twigs densely minutely hairy when young, with long weak scattered striae on 2nd yr. wood. Buds yellow, rusty-hairy. *Grey Willow* ***Salix cinerea***

Lvs usu. $< 3\text{cm}$, always rugose, often with undulate margins, with hairs below not turning brown.

Lvs 1.5-3(6) \times 1-2.5cm, occ. obtrullate, obtuse, often with twisted apiculate apex, cuneate at base, revolute when young, often with recurved margins at maturity, dull dark green above, green to glaucous below, sparsely hairy above, usu hairy below, serrate. Petiole 0.3-0.8cm. Stipules large, sub-cordate to reniform, persistent. Twigs often branching at 90°, dark reddish-brown, minutely hairy, soon hairless or \pm so, with prominent striae on 2nd yr. wood. Buds occ. slightly spreading esp. nr. twig apex, often reddish, minutely hairy to hairless. Often bogs. *Eared Willow* ***Salix aurita***

Lvs hairless or ± so below.

Lvs glaucous below, rolled when young. Petiole without glands.

Stipules large, ovate, persistent (occ. small or absent). Lvs 2-6.5 × 1.5-3.5cm, obovate to elliptical or oblong, usu. acute, cuneate or rounded at base, ± thin, ± shiny dark green above, turning blackish when dried, sparsely hairy when young, ± serrate (rarely ± entire). Petiole to 1cm. Twigs dull brown or greenish, densely hairy when young, soon hairless or ± so, occ. with a few distinct striae on 2nd yr. wood. Buds usu. hairy. *Dark-leaved Willow* **Salix myrsinifolia**

Stipules usu. v. small or absent. Lvs 2-6 × 1-5cm, oblong to elliptical (rarely ± orb.), acute to obtuse, cuneate or rounded at base, ± thick, leathery, shiny bright green above, not turning blackish, often sparsely hairy when young, serrate. Petiole to 1cm. Twigs shiny brown, usu. hairless, usu. without striae. Buds hairy. *Tea-leaved Willow* **Salix phylicifolia**

Lvs pale green below, involute when young. Petiole with 3-15 small sessile glands nr apex.

Lvs 5-12 × 2-5cm, ovate to obovate-lanc., acute to shortly acuminate, rounded to cuneate at base, ± leathery, viscid and weakly aromatic when young, dark shiny green above, turning black, glandular-serrulate with 50-60 teeth per side. Petiole 0.5-1cm. Stipules minute, ± ovate, glandular-serrate, soon falling. Twigs shiny green to brown/reddish, hairless, usu. without striae. Buds dark brown, viscid. *Bay Willow* **Salix pentandra**

SAL B – Tree or tall shrub >1m, never rooting at nodes. Lvs >3x as long as wide, usu. >3cm, oblong to linear. ❶ Twigs pruinose. ❷ At least some Lvs opp. or subopp.

Lvs hairless both sides at maturity.

Petiole with 3-4 small glands at apex (at least on some lvs).

Lvs glaucous below, with stomata both sides, 8-15 × 1.5-3cm, lanc., acuminate, cuneate at base, shiny dark green above, sparsely adpressed silky-hairy below when young, soon hairless, rolled when young, glandular-serrate, with 50-60 teeth per side. Petiole 0.5-1.5cm, hairless or sparsely hairy, channelled. Stipules 3-8mm, ± lanc, soon falling (larger and more persistent on suckers). Twigs olive-brown to yellowish, fragile at branch junctions, minutely hairy when young, soon hairless, angled, bitter-tasting. Buds to 6mm, flattened, reddish or yellowish, hairless. Trunk often pollarded, with furrowed bark. *Crack-willow* **Salix fragilis**

Lvs green or glaucous below, with stomata below only, 4-10(15) × 1-3(4)cm, oblong-lanc. to narrowly elliptic, acute to acuminate, rounded to cuneate at base, rolled when young, shiny (or dull) green above, glandular-serrate with 25-45 teeth per side. Petiole 0.8-2cm, sparsely hairy. Stipules 5-10mm, ± ovate, often persistent. Twigs shiny green to olive-brown, hairless, often strongly angled or ridged when young, with inner bark tasting of rosewater. Buds to 6mm, flattened, yellow-green (occ. reddish), soon hairless. Trunk not pollarded, with bark often flaking. *Almond Willow* **Salix triandra**

Petiole without glands.

Twigs pruinose. ❶

Lvs (4)7-12(14) × 1-3(4)cm, oblong to linear-lanc., acuminate, cuneate, folded when young, shiny green above, glaucous below, with stomata both sides (often confined to vein margins above), shallowly glandular-serrate, with 20-40 teeth per side. Petiole 0.7-2cm, hairy or hairless, channelled. Stipules narrowly ovate, glandular-serrate. Twigs shiny green or reddish, hairless, round, with bitter-tasting inner bark. Buds to 15mm, hairless or hairy.

Lvs silky-hairy below when young. Stipules to 2cm, persistent. Buds dark red.

. *European Violet-willow* **Salix daphnoides** var. **daphnoides**

Lvs hairless (bronze when young). Stipules to 0.4cm, soon falling. Buds black.

. *Siberian Violet-willow* **Salix daphnoides** var. **acutifolia**

Twigs not pruinose.

At least some lvs opp. or subopp. (at least proximally on twigs). ②

Lvs 2-8(10) × 0.5-2(3)cm, linear or linear-oblong, acute, cuneate at base, rolled when young, dark green above, usu. glaucous below, often turning black on drying, occ. sparsely woolly below when young, non-glandular serrate distally with c.13 teeth per side, with stomata both sides. Petiole to 1cm. Stipules absent. Twigs yellowish or greyish, occ. purplish, flexible, hairless, with bitter-tasting lime-yellow inner bark. Buds yellowish or reddish, hairless. Trunk with smooth greyish bark.

..... *Purple Willow* **Salix purpurea**

All lvs alt.

Lvs to 12 × 3cm, oblong-lanc., ± acuminate, cordate at base, ± folded when young, occ. purplish, hairless (or ± so) both sides, shallow glandular-serrate with c.70 teeth per side, with stomata below only. Petiole 2cm, hardly channelled. Stipules auricle-like, often persistent. Twigs hairy when young, round, with bitter-tasting inner bark. Buds hairless. VR alien. *Heart-leaved Willow* **Salix eriocephala**

Lvs with at least some hairs below at maturity.

Lvs rolled when young, with stomata both sides. Petiole with 2-5 small glands nr apex (at least on some lvs).

Lvs hairless above at maturity.

Lvs closely resembling *S. fragilis*, shiny dark green above, glaucous with sparse adpressed hairs below. Buds hairy. (*S. alba* × *fragilis*) *Hybrid Crack-willow* **Salix** × **rubens**

Lvs with sparse silky hairs above at maturity (dense when young).

Twigs hardly drooping, not fragile, densely silky-hairy, soon hairless and shiny olive-brown, round. Lvs 5-12 × 0.5-2.2cm, lanc., acuminate, cuneate at base, usu. glaucous below, densely silky-hairy below, shallowly glandular-serrate with up to 50 teeth per side (to ± entire). Petiole to 1.5cm, hairy, channelled at least nr. base. Stipules to 5mm, linear-subulate, glandular-serrate, soon falling. Buds 8mm, dark brown, reddish or yellow, adpressed-hairy. Trunk often pollarded, with deeply fissured greyish-brown bark. *White Willow* **Salix alba**

Twigs strongly drooping ('weeping'), often fragile, adpressed-hairy, yellowish, round.

Lvs 6-15 × 1-2.5cm, lanc., acuminate, cuneate at base, glaucous below, sparsely silky-hairy below, shallowly glandular-serrate with 45-70 teeth per side along thickened margin. Petiole 0.8-1.3cm, often hairy, channelled. Stipules absent, or small and soon falling. Buds 7mm, pale green or yellow, adpressed-hairy. Trunk never pollarded, with rough fissured bark. (*S. alba* × *babylonica*). *Weeping Willow* **Salix** × **sepulcralis**

Lvs revolute when young, with stomata below only. Petiole without glands (or inconspicuous).

Lvs silky-hairy (with ± parallel hairs) below, 4-17(25) × 0.6-1.5(2.5)cm, linear to linear-lanc., acuminate, cuneate at base, with recurved margins (often undulate), dull or shiny green above, sparsely minutely hairy above, entire. Petiole 3-10mm, hairy, channelled. Stipules to 10mm, linear to linear-lanc., often curved, soon falling. Twigs silky-hairy, soon hairless and ± shiny yellow- or olive-brown, round or ± so. Buds often obscured by swollen petiole, yellowish or reddish-brown, shortly hairy, soon hairless or ± so. Bark dark greyish-brown, fissured. *Osier* **Salix viminalis**

Lvs white-woolly (with tangled hairs) below, 5-15 × 0.4-0.8cm, linear, acuminate, cuneate at base, with revolute margins, shiny dark green above, turning black on drying, sparsely hairy to hairless above, slightly glandular-toothed (to ± entire). Petiole 3-5mm. Stipules usu. absent. Twigs whitish-woolly, soon hairless and yellowish-brown or reddish, angled. Buds often obscured by adpressed petiole, yellow-green, sparsely hairy. Bark greyish-brown, fissured. Hortal, alien.

..... *Olive Willow* **Salix elaeagnos**

SAL C – Low shrub <1m, rooting at nodes. Lvs usu. <3cm, net-veined or ± so (exc. *S. arbuscula*). ① Buds balsam-scented.

Lvs with stomata above (upper lf. surface ± hairless).

Lvs dull glaucous below.

Lvs 1.5-3(5) × 1-1.5(3)cm, ovate to elliptic, usu. acute, cuneate at base, ± folded when young, shiny green above, ± glaucous below, turning black when dried, occ. hairy above, densely adpressed-hairy below when young, soon hairless, obtusely glandular-serrate with c.25 teeth per side. Petiole to 5(8)mm, hairy. Stipules usu. absent. Twigs ± shiny dark reddish-brown, sparsely patent-hairy, soon hairless. Mtns., Scot. *Mountain Willow* **Salix arbuscula**

Lvs shiny green below.

Lvs 2-7 × 0.5-3cm, oblong to obovate, acute to obtuse, rounded or cuneate at base, channelled when young, shiny dark green both sides, paler below, turning black (and persisting over the winter), adpressed-hairy at least on midrib below, ciliate, glandular-serrate with 20-35 teeth per side. Petiole to 10mm, channelled, soon hairless. Stipules small, oblong, usu. persistent. Twigs green, soon shiny reddish-brown and hairless. Shrub <40cm tall. ①. Uplands, Scot. *Whortle-leaved Willow* **Salix myrsinites**

Lvs 0.3-2(3) × 0.3-2(3)cm, obovate to suborb., obtuse to retuse (rarely ± acute), usu. rounded at base, ± channelled when young, shiny dark green both sides, sparsely white-hairy below, soon hairless, serrate with 12-16 hooked teeth per side. Petiole to 4mm, channelled, white-hairy, soon hairless or ± so. Stipules minute or absent. Twigs dark shiny brown or reddish, sparsely ± adpressed-hairy, soon hairless. Buds sparsely hairy to hairless. Shrub <10cm tall. Mostly mtns. *Dwarf Willow* **Salix herbacea**

Lvs without stomata above (upper lf. surface may be obscured by hairs).

Lvs white-woolly (with tangled hairs), at least below, when young.

Lvs rugose. Extinct in wild. Hortal.

Lvs to 2 × 2cm, orb, retuse, cordate at base, rugose, with recurved margins, shiny dark green above, ± glaucous below, sparsely hairy above, white-woolly below, entire. Buds reddish.

Slow-growing gnarled shrub. (*S. lapponum* × *reticulata*) . . . *Boyd's Willow* **Salix 'Boydii'**

Lvs not rugose. Mtns.

Lvs 3.5-7 × 3-6.5cm, suborb. to broadly ovate, usu. obtuse (occ. shortly mucronate), often cordate at base, ± flat, greyish-green above, ± glaucous below, often soon ± hairless, entire or ± so. Petiole to 1.5cm. Stipules to 2cm, broadly ovate, persistent. Twigs sparsely woolly when young. Buds dark reddish-brown, soon hairless. *Woolly Willow* **Salix lanata**

Lvs 1.5-4(7) × 1-2.5cm, usu. lanc. to narrowly obovate, acute, cuneate or rounded at base, occ. ± undulate, with recurved margins when young, adpressed-woolly above, densely woolly below, occ. ± hairless both sides, entire or ± so. Petiole to 5(10)mm. Stipules small or absent. Twigs ± shiny dark reddish-brown, sparsely woolly to hairless. Buds shiny dark brown, hairless. *Downy Willow* **Salix lapponum**

Lvs silky-hairy (with adpressed hairs) at least below, not rugose.

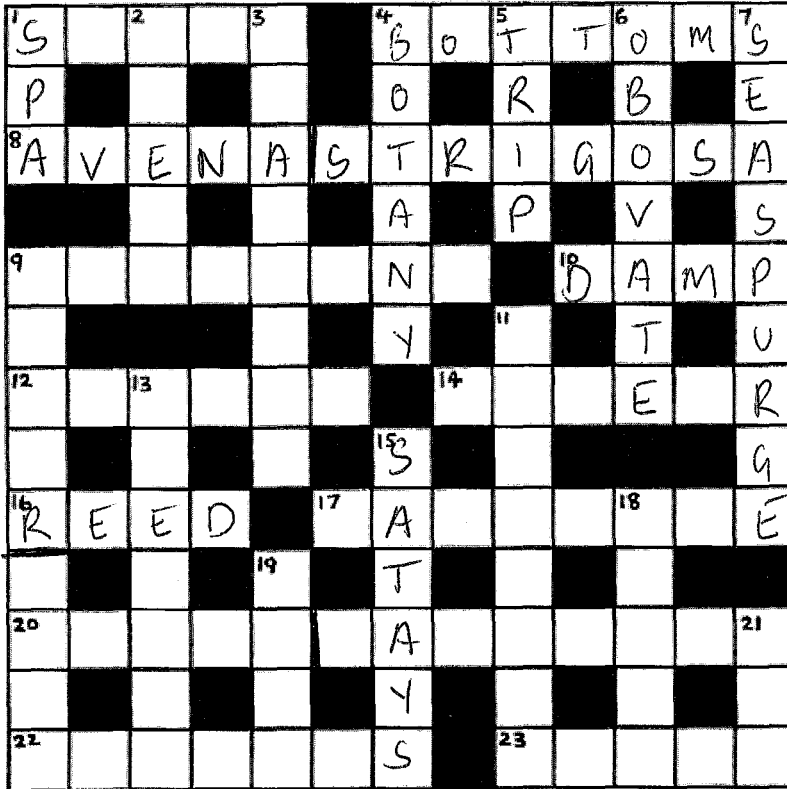
Lvs 1-3.5 × 0.4-2.5cm, lanc. to ovate-oblong, obtuse to acute or shortly mucronate (occ. twisted at apex), cuneate to rounded, with recurved margins, turning black on drying, densely silvery silky-hairy at least below, entire or with glandular teeth. Petiole usu. <4mm. Stipules usu. absent. Twigs yellowish- or reddish-brown, densely silky-hairy when young. Buds 2-3mm, yellow to dark red, silky-hairy. *Creeping Willow* **Salix repens**

Lvs hairless or ± so below, strongly rugose.

Lvs 1.2-4(5) × 1-2.5(4)cm, ovate to ± orb., obtuse, usu. rounded at base, with ± recurved margins, dark green above, whitish-grey below, soon hairless above, entire to obscurely glandular crenate-serrate. Petiole 0.7-4cm, reddish, hairless or ± so, channelled. Stipules absent. Twigs dark reddish-brown, with sparse long silky hairs when young. Buds reddish-brown, densely hairy, soon hairless. Mtns. *Net-leaved Willow* **Salix reticulata**

BSBI Crossword 11

By *Cruciada*



Across

- 1. Clear out rough vegetation (5)
- ~~4. What's up when field botanists get down to it! (7)~~
- ~~8. Save oat grains combined with bristles (5, 8)~~
- 9. Observe penny savings to provide for growth later on (8)
- ~~10. Conditions for finding *Parnassia*, for example, by weir (4)~~
- 12. Opponents about Cornish town go to the Hebrides (6)
- 14. Nearly (nearly) different shape from 6 (4)
- ~~16. Turn up *Trichophorum* and find another grass (4)~~
- 17. Power in county is golden, perhaps (8)
- 20. Possible alias in uncial – terror of Hibernian parasites? (5, 8)
- 22. Story of National Trust for Scotland showcase gifts (7)
- 23. Ye old prickle (5)

Down

- ~~1. Find Cord-grass, but miss train to Bath, say (3)~~
- 2. Scottish official is a bird – female (5)
- 3. Ballantyne leads walks looking for his speciality (8)
- ~~4. Bay not arranged for plant study (6)~~
- ~~5. Excursion to find small mayweed (4)~~
- ~~6. Instrument attracts tax with top-heavy appearance (7)~~
- ~~7. Salt waters cleanse a *Euphorbia* (3, 6)~~
- 9. Wild, means trips in search of garden aromatic (5, 4)
- 11. For Labrador Tea read Stonecrop, perhaps, as you speed on the motorway (8)
- 13. Not like ... the base of elm leaves, for example (7)
- ~~15. Stays in with a selection of peanut sauces (6)~~
- 18. Jones' cry, perhaps, as he plunges forth with waders and grapnel
- 19. Left feature of 8 on turf (4)
- 21. The lady's not for returning, in short (3)

SHYEDATAARAYNS

Notes of some of Robert Brown's herbarium specimens in The Natural History Museum, London (BM): Scottish specimens

D.T. MOORE, *c/o Botany Library, The Natural History Museum, Cromwell Road, London, SW7 5BD*
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Introduction

As a young man, at least, the Scottish-born naturalist Robert Brown (1773–1858) was active in the botanical exploration of parts of his native country (see Mabberley, 1985; Nelson, 2003). This is evident not from contemporary publications – Brown himself did not publish any botanical reports relating to native Scottish plants during his lifetime – but from manuscripts in the Botany Library, The Natural History Museum, London (Moore & Beasley, 1997). Those manuscripts indicate clearly that in the early 1790s Brown began assembling a herbarium of native Scottish plants (see Mabberley, 1985: 19), yet so far few examples of extant Scottish specimens are recorded. As is well known (Mabberley, 1985: ch. 15), Brown became first Keeper of Botany at the original British Museum in 1829. He visited Scotland rarely after this.

Brown's herbarium

The history of Robert Brown's herbarium is complicated. After his death some of his specimens were auctioned on 1st July 1859 (*vide* Kent & Allen, 1984: 104) and thus dispersed, but these seem to have been specimens that had been collected by other individuals. There is no mention of any of Brown's own Scottish specimens among the lots (at least as summarized by Mabberley, 1985). However, John J. Bennett, Brown's one-time assistant at the (old) British Museum, 'had Brown's herbarium moved ... to a room in the basement of the Museum, where it remained until Bennett's death in 1876' (see Murray, 1904: 85; Mabberley, 1985: 387), but this material seems to have comprised mostly Australian specimens from the *Investigator* voyage (see Vallance *et al.*, 2001). That it also contained some material from Scotland is apparently confirmed by the presence of specimens of native Scottish plants in BM. Kent & Allen (1984: 104) reported that there

were 220 specimens from Scotland. The source of that figure is not clear.

In an attempt to find out how many of Brown's Irish specimens had survived (listed in Moore & Nelson, 2005), one of us (DTM) undertook to search the Natural History Museum's herbarium. In the course of this search, Scottish specimens were found, both in the main herbarium and in the 'duplicate boxes' which contain 'duplicate' specimens awaiting possible distribution to other institutions. They are listed below. It must be stressed that *no* systematic search for Scottish specimens was conducted; thus this listing clearly does not constitute a catalogue.

Initial impressions, based on place names and dates, suggest that the circumstances of collection of surviving Scottish specimens are referred to in the manuscript 'R Brown. Descriptions 1792–3 Highland Journey, 1793' (now B.13 of Moore and Beasley, 1997). Some aspects of this Highland excursion are outlined by Mabberley (1985: 23–27).

A good example is the entry for *Thalictrum alpinum* (Alpine Meadow-rue) which occurs in B.13 (f.159r) and, from the date given at the beginning of the day's entry (B.13 f.157r), would be: 'Walked from the head of Glenlochial [*sic* = Glen Lochy] to Killin'. 'XXVII' plants were listed under this entry. This is followed by 'Wednesday August 14th [1793]' when Brown 'Climbed Ben-Lawers, by the south east side keeping above the south side of the Loch, and scrambling up the road in the same direction to the summit, & coming down its south side as directly as possible ...'. The corresponding locality entry in this manuscript for *Thalictrum alpinum* states 'XVII *Thalictrum alpinum* On the rocks above the Loch plentiful but sparingly in flower'.

Another example concerns *Puccinellia maritima* (Common Saltmarsh-grass). Brown knew this as '*Poa maritima*'. One of the original labels on his surviving specimen (see

below) reads: 'Poa maritima Huds Salt Marsh between St Andrews & the Guard Bridge Fifeshire July 1793 R Brown'. This appears to tie up with an entry in B.13 (f.116r): 'III Poa maritima In great plenty in the same marsh' – the 'same marsh' being as the entry above in the manuscript (for 'Juncus bulbosus'): '... In great quantity in the salt marsh – between St Andrews & the Guard bridge'. We read at the head of that day's entry that this was 'Monday July 22d [1793]' when Brown 'Walked from St Andrews to Dundee'.

In the following listing, the information on the original labels, in Brown's handwriting, is transcribed – note that he usually wrote his initials 'RB' and name 'RBrown' without any space between the capital letters. However, the reader is warned that Brown became increasingly inconsistent in his signature and record keeping as years went by. This apart, it is remarkable that the Brown specimens which came to **BM** within William Withering's herbarium (see Kent & Allen, 1984: 277) invariably have much more detailed labels attached, often with his considered opinions. A good example is the specimen of *Polystichum lonchitis* (Holly-fern).

It is hoped that this account might be developed at some future date into a full length paper with transcriptions of the Highland excursion narrative in B.13.

Transcriptions of herbarium labels:

Lycopodiopsida

Lycopodiaceae

Lycopodiella inundata: Marsh Clubmoss

Main collection (2 specimens)

'Lycopodium inundatum Lin Bog near the foot of Glenlochail [Glen Lochy] Perthshire August 1793 RBrown'

'1) Lycopodium inundatum Lin In a bog near the foot of Glen-lo-chail above Killin Aug^t 1793 RB'

Duplicate box (1 specimen)

'Lycopodium inundatum Lin Bog near the foot of Glenlochail [Glen Lochy] , Perthshire August 1793 R Brown'

Lycopodium annotinum: Interrupted Clubmoss

Duplicate box

'Lycopodium annotinum High Moors & Sides of Mountains, about Invercauld Aberdeenshire August 1794 RB-n'

Pteropsida

Adiantaceae

Cryptogramma crispa: Parsley Fern

Main collection (1 specimen)

'Pteris crispa Osmunda crispa Lin: On the east side of Ben Bourde a high mountain about seven miles from Invercauld, Aberdeenshire: Aug^t: 1792 RB'

Duplicate box (1 specimen)

'Pteris crispa Osmunda crispa Linnei On the east side of Ben Bourde a high Mountain about 7 miles from Invercauld, Aberdeenshire Aug^t 1792 RBrown'

Aspleniaceae

Asplenium adiantum-nigrum: Black Spleenwort

Main collection (1 specimen)

'Asplenium Adiantum nigrum Near the Hermitage of Braid near Edin^r 1792' [in Brown's handwriting]

Duplicate box (2 specimens)

'Asplenium adiant nig: Kings park Edin^r December 1792 RBrown'

'Asplenium Adiatum nigrum King park Edin^r December 1792 RBrown'

Asplenium marinum: Sea Spleenwort

Main collection (1 specimen) (Brown noted on the label that he had either seen or collected this species from two areas – Ireland (see Moore & Nelson, 2005: 18) and Scotland. The transcription of the original label probably refers to the Scottish specimen.)

'Asplenium marinum Lin In great abundance about Weems especially in the Coves & in several other places in Fife. On the Angus coast between Montrose & Arbroath. & on Rocks near Down Hill {the seat of the Bishop of Derry, Ireland}' (*ex herb.* Withering)

Duplicate box (2 specimens)

'Asplenium marinum Coves of Weems Fifeshire October 1791 R Brown'

'Asplenium marinum Coves of ~~Weems~~ [sic] Wemys Fifeshire Sept^t 1793 R Brown'

Asplenium septentrionale: Forked Spleenwort
Main collection (3 sheets)

'Acrostichum septentrionale abundantly in the crevices of Rocks in the Kings park particularly those with a southern exposure in equal abundance & in much greater luxuriance in similar situations on Blackfords Hill where I have also occasional found it. descending [verso] from its rocks & growing among smaller stones'

'Acrostichum septentrionale Lin Rocks of Blackford hill near Edin^r Nov^r 1792 R Brown' (on same sheet as 'Acrostichum septentrionale South side of Blackford hill near Edinb^r Aug^t [sic] January 1793 R Brown')

'Acrostichum septentrionale Linnei South side of Blackford Hill near Edin^r: January 1793 RBrown'

Duplicate box (2 specimens)

'Acrostichum septentrionale Lin Rocks on Blackford hill near Edin^r Nov^r 1792 RBrown'. The following label is adjacent: 'Acrostichum septentrionale South side of the Blackford hill near Edinb^r January 1793 RBrown'

Asplenium trichomanes: Maidenhair Spleenwort

Main collection (3 specimens)

'Asplenium Trichomanoides Blackford hill near Edin^r January 1793 RBrown', with the following label on the same sheet: 'Asplen: Trichomanoides Blackford hill near Edin^r Dec^r 1792 RBrown'

'Asplen: Trichomanoides var The Large Cove of Weems Fifeshire Aug^t 1792 RB'

Asplenium trichomanes ssp. **quadrivalens:**
Maidenhair Spleenwort

Main collection (1 sheet)

'Asplen: Trichmanoides Craig Lockart near Edin^r January 1793 R Brown'

Asplenium viride: Green Spleenwort

Main collection (4 specimens)

'1) Asplenium viride Huds: ang: On many of the Highland mountains in the crevices of shady & somewhat moist rocks: as on the Mountains of Perthshire & of Aberdeenshire: also in the Den of Reichip where the

Convallaria verticillata Lin grows in this last situation uncommonly luxuriant' (*ex herb.* Withering)

'Asplenium viride Den of Reichip [?] Dunkeld Perthshire August 1793 R Brown'

'Asplenium viride Rocks of the Hill opposite Invercauld house Aberdeenshire Sep^r 1792 RB'

'Asplenium viride Rocks of the Hill opposite Invercauld house Aberdeenshire Sep^r 1792 RB'

Duplicate box (5 specimens)

'Asplen: viride Huds Mountain opposite to Invercauld house Sep^r 1792 RBrown'

'Asplenium viride Huds Den of Reichip near Dunkeld Perthshire. August 1793 RBrown'

'Asplenium viride Huds Den of Reichip near Dunkeld, Perthshire August 1793 RBrown'

'Asplenium viride Den of Reichip near Dunkeld Perthshire August 1793 RBrown', with the following label on the same sheet, upside-down, 'Asplenium viride Den of Reichip near Dunkeld Perthshire August 1793 RBrown'

Hymenophyllaceae

Hymenophyllum wilsonii: Wilson's Filmy-fern

Main collection (1 specimen)

'Trichomanes tunbrigense South Bank of the River Isla not far below the Reeky Lyn. Angus-shire August 1794 RB'

Duplicate box (1 specimen)

'Trichomanes tunbridgense Lin Banks of the River Isla not far below the Reeky Lyn, Angusshire sparingly August 1794 RB-n'

Marsileaceae

Pilularia globulifera: Pillwort

Duplicate box (1 specimen)

'Pilularia globulifera Bog at Auchranie near Craig in Isla. Angus shire August 1793 RBrown'

Ophioglossaceae

Botrychium lunaria: Moonwort

Main collection (2 specimens)

'Osmunda lunaria Lin Dry pasture on the roadside between Blairgowrie & Marly, Perthshire August 1793 RBrown'. On the same sheet is this label, in Brown's distinc-

tive hand: 'Osmunda Lunaria Linnei Pasture near Marly Perthshire June 1794 Rev^d Mr McRitchie'

Duplicate box (1 specimen)

'Osmunda Lunaria Lin Pasture by the roadside between [Marly] & Blair Gowrie Perthshire August 1793 R Brown'

Polypodiaceae

Polypodium interjectum: Intermediate Polypody

Main collection (2 specimens)

'Polypodii vulgaris var Rocks at the south west side of the King Park Edin^r January 1793 RBrown'

'1) Polypodium vulgare á Lin lobis nonnullis furcatis: differs only in degree from the variety found by D^r Alexander & figur'd by Bolton [1785–1790: tab. 18] – In a shady place near Braid Hill in the neighbourhood of Edin^r: Feb^y 1792 RB' (*ex herb.* Withering).

Duplicate box (1 specimen)

'Polypodium vulgare South side of the Kings park Edin^r 1793 RB'

Thelypteridaceae

Oreopteris limbosperma: Lemon-scented Fern

Main collection (3 specimens)

'Polypodium oreopteris Perthshire 1793 RB'

'Polypodium oreopteris Near Craig hall, Perthshire August 1793 R Brown'

'Polypodium oreopteris Den of Reichip near Dunkeld Perthshire August 1793 RBrown'

Duplicate box (1 specimen)

'Polypodium oreopteris Errhart & Dicks Moist ground near Craighall [struck out, in pencil] Perthshire Sep^r 1793 RB'

Phegopteris connectilis: Beech Fern

Main collection (1 specimen)

'Polypodium Phegopteris Linnei In the woody side of the Hill opposite to Invercauld House, Aberdeenshire. Aug^t: 1792 RBrown'

Woodsiaceae

Gymnocarpium dryopteris: Oak Fern

Main collection (1 specimen)

'Polypod: Dryopteris Woods at Roslin near Edin^r June 1792 RBrown'

Duplicate box (1 specimen)

'Polypodium Dryopteris Linnei Shady woods at Rosline – June 1792 RBrown'

Dryopteridaceae

Polystichum lonchitis: Holly-fern

Main collection (3 specimens)

'Polypodrum Lonchitis Lin On many of our Highland Mountains as on all those of Breadalbane & Glenlochail &c Aug^t 1793 RB I have only to remark on this species that M^r Bolton [1785–1790: tab. 19] who has hazarded the conjecture that it may be only a starvd variety of P aculeatum Lin & D^r Stokes who seems [verso] to have thought this not improbable; probably never saw this species in its highest state of perfection: ... [discussion continues]' (*ex herb.* Withering).

'Polypodium Lonchitis Malgyhrdy a mountain in Glen-lochail August 1793 RBrown'

'Polypodium Lonchitis Rocks of Craig Vore above Loch Larig an Lochain Breadalbane August 1794 R–B–n'

Duplicate box (2 specimens)

'Polypod: Lonchitis Mountain opposite to Invercauld house Sep^r 1792 RBrown', with the following on the same sheet: 'Polypod: Lonchitis Mountain opposite to Invercauld house Aberdeenshire Sep^r 1792 RBrown'

Dicotyledons

Asteraceae

Saussurea alpina: Alpine Saw-wort

'Seratula alpina Top of Ceavn Drochit [Carna Drochaide] a hill above Miltown of Invercauld, Aberdeenshire, Aug^t 1792 RB' (BM 135/4)

Campanulaceae

Lobelia dortmanna: Water Lobelia

'Lobelia Dortmanna Linnei Loch of Clunie Perthshire Sep^r 1793 R. Brown'

Caryophyllaceae

Sagina apetala: Annual Pearlwort (1 sheet; 2 gatherings)

'Sagina apetala It grew spontaneously in the Nursery of Dickson & Brown at Perth [reverse] but very sparingly from [deleted] out by Mr Don who called it Sagina apetala August 1791 RBrown' [Accession no. 9436]

'Sagina apetala On the stone wall west side of the high road exactly opposite to that road

w^{ch} leads down to Dalry near Edin^r Dec^r
1794 RBrown' [Accession no. 9439]

Plantaginaceae

Littorella uniflora: Shoreweed (4 specimens
on 2 sheets)

'Littorella lacustris Lin: Mant: specimens
gathered in a bog w^{ch} in the summer is nearly
dry. on the top of Braid Hill near Edin^r: It is
frequent plant near the margins of many of
our Highland Lakes – but being generally
immersed seldom flowers. July 1793 RB'
(*ex herb.* Withering)

'Littorella lacustris Lin Ground overflowed in
the Winter On the top of Braid Hill near
Edin^r July 1793 R Brown'

'Littorella lacustris A small marsh of two on
the top of Braid Hill near Edin^r July 1793 R
Brown'

'Littorella lacustris Bog on the top of Braid
Hill near Edin^r June 1794 RB'

Primulaceae

Anagallis tenella: Bog Pimpernel

'Anagallis tenella Lin Hunting bog, Kings
park Edin^b: July 1792–1793 RBrown' on
same sheet as the following (not in Brown's
writing): 'Scotland July 1792 Rob^t Brown'

Ranunculaceae

Thalictrum alpinum: Alpine Meadow-rue
(see example in main text above)

'Thalictrum alpinum Lin Malghyrdy Benlesk-
erny & Ben Lawers, mountains in Perthshire
August 1793 RBrown', with the following
second label below: 'Thalictrum alpinum
Lin Ben Lawers in Breadalbane August
1794 RBrown'

Saxifragaceae

Saxifraga tridactylites: Rue-leaved Saxifrage

'Saxifraga tridactylites Lin Rocks & wall tops
at Craig Lockert near Edin^r May 1794 RB–n'

Scrophulariaceae

Melampyrum pratense: Common Cow-wheat

'Melampyrum Pratense We found it at the
Falls of Moness in Strath Tay 21 June 1792
– & also in the Den of Rechip about 3 miles
N. E. from Dunkeld 4 July' (*leg.* W.
McRitchie).

Monocotyledons

Cyperaceae

Blysmus rufus: Saltmarsh Flat-sedge

'*Schoenus compressus* [*sic*] rufus Huds Salt
Marsh between the Guard & the smaller
Bridge: near S^t Andrews July 1793 R
Brown'. A second label has a description in
Latin.

Bolboschoenus maritimus: Sea Club-rush

'*Scirpus maritimus* Bridge of Taker near Mon-
trose Sep^t 1792 RBrown': a second label, in
Brown's handwriting is below this.

'*Scirpus maritimus* Lin: between N Queens-
ferry & Inverkeithing Fifeshire July 1793
RB'; and the following adjacent, '*Scirpus*
maritimus Lin Coast between Queensferry
& Inverkeithing Aug^t 1794 RB'

Rhynchospora alba: White Beak-sedge

'*Schoenus albus* Lin Bogs in Glenlochail:
Perthshire Aug^t 1793 RBrown'

Orchidaceae

Platanthera bifolia: Lesser Butterfly-orchid

'*Orchis bifolia* Lin near Roslin June 1792 R.
Brown'

Poaceae

Catapodium marinum: Sea Fern-grass

'*Triticum unilaterale* Lin. — *maritimum* Huds
Near [...] island Fifeshire August 1792
RBrown'

Festuca altissima: Wood Fescue

'*Festuca nemorosa* N Discovered by Mr G
Don in the Den at the Lint Mill Foot of Ben
Lawers, Breadalbane 1793. specimen gath-
ered by the same, in July 1794 RB'

Festuca cf. rubra: fescue

'*Festuca glabra* Light Sp: — *gallovidiensis*
Mss Walkeri Arbigland in Galloway, Isle of
Bute & shore of Loch Fyn discovered by Dr
Walker an 1769' (in Brown's handwriting).
Note: the manuscript name attributed to the
Revd Dr John Walker (1731–1803) has
never been published. It is not known pre-
cisely how Brown obtained this name, but he
had enrolled in Professor Walker's botanical
classes at the University of Edinburgh in
1792 and maintained contact with Walker
subsequently, including while he was serv-
ing in Ireland (see Nelson, 2003). Brown's
manuscript descriptions of willows (*Salix*)

contain other unpublished names that he attributed to Walker (see Nelson, 2003).

Melica uniflora: Wood Melick

‘Melica uniflora Retzii Woods at Roslin 1792 RBrown’

Milium effusum: Wood Millet

‘Milium effusum Lin Rosline Wood May 1792 RB’

Puccinellia distans: Reflexed Saltmarsh-grass

‘Poa retroflexa Curtis Sea side in one place only between [sic] on the same side with the outer harbour of Inverkeithing towards the town, Fifeshire. July 1793 RBrown’, with the following on the same sheet, adjacent: ‘Poa retroflexa Curtis Salt marshy ground on [sic] in one place only. on the same side with the outer harbour of Inverkeithing & towards the town. Fifeshire July 1793 Rbrown’

‘Poa retroflexa Curtis Fl. Lond. Perpendicular bank the foot of w^{ch} is washed by the tide, not a stones cast south from the toll house at the end of Lieth Links on the road to Musselburgh June 1794 R Brown’. On the same sheet is the following label: ‘Poa retroflex-aracta [sic] Curtis Fl. Lond. var. Side of the bank a little beyond the first toll house on the road from Lieth to Musselburgh June 1794 RB-n’

Puccinellia maritima: Common Saltmarsh-grass (see example in text above)

‘Poa maritima Huds Salt marshy ground near Inverkeithing Fifeshire July 1793 Rbrown’

‘Poa maritima Huds Coast a few miles south of from Montrose Angusshire October 1792 RBrown’, and the following label is adjacent on the same sheet: ‘Poa maritima Huds Salt marsh between St Andrews & and the Guard bridge Fifeshire July 1793 RBrown’.

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Crossword Solution

Across: 1. scrub; 4. bottoms; 8. *Avena strigosa*; 9. seedbank; 10. damp; 12. Ebudes; 14. linear; 16. reed; 17. samphire; 20. *Inula salicina*; 22. talents; 23. thorn
Down: 1. spa; 2. reeve; 3. brambles; 4. botany; 5. trip; 6. obovate; 7. sea spurge; 9. spear mint; 11. misprint; 13. unequal; 15. satays; 18. ingo; 19. lawn; 21. Ann

***Monotropa hypopitys* (Yellow Bird's-nest) and tree/fungus partners**

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One of the species currently being monitored by the BSBI in its Threatened Plants pilot project 2008 is *Monotropa hypopitys* (Yellow Birds-nest) (see Front Cover). While recording the population and ecological data of this plant, useful information would be gained if a note was made of associated tree species and fungal partner (at the appropriate time of year). The involvement of local field mycology groups for this might help.

In Carmarthenshire, records of *Monotropa* are kept by the county recorder, Richard Pryce. There seem to be about 17 records for the county, dating from 1965, and from about 7 localities. From this list, 10 are for *Monotropa* agg, 6 for ssp. *hypophegea* and just one for ssp. *hypopitys*. Only two older records from Tywyn Burrows, Pembrey (I.K. Morgan, 1991), mention the associated tree species, in these instances *Salix repens*. The last record prior to 2004 is from August 1996, from Pembrey Forest.

In the summer of 2004 I found a 'fairy ring' of *Monotropa* scapes at the Ashpits, Burry Port (SN4601), an area of pulverised fuel ash (pfa) from the former coal-fired power station that operated between 1953-84. The area is relatively 'young' in an ecological sense and has been naturally colonised by self-sown vegetation until part was developed for recreation in recent years. The area where *Monotropa* occurs has not been 'developed', and consists of mature scrub dominated by *Salix cinerea* (Grey Willow) with some *Betula pubescens* (Downy Birch) and one self-sown *Pinus nigra* ssp. *laricio* (Corsican Pine). Small groups of trees have been planted in recent years including *Populus tremula* (Aspen), *Fraxinus excelsior* (Ash) and *Quercus* spp. (oak).

In 2004, about 350 scapes of *Monotropa hypopitys* ssp. *hypophegea* were counted in the ring and no flowers were seen in other areas. In 2005 there were somewhat fewer scapes in the ring, although it was still evident as a ring. Some scapes were also noted under

Aspen, about 30m from the ring but willow is close by at that site. Since 2005 few, if any, scapes have been found at the original ring but there has been considerable extension in area, year by year, of scapes under willow to the east of the earlier finds.

Studies at the University of Sheffield by Prof. David Read showed, by molecular analysis, that '*Monotropa* growing with *Salix* is associated with the *Salix*-specific fungus *Tricholoma cingulatum*, whereas under *Pinus* it was colonised by the Pinaceae-specific *Tricholoma terreum*' (Leake, *et al.*, 2004). However I do not think the sub-species of *Monotropa* associated with the different tree/fungus associations was noted. Do the sub-species rely on just one fungal host or can they live with either? The studies by Prof. Read have also demonstrated seed and early plant development.

At Burry Port, the *Salix*-specific fungus, *Tricholoma cingulatum* (Girdled Knight), is abundant over a large area from late October to mid-December. No *T. terreum* (Grey Knight) has been seen although the one pine is present. Tree roots spread some distance from the trunk and mycorrhizal fungi may enlarge the area considerably, making the fungus/tree association somewhat speculative. This cannot be regarded as an 'experiment' but I have put one *Monotropa* seed capsule into the soil surface where *T. cingulatum* has been seen, at two spots some distance from where known *Monotropa* plants had previously been found, and 18 months later scapes of *Monotropa* appeared. It seems that, if one wanted to, and it was 'ethical' to do so, Yellow Birds-nest could be introduced to areas known to have the specific fungus.

This is just a proposal for discussion but, if considered of any value, a survey of the *Monotropa*/tree/fungus complex could be undertaken, but it might need coordinating to involve mycologists as well as botanists.

Notes:

Tricholoma cingulatum is considered 'occasional' or 'rare' in various fungus books. There are 246 records on the 'Fungal Records Database for Britain and Ireland' (FRDBI). Of these, eight are in Wales. Two additional known sites in Carm. are not on FRDBI: Ashpits, Burry Port and Mynydd Mawr woodland, Tumble. I can see no records for Scotland and few for Ireland.

T. terreum is a more common species with 872 records on FRDBI, including many for Scotland. The Welsh records have not yet been sorted from this list. It occurs in Pembrey Forest.

The distribution map for *T. cingulatum* shows a south-eastern British distribution. The map for *Monotropa* shows a very similar pattern (in the *New Atlas of British and Irish Flora*), but of course the 'squares' have not been compared.

I believe that ssp. *hypopitys* is less common than ssp. *hypophegea* in the UK and that ssp. *hypopitys* becomes more frequent further north. I wonder if this is because *T. terreum* is more common in the north? It would be interesting to know exactly where in Carm. ssp. *hypopitys* was found.

Local spread of *Monotropa* is by means of vegetative runners and by wind-blown dust seeds. Dust seeds enable spread to distant locations but germination and development can only succeed if seeds meet the specific fungus. I wonder if the Ashpits seeds were

blown by the prevailing winds from Pembrey Forest? The considerable spread at the Ashpits is likely to be by wind-blown distribution, as it is mainly eastwards. There is also some evidence for spread by vegetative runners by the formation of rings of *Monotropa* scapes.

Threats to *Monotropa* populations:

Fragmentation of suitable woodland habitat with the necessary fungal population is likely to be the main threat. Fungal species themselves are in competition for ectomycorrhizal attachments to tree roots. More vigorous fungi may compete with the *Tricholoma* and replace these. If the *Tricholoma* goes, then *Monotropa* will also die-off. A strong *Monotropa* population (as it is parasitic on the fungus) may weaken the specific fungus so it becomes more susceptible to other competing fungi. Prof. Read has, however, shown that initially, the plant may make the fungus more vigorous.

Prof. Read considers *Monotropa* a seriously threatened species. The population that he studied for some years at Newborough (Anglesey) has now gone.

Reference:

LEAKE, J.R., MCKENDRICK, S.L., BIDARTONDO, M. & READ, D.J. (2004). Symbiotic germination and development of the myco-heterotroph *Monotropa hypopitys* in nature and its requirement for locally distributed *Tricholoma* spp. *New Phytologist* **163**: 405-423.

A note on the identification of *Fumaria occidentalis* Pugsley

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With regard to the identification of the British species of *Fumaria*, I have always found the characters of the mature dried fruits to be one of the most useful, if sometimes difficult to convey. In the case of the endemic *F. occidentalis* (Western Ramping-fumitory), the fruit has a character which seems to be omitted from most texts, but which Pugsley noted in 1912. This appears to be a reliable, and

obvious, characteristic for this species and therefore worth highlighting.

Mature dry *Fumaria* fruits each have two, visible apical pits, one either side of the fruit apex. In the case of *F. occidentalis*, each pit is subtended by a single, distinctive tubercle which stands out clearly amid the normal rugosity of the fruit coat. This is unique among the present British species of the genus. When the outer layer of the pericarp shrinks

on drying, these two tubercles act like the vertical supports of a ridge tent and often cause a crease to form at 90° to the wide axis (and keel) of the fruit. This engenders a distinctive, cruciform pattern when the fruit is viewed from above.

I have never seen this combination of characters in any of the other British *Fumaria* species, though it may occur in some of the continental taxa. If so, this could shed some

light on the affinities of *F. occidentalis*. I attach two scanning electron micrographs (Figs 1 and 2) to illustrate the apical features (including the notched beak also described by Pugsley) which are clearly visible to the naked eye.

Reference:

PUGSLEY, H.W. (1912). The Genus *Fumaria* L. in Britain. *Journal of Botany* 50: 1-76.

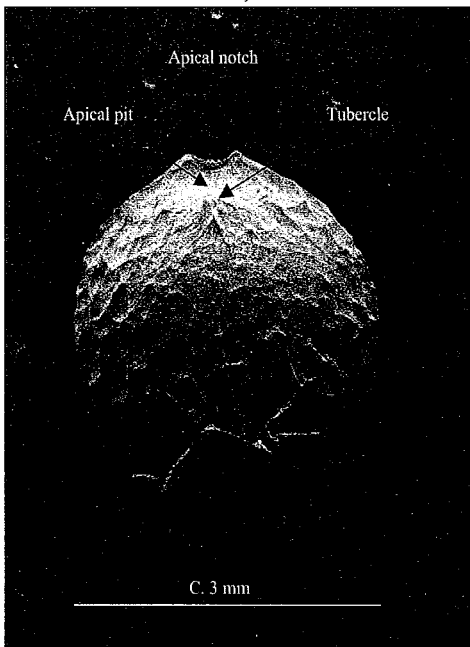


Figure 1: *Fumaria occidentalis* (mature dried fruit from side)

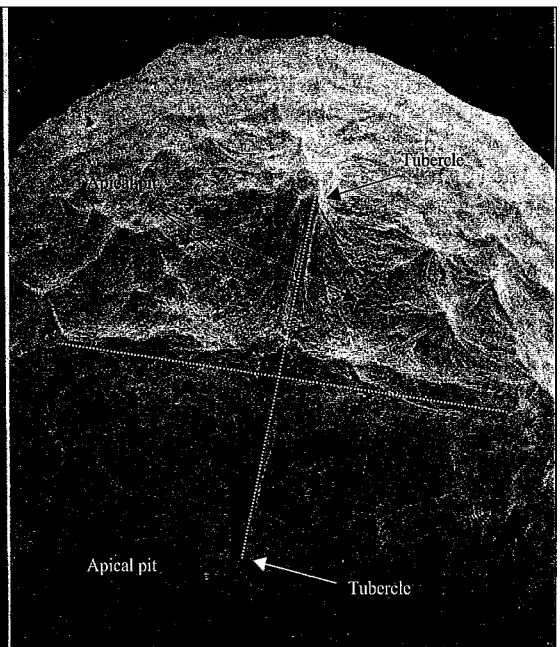


Figure 2: *Fumaria occidentalis* (mature dried fruit from above showing tubercles and cruciform pattern at intersection of crease and keel)

The Botanical Research Fund

The Botanical Research Fund is a small trust fund which makes modest grants to individuals to support botanical investigations of all types and, more generally, to assist their advancement in the botanical field. Grants are available to amateurs, professionals and students of British and Irish nationality. Where appropriate, grants may be awarded to applicants in successive years to a maximum of three.

Examples of projects recently supported by the Botanical Research Fund include:

- Development of a vegetative key to the British Flora

- Herbarium research for a monograph of *Strobilanthes* (Acanthaceae)
- Taxonomic studies of the Coralline algae
- Field surveys of seaweeds, bryophytes and *Rubus*

The next deadline for applications is February 28th, 2008.

Further details may be obtained from Mark Carine, Hon. Secretary, The Botanical Research Fund, c/o Department of Botany, The Natural History Museum, Cromwell Road, London, SW7 5BD (m.carine@nhm.ac.uk)

Botany in Literature – 48

A dream of *Asplenium* – Rue – Lizards

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The following extract is as recounted by Freud (pp. 69-71) of a dream about a fern and lizards as experienced by the French philosopher J.R.L. Delbœuf, who wrote of it in his 1885 *Le sommeil et les rêves* (Paris).

It is interesting in that it traces the contents of the dream to an herbarium record, and a periodical, and shows therefore the depth to which seemingly insignificant incidences are more or less accurately imprinted on the subconscious. Thus, the wisdom of the expression 'to sleep on it' becomes inversely apparent.

It may happen that a piece of material occurs in the content of a dream which, in the waking state, we do not recognize as forming a part of our knowledge or experience...

A particularly striking example of this is given by Delbœuf (1885: 107ff.) from his own experience. He saw in a dream the courtyard of his house covered with snow and found two small lizards half-frozen and buried under it. Being an animal-lover, he picked them up, warmed them and carried them back to the little hole in the masonry where they belonged. He further gave them a few leaves of a small fern which grew on the wall and of which, as he knew, they were very fond. In the dream he knew the name of the plant: *Asplenium ruta muralis* [sic]¹ The dream proceeded, and, after a digression, came back to the lizards². Delbœuf then saw, to his astonishment, two new ones which were busy on the remains of the fern. He then looked round him and saw a fifth and then a sixth lizard making their way to the hole in the wall, until the whole roadway was filled with a procession of lizards, all moving in the same direction ... and so on.

When he was awake, Delbœuf knew the Latin names of very few plants and an *Asplenium* was not among them. To his

great surprise he was able to confirm that a fern of this name actually exists. Its correct name is *Asplenium ruta muraria* [sic], which had been slightly distorted in the dream. It was hardly possible that this could be a coincidence and it remained a mystery to Delbœuf how he had acquired his knowledge of the name '*Asplenium*' in his dream.

The dream occurred in 1862. Sixteen years later, while the philosopher was on a visit to one of his friends, he saw a little album of pressed flowers of the sort that are sold to foreigners as mementos in some parts of Switzerland. A recollection began to dawn on him - he opened the herbarium, found the *Asplenium* of his dream and saw its Latin name written underneath it in his own handwriting. The facts could now be established. In 1860 (two years before the lizard dream) a sister of this same friend had visited Delbœuf on her honeymoon. She had with her the album, which was to be a gift to her brother, and Delbœuf took the trouble to write its Latin name under each dried plant, at the dictation of a botanist.

Good luck, which made this example so well worth recording, enabled Delbœuf to trace yet another part of the content of the dream to its forgotten source. One day in 1877 he happened to take up an old volume of an illustrated periodical and in it he found a picture of the whole procession of lizards which he had dreamed of in 1862. The volume was dated 1861 and Delbœuf remembered having been a subscriber to the paper from its first number.

Notes

1. (a) *Asplenium ruta muralis* [sic]: although corrected by Freud to *Asplenium ruta muraria*, even more correctly it is now *A. ruta-muraria* L. Known in the vernacular

as Wall-rue (but strictly, in the genitive, as Rue of the Wall), other common names have been Wall Spleenwort, Rue of the Walls, The Wall-rue Fern, Spleen Fern, White Maidenhair, and Tentwort. It belongs to the Aspleniaceae (the Spleenwort Family), sub-family Asplenoideae, which consists of 11 genera, including *Asplenium*. The family is characterised by short or very short rhizomes, simple to multi-pinnate fronds (sometimes acrostichoid = with the sori fused), the soria (= groups of sporangia) and indusia (= covers growing over the sporangia) being various. There are no trees in the family, but climbers and epiphytes are found. The triangular-ovate leaves of *A. ruta-muraria* are green, and irregularly and sparingly 1-2 pinnate. The petioles, which are longer than the leaf (= blade) are also green. The indusia have fringed margins. The fern is native to the British Isles and grows on rocks and in the crevices and joints of all kinds of walls where the base substratum is rich. In acid areas it will grow on mortar. Wall-rue is found not only in this country but also in the eastern United States, Europe, and Asia (= Eurasia). The etymology of the Latin name derives from both Ancient or Classical Greek and Classical Latin, viz.: *Asplenium* from α (*a*) = not, and $\sigma\pi\lambda\acute{\eta}\nu$ (*splē'n*) (Modern Greek = $\sigma\pi\lambda\acute{\eta}\nu\alpha$ (*splēna*)) = spleen; *ruta* from $\rho\acute{\upsilon}\tau\eta$ (*rutē*) = rue (bitterness, unpleasantness); *muraria* from Latin *mūrālis* = of a wall. Although the name traditionally alludes to the plants supposed medicinal use in curing infirmities of the spleen, the literal translation 'not-spleen' would appear to contradict this, but if rendered *in extenso* as anti-[diseases of the] spleen (i.e. cholagogic, choloretic), then its possible attributes make sense. The frond has also been vaunted as an astringent, emmenagogue, haemostatic, and ophthalmic. The Black Spleenwort (*A. adiantum-nigrum*) was also once regarded as a cure for ailments of the spleen.

(b) The choice of *ruta* for the fern's specific epithet obviously allies it to *Ruta graveolens*, Rue (also known as Herb of Grace,

Common Rue, Garden Rue, German Rue, Herby-grass, Herb of Repentance) of the Rutaceae, and its deeply 2-3 pinnately-lobed leaves; also the fact that it grows in wall-cracks in South-east England. But unlike *Asplenium ruta-muraria* it is not used for conditions of the spleen. However, despite the fact that it can cause kidney irritation, degeneration of the liver, and, when handled after the skin's exposure to the sun, dermatitis, it had many medicinal uses, especially in Ancient Egypt.

In contrast to the above derivation, Grieve gives $\rho\acute{\eta}\nu\omega$ (*rē'uō*) = to set free (as in set free from illness). The name of the whole plant in Greek is $\pi\acute{\eta}\gamma\alpha\nu\omicron\nu$ (*pē'ganon*). In Modern Greek $\rho\acute{\eta}\gamma\mu\alpha$ (*rē'gma*) means crack, or crevice.

(c) Several other dicotyledonous plants share the name of rue, at least in the vernacular. Thus Rue Anemone (*Anemonella thalictroides*), which has edible tubers, False Rue Anemone (*Isopyrum thalictroides*), Early Meadow Rue (*Thalictrum dioicum*), Greater (or French) Meadow Rue (*T. aquilegifolium*), Common [Yellow] Meadow Rue (*T. flavum*) (all Ranunculaceae), and Goat's Rue (*Galega officinalis*) (Leguminosae/Fabaceae), this latter being used as fodder and also fed to goats to improve milk flow (*gala* = milk). It was also believed to cure bites from poisonous animals, such as the goat, the breath of which the Ancients believed to be poisonous. The plant is toxic to sheep.

2. *Lizards*: (i) There are 3000 species and sub-species of lizard, 51 of them found in Europe. All have scaly skins which adults shed via a moult once every month or so during the months in which they are active. Unlike snakes, the epidermis is not lost in one piece but in patches or even a scale at a time. Lizards also have relatively long tails, and in most cases, closeable eyelids, and two pairs of legs.

Typical lizards, of which there are two types, green lizards and rock lizards, belong to the reptilian order Squamata (Scaly Reptiles or Squamates), sub-order Sauria (Lizards),



Derek Hill with a large patch of *Gentiana acaulis*, Buckland Hills (v.c.17).
Photo T. Rich © 2008 (see p. 50)



Tristagma uniflora, Newport Docks (v.c.35).
Photo T.G. Evans © 2008 (see p. 52)



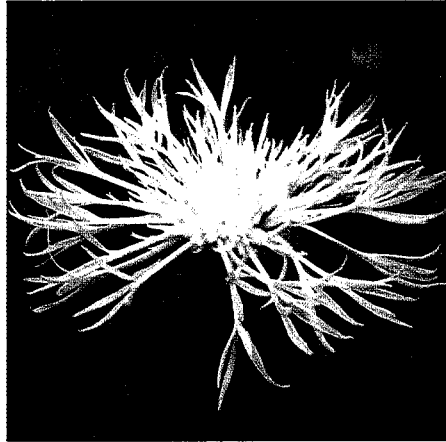
Acacia dealbata, Sandown verge (v.c.10).
Photo G. Toone © 2008 (see p. 49)



Misopates orontium, Dunstan (v.c.32). Photos
B. Laney © 2008 (see p. 28)



Eruca vesicaria, Forelands, Bembridge (v.c.10). Photo A. Campbell © 2008 (see p. 49)



Centaurea scabiosa (white form), Pitstone (v.c.24). Photo J. Graves © 2008 (see p. 7)



Lathraea clandestina on *Gunnera*, Alverchurch (v.c. 37). Photos A. Ogden © 2004 (see p. 51)



Crassula decumbens (see p. 66)



Scandix pecten-veneris (see p. 65)



Sempervivum montanum, Forau de Aiguallut (see p. 72)



Moneses uniflora, Selva Negra (see p. 75)

Photos taken at St Mary's Scilly (v.c. 1b). by L. Worthington © 2008

Photos taken in Spain by T. Farina © 2008



Photo 1 *Lycopodium annotinum* Site 1: 24/12/2007 (see p. 27)



Photo 2 *Lycopodium annotinum* Site 1: 9/2/2008 (see p. 28)



Photo 3 *Lycopodium annotinum*
Site 2: 10/12/2007 (see p. 28)



Photo 4 *Lycopodium annotinum*
Site 3: 6/2/2008 (see p. 28)



Photo 5 *Lycopodium annotinum*
Site 5: 10/12/2007 (see p. 28)



Photo 6 *Lycopodium annotinum*
Site 4: 11/2/2008 (see p. 28)

Photos 1 & 2 © B. Sonnberger; photos 3, 4, 5 & 6 © A. Sliwiska-Wyrzychowska & M. Bogdanowicz



Astragalus danicus, Cranwich Heath, Norfolk



Ophrys insectifera, Burren (v.c.H9)



Crepis mollis, Wharfedale, Yorkshire Dales



Blysmus compressus above Alum Pot,
Ribblesdale, Yorkshire Dales

family Lacertidæ (Lacertids). As the features of each type of lizard are connected with where they live and hunt, habitat differences are useful in confirming identification. Thus the fact that Delbœuf's lizard dwelt in a hole in a stone wall, more or less determines it as a rock (or crevice) lizard, which are often brown and flattened in appearance, unlike the lizards which hunt in vegetation, and, by way of camouflage are correspondingly green (for example, *Lacerta schreiberi* (Schreiber's Green Lizard) of north-west, west, and central Iberia).

By virtue of Delbœuf residing in Europe, and probably France, and the fact that in his dream, and subsequently periodical, he saw several lizards, it would seem that the lizard was of frequent occurrence, inasmuch that it was commonly found. The species which most aptly fits the rather scant details to hand is the lacertid *Podarcis muralis* (Common Wall Lizard) which is found in mainland Europe, north to France, south Belgium and south Netherlands, the Rhine Valley, Czechoslovakia and Romania, and south to central Spain, south Italy, and south Balkans.

As Freud does not give a physical description of the lizard and as it has not been possible, as yet, to consult Delbœuf's work in the event of such details being provided, I give some here.

The size of *Podarcis muralis* is quite small, being up to 7.5cm from snout to vent, but usually less, with a tail $1\frac{2}{3}$ to $2\frac{1}{4}$ times as long. As befits a wall lizard, it is flattened, with a smooth-edged collar and lightly keeled scales. Its pattern is very variable, but mostly brownish or grey (occasionally tinged green) in colour, often with conspicuous black and white bars on the sides of the tail. It is worth noting that males have more complex dorsal markings than females, reticulation sometimes occurring. The ground colour of the belly may be whitish or pale buff, with often some red, pink, or orange in the female. Extending to the belly, from the usually rust-marked whitish or cream throat, especially in the female, is a variable amount of black pigment.

Juveniles are more or less like the female, but the tail is sometimes light grey.

Widespread, its habitat ranges from sheltered sunny locations (north) to mountainous areas (south) of over 2000m, and in the south it is often encountered in rather humid, semi-shaded places. It is typically a climbing species, seen on field and garden walls, parapets, rock-faces, borders, and even tree-trunks.

The Common Wall Lizard is generally a very active and alert species, and usually more adventurous and opportunistic than its relatives. The fact that more than any other small lacerta it occurs near human habitation marks it out as the creature Delbœuf cared for.

There are some very beautiful regional variations, such as that found in the Rome area, which has heavy black and emerald green dorsal markings.

There is another species, *Lacerta oxycephala* (Sharp-snouted Rock Lizard), which lives in a similar habitat, but is confined to south-west Yugoslavia and neighbouring areas. It retreats into crevices or among stones when disturbed.

Other species of rock lizards include *Lacerta græca* (Green Rock Lizard), *L. saxicola* (Caucasian Rock Lizard), *Podarcis taurica* (Balkan Wall Lizard), *P. erhardii* (Erhard's Wall Lizard), *P. peloponnesiaca* (Peloponnese Wall Lizard), *P. milensis* (Milos Wall Lizard).

Lizards eat both plants (foliage, fruit, flowers, seeds, nectar), and animals (e.g. insects). Although I have been unable to determine whether *Podarcis muralis* eats specifically *Asplenium ruta-muraria*, the fact that they both occur in Europe is a mitigating factor. Also, in favour of this lizard species is the original naming of the fern as *A. ruta muralis*, which suggests that quite possibly, insofar as the *muralis* is concerned, Delbœuf was also acquainted with the Latin name of the creature and inadvertently conflated the two scientific epithets.

(ii) In Lewis Carroll's *Alice in Wonderland* Bill the Lizard is found in both Chapter 3 (A Caucus-Race and a Long Tale) and Chapter 11 (Who Stole the Tarts?). In the first instance,

he is picked upon to go down the chimney to investigate the nature of the gigantic creature (Alice) in the house, which results in Alice kicking him ‘like a Jack-in-the-box’, so he goes back up the chimney ‘like a sky-rocket!’, as he relates, upon being revived with some brandy, in ‘a little feeble, squeaking voice’.

In the second, he is a juror. His pencil squeaks and ‘This, of course, Alice could *not* stand’, so she gets behind him and takes it away. The perplexed creature can not comprehend what has happened to the pencil, and not locating it, ‘he was obliged to write with one finger for the rest of the day; and this was of very little use, as it left no mark on the slate’. The fact that he neither makes a fuss nor asks for a replacement, perhaps betokens what shy little creatures lizards are.

Carroll’s original illustration portrays the lizard with a horizontally striped tail.

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Correction to Botany in Literature – 46

Once more I must apologise to Margot, this time for the following error in paragraph placement on page 36 of the last issue

‘... But he did not eat any more of them.

He forgot forthwith. He rolled over and sat up with a look of astonishment on his face.’

Should read

‘... But he did not eat any more of them. He forgot forthwith.

He rolled over and sat up with a look of astonishment on his face.’

CONSERVATION NEWS & VIEWS

The Trump Inquiry

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A proposal by Donald Trump to develop two golf courses and a holiday resort on the coast north of Aberdeen has caused much concern to conservation and wildlife organisations over the past three years. The championship course would overlap 67 ha of the Foveran Links SSSI, and emasculation is feared of the main attributes for which the site was designated: the scarce dune and dune-slack plant communities and the near-unique geomorphology of massive mobile dunes and sand-dome. A further 177 ha of dunes outwith the SSSI are included in the present proposal.

With a strong case being put by opponents, the Aberdeenshire Infrastructure (=Planning) Committee turned down the development by 9 to 5 votes in October 2007. This caused a political storm, and after a convoluted and irregular series of moves, a public inquiry was set up by the Scottish Government.

Brinkmanship by TIGLS, the Trump organisation, brought them a new type of speedy inquiry led by three reporters. Objecting organisations were asked to combine their cases to avoid delay and duplication, and so BSBI tagged on to a group including the Royal Society for the Protection of Birds and the Scottish Wildlife Trust. The BSBI has many fewer members than these two organisations, but this arrangement had advantages in that a rounded opposition case could be put based on accurate botanical knowledge. The joint group (known as RSB) hired an advocate, and members from each organisation took part in the consultations and writing which produced the statutory statements-of-case, precognitions, rebuttals, etc.

Populations of ten RDB and Scarce higher plants and ferns are potentially threatened by the championship course at Menie:

Carex maritima (Curved Sedge)

Dactylorhiza incarnata (Early Marsh-orchid)

Festuca arenaria (Rush-leaved Fescue)

Gnaphalium sylvaticum (Heath Cudweed)

Ophioglossum azoricum (Small Adder's-tongue)

Pyrola media (Intermediate Wintergreen)

Radiola linoides (Allseed)

Teesdalia nudicaulis (Shepherd's Cress)

Viola canina (Heath Dog-violet)

Viola tricolor (Wild Pansy).

Moreover, five vegetation types protected by the *EC Habitats Directive* would lose substantial acreages including three Priority Habitats (2130, 2140 and 2150 covering grey dunes and decalcified fixed dunes carrying heath). Dune slacks (EC 2190, a non-priority habitat) would suffer very badly, with Scottish Natural Heritage claiming that 98% of the Scottish stock of young dune slack (NVC SD13) would be damaged or lost.

The Trump organisation played down these serious losses by 1) proposing a major programme of translocation, and 2) calculating the losses against the whole extent of the SSSI, two-thirds of which lies north of the proposed championship course. But this part of the SSSI is less valuable botanically and geomorphologically, and several key species particularly *Carex maritima*, *Ophioglossum azoricum* and *Pyrola media*, do not occur.

The Inquiry ran for four weeks from June to July 2008, and in the last week two days were spent in visiting the site. The arguments for developers and opponents were put effectively, and some rigorous cross-examination occurred. On the first day Donald Trump appeared, and was subjected to prolonged and searching questioning from the conservation organisations and the rambles.

A highlight for many observers was when the TIGLS habitats adviser, Dr Tom Dargie, was asked about the opinion he gave to Donald Trump in spring 2006, that there should be no development on the SSSI. He replied that he still held that opinion.

The translocation proposed is on a vast scale – 35 ha of dune and dune slack to be moved in turves of 2 by 1 metre. Besides possible problems in plant survival in the new positions, there is a major difficulty of finding suitable receptor areas that do not already hold valuable plant communities. Also ground-water conditions will need to be replicated, which for dune-slack translocation may well require excavation.

Additionally, an enormous operation to level the alp-like dunes would be necessary - the cut and fill will shift ‘biblical quantities of sand’, as the SNH geomorphologist told the inquiry. The extent of these operations, coupled with the stabilisation of the mobile sand and the translocation programme, will effectively ruin 100 ha of high-quality habitat.

The reporters recommendations are due in the autumn, and John Swinney, Cabinet Secretary for Finance and Sustainable Growth, will make the final decision.

Conservationists are well satisfied that the damage that will accrue from the championship golf course has been exposed, and the principle that SSSIs should not be damaged other than in exceptional circumstances has been broadly accepted.

So we expect that the reporters will give partial or even total protection to the SSSI. Whereupon TIGLS will threaten to abandon the project and great political controversy will result. In which case lobbying of John Swinney by conservationists may help to obtain a reasonable compromise.

Rare plants under threat from thieves

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The police, environmental and gardening groups have joined together to condemn thieves who have stolen a rare type of orchid from the Peak District National Park countryside.

The Dark Red Helleborine orchids were dug up and removed from the Stoney Middleton area between 16 and 23 July.

The Peak District National Park Authority, Natural England, National Trust, Derby Museum and Art Gallery and the Royal Horticultural Society have all expressed concern about the impact that losing the rare plants could have on biodiversity in the Peak District.

Unless the theft has been carried out by someone with specialist knowledge the orchids that have been stolen are likely to die anyway due to the difficulty of successfully transplanting rare plants. Even legal attempts to move orchids for conservation reasons often fail.

Rhodri Thomas, natural environment team manager for the Peak District National Park Authority, said:

‘The actions of the thieves have damaged a nationally important wildlife site and put a rare plant under further threat.

Orchids are popular flowers but it is important that they are left to flourish in

their natural environment - in this case the limestone area of the White Peak.

The Dark Red Helleborine orchids are only found in five areas of the UK. Their numbers in the Peak District fell sharply in the 1960s due to mineral extraction and now there are not many plants left so it is important we do everything possible to protect them.’

Under the Wildlife and Countryside Act 1981 it is an offence to pick rare plants. It is also a criminal offence to take plants from land without the owner’s permission.

Dark Red Helleborine orchids – also known as *Epipactis atrorubens* – are scarce nationally. They are usually 15cm to 30cm tall, with a hairy stem and up to 20 flowers. The flowers are distinctive because they grow in two opposite rows on either side of the stem.

The RHS encourages gardeners, when acquiring plants of wild species, to always check that they have been obtained from sustainable, cultivated sources and not to accept plants they suspect to have been dug up from the wild.’

Anyone with information about the orchid theft should ring Derbyshire Constabulary on 0845 123 3333.

ALIENS

Acacia dealbata self-seeded in Britain

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In early February of this year my eye was caught by three small saplings beneath a south facing wall alongside a well used footpath in urban Sandown, East Wight. The tallest of these reached 45cm and they all seemed to have appeared from seed and to be at least two years old. They bear the distinctive twice-pinnate leaves of *Acacia dealbata* ('Silver Wattle'), a small tree from Tasmania and south-east Australia, much planted in gardens of the relatively frost-free parts of the British south coast and in Ireland. (see Colour Section, Plate 1).

The nearest source of possible seed, which was in spectacular full flower at the time, stood overhanging the pavement of the adjacent main road, 100m away. This supposed parent is mature in outline, probably at least 20 years old, and, I have since discovered, bears pods of seed which looks viable.

A fairly thorough search of the literature failed to find any records of the tree as a casual

and so, as a compass needle turns to the north, I wrote to Eric Clement, who kindly pointed out to me 'Plants found in Ireland but not in Britain', published as an addendum to the Vice-County Census Catalogue, where *Acacia dealbata* is amongst six species 'recorded as casual or marginally naturalised in Ireland but not so in Britain'. It is reported there as having only been recorded as self-sowing in parks and 'wild gardens' and the records, we are told, 'need careful vetting'. This came as a surprise, since Silver Wattle is a common garden tree here and there must surely be others which self-seed, both on the Isle of Wight and along the coast towards Cornwall. South facing walls seem likely to offer the best chance.

Reference:

STACE, C.A. (2005). Plants found in Ireland but not in Britain. *Watsonia* 25: 296-298.

Eruca vesicaria (Garden Rocket) found growing on a cliff face at Bembridge, Isle of Wight

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On January 29th of this year, I found *Eruca vesicaria* (Garden Rocket) growing in some quantity and already flowering, on the cliff face at Forelands, Bembridge (v.c.10) (see Colour Section, Plate 2). There were seven groups of plants, scattered along the lower part of the cliff, extending over a distance of 90m. One of these groups was later buried beneath a cliff-fall. The lowest plants were growing just 1 - 1.5m above the beach, so were vulnerable to splashes of salt spray during high tides, but appeared unharmed, even after several weeks. One, the smallest patch of plants, was the highest, being c.3m up the cliff.

By early February, the two largest groups had reached almost a metre high and over a metre wide. Arising from near the centre of one of these were some dead stalks, presumably remains of last year's plants.

During April, the fruits began to ripen more quickly. Previously, although there were plenty, they mostly remained immature. Throughout the month, the plants continued to flower profusely, and at first glance the flowers – pale yellow and violet-veined, resembled those of *Raphanus raphanistrum* (Wild Radish). It will be interesting to see if this introduced species, an annual, can persist on such an exposed site.

Records of *Gentiana acaulis* L. (Gentianaceae) in Britain

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TIM C.G. RICH, *Department of Biodiversity and Systematic Biology, National Museum of Wales, Cardiff, CF10 3NP*

Gentiana acaulis L. (Trumpet Gentian), is a spectacular alpine plant, native in the Alps, Balkans, Carpathians and Pyrenees, where it is a strongly calcifuge species of well-drained, nutrient-poor soils at altitudes of 1400-3000m. It is a popular garden plant in Britain that has been sporadically recorded as planted or naturalised in various places, although the extent to which it has ever been truly naturalised is difficult to assess. There are a number of clear garden specimens in herbaria, and some records do not specify the status, so should be treated with caution. A number of early records seem to be erroneous resulting from confusion with various other taxa, and in the absence of specimens are best rejected. The purpose of this short note is to summarise the records traced. Rejected records are given in square brackets.

[V.c.10 Isle of Wight. A record for Freshwater Downs by I.H. Knox (1878) was an error for either dwarf *Campanula glomerata* L. (Marshall, 1878) or *Gentianella campestris* (Bree, 1878).]

V.c.17 Surrey. Buckland Downs, first recorded May 1960, Miss B.M.C. Morgan and Miss C. Gurney (Lousley, 1961) and still present. The original planting was on the west side of Buckland Lane, and they persisted until they were shaded out by tree planting. Additional colonies were planted in subsequent years, and were first recorded in the mid-1980s by D.A.W. Hill. It is currently known from three small colonies in grazed chalk grassland on soil pH 7.3 (**BM**, **LTR**, **NMW**) (see Colour Section, Plate 1). This colony has been incorrectly reported as *G. chusii* E. P. Perrier & Songeon (e.g. in Stace, 1997).

V.c.21 Middlesex. Reported as having been 'shown to us as a wild plant' from Middlesex by Smith & Sowerby (1807). The record from 'near London' in Macreight (1837) refers to this source.

V.c.34 West Gloucestershire. Amberley, on a common near a path, March 1919, Mrs D. Travers, doubtless planted (Druce, 1920).

V.c.45 Pembrokeshire. Haverfordwest, M. de St Amans (**BM**; the specimen was used as the basis for the excellent illustration in *English Botany*, tab. 1594 (Smith & Sowerby, 1807)).

[V.c.48 Merioneth. A record for Cader Idris by J. Colebrook (1877a, 1877b) was suggested to be *Gentianella campestris* by Druce (1878).]

[V.c.59 South Lancashire. A record for sand hills near Liverpool, Mr Townley (Sidebotham, 1848) was rejected by Watson (1848).]

V.c.62 North-east Yorkshire. Rievaulx Terrace, naturalised, 1906, N. D. Simpson (**BM**).

V.c.83 Midlothian. Garden escape, Tynehead (Sonntag 1894). Garden escape, Roslin, C.O. Sonntag (Sonntag, 1894). Water of Leith, 1865, A. Craig Christie (**E**), possibly an escape from the Royal Botanic Garden, Edinburgh (pers. comm.: D. McKean, 2008).

V.c.85 Fife. Dunfermline, 4 September 1871, I.B. Balfour (**OXF**).

[V.c.97 Westernness. Reported as 'occurring frequently in fine down grass ... by a small headland of Knoydart ... blooming between June and September, J. Baird' by Druce (1917), who rejected the record as being mistaken for *Campanula rotundifolia*.]

[V.c.103 Mid Ebudes. Marshall (1878) reported it had been found on Staffa in June 1834-1835 'doubtless as a garden escape' but had not been seen since. It is likely to be an error for *Campanula* or *Gentianella*. *G. campestris* has been recorded; L. Farrell, pers. comm., 2008]

In summary, *G. acaulis* currently occurs in v.c.17 and has been recorded in v.cc.21, 34, 45, 62, 83 and 85.

Acknowledgements:

We would like to thank Mr A.N.M. Sanders for information about the Buckland Hills colonies, the Keepers of the Herbaria at **BM**, **E**, **GL**, **K**, **OXF**, **NMW** and **RNG** for access to collections, and Lynne Farrell, Serena Marner, Douglas McKean, Mark Spencer, Clive Stace and Keith Watson for their help.

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Purple Toothwort grows on *Gunnera*

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I like to grow unusual plants in the garden. Many years ago I was given *Gunnera manicata* (Brazilian Giant-rhubarb) which is from South America (Colombia, Brazil), a clump-forming bog plant with huge leaves. A year or two later I acquired *Lathraea clandestina* (Purple Toothwort) (Europe) which is a parasite on *Salix* (willows), *Populus* (poplars) and *Alnus* (alders).

I planted the *Lathraea* next to a *Salix babylonica* (Weeping Willow) and a *Populus nigra* var. *italica* (Lombardy Poplar), where it grew successfully for many years, appearing in a different position each year. Then the *Lathraea* began to grow most profusely around the *Gunnera*, indeed in such close proximity that I began to suspect that it was parasitic on that plant too (see Colour Section, Plate 2).

This seemed to be such an unlikely occurrence that I showed it to some botanist friends who were visiting. They thought that maybe the willow and poplar roots which were not far away had invaded the area around the *Gunnera*, attracted by the dampness from watering in dry

periods. We discussed possible methods of trying to discover which roots were attached to the *Lathraea*, maybe by gently washing away the soil with a hose, but a much simpler test was discovered accidentally. Some friends asked for a cutting of the *Gunnera* for their garden, which is best done by hacking out a rooted bud in Spring before growth begins. Recently I went to visit their garden to see how the *Gunnera* was doing. It was flourishing well, but I was astonished to see that it was surrounded by *Lathraea*, with no sign of willow or poplar shoots around. This proves to my satisfaction that the Purple Toothwort can grow on *Gunnera*, a most incredible association.

Incidentally, may I mention another observation. During dry spells I have noticed that the soil around the clumps of *Lathraea* remains very soggy. I wonder if the plant has to rid itself of excess water and possibly sugars in the same way as aphids? Sucking sap gives a very unbalanced diet to a plant which has to build only flowers and which has no green leaves to do the chemistry.

Adiantum raddianum – not a new vice-county record for North Somerset (v.c.6)

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On New Year's Day 2008, Mark Spencer photographed a fern, which he thought might be *Adiantum raddianum* (Delta Maidenhair), in a basement in Bath. He showed his photograph to Fred Rumsey for confirmation, but identification requires a view of the underside of the frond and the photograph, taken looking down into the basement, showed only the upper surfaces of fronds. Here was a mission for a Bath Basement Botanist! Thanks to Mark's excellent directions, the basement was easily located and four splendid plants, one clearly of some age, were admired through the railings, growing just out of reach on the steps down into the basement. The fortuitous arrival of the postman allowed swift collection of a mature frond.

The plant was easily identified as *A. raddianum*, confirmed by Fred Rumsey. There is a beautiful drawing of this species on the front cover of *BSBI News* 78 (April 1998). Fronds are usually longer and may be more divided (to 4-pinnate) than the fronds of *A. capillus-veneris*, but the distinguishing feature is the shape of the pseudo-indusium, which is reniform around the sinus of the leaf lobe in *A. raddianum*, but linear, lying between the sinuses, in *A. capillus-veneris* (Rumsey, 1998).

Adiantum raddianum is native to Central and Southern America and Mexico, but has become naturalised in many countries. In Europe, it is known from Belgium, Netherlands, Germany, Portugal and Spain, as well as Britain (Verloove, Van der Ham & Denters, 2007). It was first found established in the British Isles

by Fred Rumsey in September 1997, on a sheltered house wall in Pimlico, London (Rumsey, 1998). It has since been found at other sites in London (Edgington, 2005).

The recent record for Bath was initially thought to be a new vice-county record, but this is not so! Inspired by the discovery of this attractive alien, I looked at the records for the related *A. capillus-veneris* in Somerset, preparing to write its entry for the (as yet embryonic) Somerset Rare Plant Register. *A. capillus-veneris* is Nationally Scarce, and although not native to Somerset, it is found as an escape from cultivation in a few places, including several sites in Bath. Whilst sorting the records, I found one for the same basement as our new species, made by Ian Green in October 1997. Ian and I agreed that it is too much of a coincidence not to be a mis-identification – an easy mistake without the timely arrival of a postman! Ian thus found *A. raddianum* in Bath just one month after it was first found in London. It is possible that this fern is more widespread, masquerading in other inaccessible spots as *A. capillus-veneris*.

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Some new aliens at Newport Docks

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On 8 April SJT was botanising on 'waste' ground behind the sea wall at Newport Docks in Monmouthshire (v.c.35) and, on sparsely

vegetated ground, she enjoyed seeing abundant *Erophila verna* (Common Whitlow-grass), *Arabidopsis thaliana* (Thale Cress),

Saxifraga tridactylites (Rue-leaved Saxifrage) and *Myosotis ramosissima* (Early Forget-me-not), all of which proved to be new records for the tetrad SO3184. She then came across four small patches of a bulbous plant (SO3171 8418) that had pale mauve to whitish flowers and narrow, curved leaves. Later, on consulting a range of books, she identified it as *Tristagma* (*Tritelia*, *Ipheion*) *uniflorum* (Spring Starflower), a South American species naturalised in Cornwall, the Channel Islands and the Scillies (Stace, 1977) and which will be familiar to many gardeners. It had not been recorded before in v.c.35 (away from gardens), although there is a record from west of Cardiff. A few metres from the Starflower SJT noted a patch of a strange *Allium* species with yellowish-green leaves, but whose flowers were still hidden in the bracts. Another alien found that day was *Duchesnea indica* (Yellow-flowered Strawberry) that was growing on a pile of rubble at SO325845.

SJT contacted TGE, the vice-county recorder, and together we visited Newport Docks on 14 April to see the plants found earlier. TGE photographed the Spring Starflower (see Colour Section, Plate 1), and we were able to note the strong garlic smell of the leaves and the sweet-smelling flowers. In the *Allium* patch of about 1m², one flower was now evident, and we keyed the species out to Hairy Garlic, *Allium subhirsutum*, a rare alien in Britain, and a new record for the vice-county.

Newport Docks has long been known for its wealth of interesting plants and the record card for the area of the docks has the largest number of taxa of any other similar sized area in the county (Evans, 2007). *Tristagma uniflorum*, *Allium subhirsutum* and *Duchesnea indica* are now added to the long list of aliens that have been recorded there.

We checked other waste ground north of Alexandra Dock, where TGE had botanised prior to 1996, but much of this area had been developed and a once large marsh had been reduced to a few square metres. Former occupants of the marsh and surrounds included *Scrophularia canina* (French Figwort) on raised ashy paths in 1973 and between 1970 and 1983 *Cyperus longus*

(Galingale), *C. eragrostis* (Pale Galingale), *Trifolium resupinatum* (Reversed Clover), *Scirpoides holoschoenus* (Round-headed Rush), *Carex divisa* (Divided Sedge) and *Verbascum nigrum* (Dark Mullein). Infill of the marsh from 1983 to 1984 to store Japanese cars destroyed most of the marsh, but some of the above species survived in the small area of remaining marsh or on nearby waste land, where 700+ *Ophrys apifera* (Bee Orchid) were widespread in 1991. In 1993 there were more than 300 *O. apifera*, but after that year the large area of waste ground was levelled and scarified. Several long buildings now cover the in-filled marsh, parallel to a long building for imported timber. TGE suggests that *Ophrys apifera* could be the only survivor, as these orchids have occurred somewhere in the Docks every year since 1970.

Near the western entrance to the docks still stands the Gasometer. A large area was formerly occupied by rail shunting yards, spread ashy ballast and other waste land. This was home to *Illecebrum verticillatum* (Coral-necklace), *Achillea ligustica* (Southern Yarrow), *Scrophularia scorodonia* (Balm-leaved Figwort) and *Reseda alba* (White Mignonette). This large area is now fenced off and the whole area has been scraped clear of vegetation. Any survivors of these species here are very unlikely.

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[Since we wrote this note, Heather Colls has told us of a previous record of *Tristagma uniflorum* on 4th May 2006 on a roadside by Bowleaze Reen (ST37707785514) on the Gwent Levels. She estimated that there were well over a dozen flowers and that the plants covered an area of about 0.5m square. Heather noted that it looked well established and was keeping company with several black polythene bags of rubbish. She added that there were no other garden throw out plants there.]

'A missing mistletoe' that never was – the Irish angle on *Loranthus europaeus*

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Being interested in mistletoe – *Viscum album*, that is – particularly in Ireland (Nelson, 2007a; and *in press*), Eric Clement's note about 'A missing mistletoe' in *BSBI News* 108 (April, 2008) caught my eye. He drew attention to the recent discovery of *Loranthus europaeus* on *Quercus velutina* in the Royal Botanic Gardens, Kew. That plant does thrive and is growing as reported, but the associated story, first published in *Kew* (Winter 2006, 12–13), the magazine issued by the Friends of the Royal Botanic Gardens, Kew, is seriously flawed and needs correction.

My suspicions were aroused by the report, noted by Clement (2008: 44), that there existed a letter dated 1911 which had been written by Dr David Moore, for the poor man had died "very quietly" twenty-two years earlier on 9 June 1879 following an "experimental operation" on his bladder (see Nelson & McCracken, 1987: 151). Deceased plantsmen don't write letters!

Thanks to Tony Hall (Manager of Arboretum Operations, Royal Botanic Gardens, Kew), who had first spotted the *Loranthus* in the arboretum at Kew, I have obtained a copy of the letter and I can confirm it was type-written, on his personal, official headed notepaper, and signed by Frederick Moore, and is dated 4th January 1911.

Frederick Moore refers to two well-recorded seedlings of *Loranthus europaeus* which his father, David Moore, had established at Glasnevin – the letter has nothing whatever to do with the existence of this species in Kew. Briefly, David Moore obtained seeds of *L. europaeus* from Professor Eduard Fenzl of the University of Vienna in 1870, and by 1872 young leafy plants were growing in Glasnevin on a "common oak" and a Turkey oak. David Moore reported all this in detail in a paper that he read to the Royal Dublin Society on 20th January 1873. It was subsequently published (Moore, 1875).

Frederick Moore added some interesting details: 'I remember well *Loranthus* being established on two Oak trees here [Glasnevin] in the garden. One at the back of the nursery garden and the other near the pond. As well as I remember it was about 1873, but both these died. They only lived for two or three years. I did not at the time know anything about them, but I remember my father pointing them out, and the branches of one of the trees was protected by gauze for some time after the fruit [of *Loranthus*] was put on.'

Thus, contrary to what Vines (2006: 13) wrote, Moore's letter is about the deliberate attempts to cultivate mistletoes in Ireland (see Nelson, 2007b). *Loranthus europaeus* was *not* 'spotted ... on a tree at Kew in 1873...', and Clement & Foster (1994) did *not* miss an important manuscript record.

However, there is another small twist to this affair of the 'missing' mistletoe. Frederick Moore's letter was addressed to William Jackson Bean (Assistant Curator, Royal Botanic Gardens, Kew) and appears to have been a response to an enquiry from Bean. Below the original letter, which is glued to a herbarium sheet, there is a slip of paper cut from a printed source that turns out to be Bean's magisterial book *Trees and shrubs hardy in the British Isles*. Under the heading 'LORANTHUS EUROPÆUS', Bean (1921: 662–663) reported that: 'Some years ago a plant was introduced to Kew from Austria growing on an oak. ... Although the oak grew vigorously, the parasite never flourished or grew much, and after lingering ten or twelve years, died.'

In another relevant publication with which Bean would have been closely associated, *Hand-list of trees and shrubs, excluding Coniferae, grown in Arboretum ... Royal Botanic Gardens, Kew* (1902), on page 607, there is an entry for both *Loranthus europaeus* and *Viscum album* suggesting that there was a living plant of *Loranthus europaeus* on a tree

in Kew's Arboretum in the early 1900s, but, like the ones at Glasnevin, it did not survive for long.

Acknowledgements:

I am grateful to Tony Hall and Susyn Andrews for helping me to explain the story of the Moore letter and the Glasnevin link.

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A missing mistletoe: a correction

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Eric Clement's article in a recent *BSBI News* concerning *Loranthus europaeus* caught my eye, since I was Tony Hall's point of contact when the plant was first noticed. I have, for more than thirty years, been recording Kew's wild flora, but the mistletoe had escaped me until Tony drew my attention to it. While there is no doubt about its identity, nor the fact that it appears to have established itself spontaneously on a tree grown from seed, there is confusion about its history. The letter referred to in the article was written not by David Moore (who had been dead for 32 years) but by his son Frederick Moore, who took over as Keeper of the Botanic Garden at Glasnevin in succession to his father. The letter, written in January 1911 and addressed to W.J. Bean who was an assistant curator at Kew at the time, was sent from Dublin and opens with the words: 'I remember well

Loranthus being established on two Oak trees here in the garden. One is at the back of the nursery garden and the other near the pond. As well as I can remember it was about 1873, but both these died.' Apparently they only lived for two or three years and were pointed out to him by his father. From the context of the letter it is clear that the plants were not growing at Kew at all, but rather in Glasnevin. An article by David Moore, delivered to the Royal Dublin Society in January 1873, indicates that the mistletoe growing on the oaks was the result of several concerted efforts, begun some twenty years earlier, by him and his staff to establish this plant in the garden.

Reference:

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Malva linnaei (*Lavatera cretica*) challenged

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It is ten years since *Malva linnaei* M.F. Ray was introduced as a new name to replace *Lavatera cretica* L. (Smaller Tree-mallow) – see *Novon* 8: 288-295 (1998). A new epithet is required in *Malva*, because a *different* plant has already been named as *Malva cretica* Cav. (1786). Working at the University of California, Martin Ray clearly demonstrated that some species of *Lavatera* are much closer to some *Malva* spp. and that they should be transferred to this latter genus.

American and Australian Floras now blazon this, and other, unfamiliar names, but European works so far have all (?) ignored these proposed name changes. After 250 years of nomenclatural stability, I do wonder if we should trouble to change to match the DNA indicators. Should we slavishly change names to match the genes that we cannot see?

Worse news, to some, is the fact that this new epithet seems most unlikely to be the earliest one available, and it should therefore be changed to meet the rules of the *Botanical Code* (ICBN). Amongst the (apparent) synonyms of *Lavatera cretica* L. (1753) are: *Malope multiflora* Cav.; *Monad. Class. Diss.*

Dec. 2: 85 (1786) – admittedly an atypical white-flowered plant!

Lavatera neapolitana Ten., *Fl. Nap.* 2: 113 (1820).

Malva pseudolavatera Webb, *Phyt. Can.* 1: 29 (1836).

Malva hederifolia (as -ae-) Visian, *Fl. Dalm.* 3: 205 (1851).

I will not make a new combination here, since these names first need to be checked against their validity, identity of the (lecto-) type specimen, and whether the name already exists in *Malva* (duplicated names, called homonyms, can be avoided by making use of the website: www.ipni.org and other databases). At first sight, *Malva multiflora* does seem to be the earliest and hence the winner!

Mabberley's *Plant Book*, ed. 3 (2008), p.518, alas, recognises *Malva dendromorpha*

M.[F.] Ray (1998) as the 'current' name for *Lavatera arborea* L. (Tree-mallow). Again a *different* plant is already called *Malva arborea* A.St.Hill (1827), and so a new epithet is required. In this case, I cannot find an earlier (and more pleasant!) epithet. Will Stace's *New Flora of the British Isles* ed. 3 (*ined.*) follow this guideline? As botanists, we can all make our own choice, until we have a world list that we are recommended to follow! Meanwhile, I note that the *RHS Plant Finder 2008-2009* has continued to steadfastly ignore these new names – hurray!

Lavatera cretica is slowly increasing its range in Britain, although the colony in Gosport (S. Hants) (see John Norton's article in *BSBI News* 100: 46-48 (2005)) has failed to increase in numbers or to spread. Geoff Toone tells me of the first record for the Isle of Wight in 2008 – he found one huge plant on a farmer's muck heap. Obviously, it appreciates today's excessive nitrogen regime! It has re-appeared in Cornwall after a long lapse – see *Botanical Cornwall* 13: 1-2 (2005), which also contains three coloured photos (on p. 4), showing small, pale flowers (petals 1.5cm long), matching the Gosport plants (see Plate 3, *loc. cit.*). Also shown therein is the variant from the Isles of Scilly, which has deeper-coloured flowers, measuring 3cm in length. It is a variable species, with, I agree, flowers much like any *Malva* sp., once one dismisses the fact that the epicalyx segments are clearly united (*c.f.* free in all traditional *Malva* species).

Postscript:

With computer wizardry, John Norton and David Nicolle now inform me of the existence of www.malvaceae.info, wherein Stewart R. Hinsley already (provisionally) lists *Malva multiflora* (Cav.) Soldano, Banfi & Galasso (July, 2005) as a synonym of *Lavatera cretica*. There still remains the possibility that this will prove to be a worthy segregate species.

Galium murale – a foothold in Eastbourne?

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Eastbourne in East Sussex, long known as the suntrap of the south, has, like most coastal towns, its fair share of interesting plants, though not perhaps to the extent of places in the milder south-west.

Photo 1 (see inside Front Cover) shows *Galium murale* (L.) All. (Small Goose-grass) from the drive of an old house in Eastbourne, which is subdivided into flats, one of which is occupied by a relative. When she first moved in, some two decades ago, I did look around during the first year or so, but found nothing of interest botanically, apart from *Ophrys apifera* (Bee Orchid), which was soon eliminated by weed killer and fertiliser treatment of the lawn, and *Spiranthes spiralis* (Autumn Ladies-tresses), which survived. The drive was seldom used by anyone, least of all me. However persistence in my botanising would have paid off earlier than 18th May of this year, as photo 2 (see inside Front Cover) clearly shows the sward of the bedstraw, which indicates it has been present for some years. Black mark against me for having missed a population of some 1000+ plants!

A specimen travelling by Royal Mail, the so-called snail mail, was determined by Eric Clement within 36 hours, and subsequently confirmed by Rodney Burton, the BSBI *Galium* referee, who, being more observant than I, noted a scrap of *Stellaria pallida* (Lesser Chickweed) mixed in. Rodney was aware of two recent records. He had seen *Galium murale* as a wool alien many years ago at Blackmoor in North Hants. The other, by Ian Bennallick in 2007, was from the base of a wall in Lostwithiel in Cornwall. I do not know if it has persisted from that original find. Eric drew my attention to its absence from Stace (1997), but its listing in his and Sally Foster's *Aliens*.

At the time of writing, I have not heard from the Vice-county Recorder, but his colleague, Arthur Hoare, tells me that it is a first record for v.c.14: East Sussex. But should this be the case? It is a weedy plant – Clement & Foster

(1994) describe it as the 'Small Goosefoot', and this is fair comment. Further, being a Mediterranean plant by origin, it is a winter annual. Both factors in combination make it a plant that is easily missed, as indeed I had. The drive on which it grows is of crumbling tarmac – very similar in effect to a gravel drive. With its specific name, it could be expected on walls, which, along that road, are mainly of the same age as the house, and also on the pavement, which largely consists of bricks – a seemingly ideal habitat.

I was able to return to Eastbourne some weeks later on 29th June, by which time it had effectively gone over, especially as the drive had been treated with weed killer. However I spent two hours meticulously searching the walls, pavements and, as far as I was able without trespassing, the drives and front gardens of all the houses of that road and parts of two neighbouring roads. I was only able to find it in one other garden on the opposite side of the road, and nowhere else, but it does indicate that it is both persisting and likely to spread. I intend to return next year, earlier in the season, and with binoculars...! Eric suggests that it might have been introduced via an imported container plant. Others might like to search elsewhere for this bedstraw, perhaps combining it with trying to enlarge the known distribution of *Poa infirma*.

For identification, there is of course a good description in *Flora Europaea* 4: 36, where it comes last of the 145 species. For illustrations, Clement & Foster list five possibilities, all being rather obscure publications. More recently published books, and therefore more easily available, with illustrations which clearly show the small number of flowers, usually 1-2, in the leaf axils, include Beckett's book on Mallorca, Boulos' *Flora of Egypt* 2: 237 and, probably most usefully, Blamey and Grey-Wilson's book on *Mediterranean Wild Flowers*.

Whilst plant hunters are in Eastbourne trying to find this bedstraw, which, being on private

property, I can only reveal to the extent of an approximate map reference of TV605982, they might like to explore the area of the Wish Tower. The stand of *Asteriscus maritimus* (Gold Coins / Yellow Sea-aster), reported by me in *BSBI News* 82 (September, 1999) persisted up until earlier this year, flowering every month without fail, both winter and summer, until hit by the local council with weed killer. One non-flowering plant remains. It has occurred on the shingle on the beach in this area, but the plants which over-wintered and withstood all that the sea could throw at them, still looking full of promise in May, succumbed to a subsequent summer tide, which scoured much of the vegetated shingle along the sea wall. Photo 3 (see inside Front Cover) clearly shows this interesting habitat, which not only provides plants with an exceptional degree of warmth through the 'storage heater' effect, but also gives some shelter from the wind, a vertical fresh water catchment area, and a trap for both human litter and sea-borne debris, including seaweed, which rot down to provide nutrient. Healthy plants are the norm.

Botanically, in the space of a few metres, I produced a list of over 20 species. This consisted mainly of the usual shingle plants,

but also a number of garden escapes, including fine specimens of *Gazania rigens* (Treasure-flower) (photo 4 (see inside Front Cover)) and flowering plants of *Eryngium yuccifolium*, *Achillea filipendulina* 'Gold Plate', and *Nepeta racemosa* Lam. (= *N. ×faassenii* of Stace) (Garden Catmint). I am grateful for Eric's assistance with some of these determinations, and his encouragement that I should write this article.

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Request for information on Water Primrose

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Ludwigia grandiflora/peplodes (Water Primrose) is a South American species that has become a serious pest in parts of Europe, particularly in France, where it has spread rapidly, choking waterways, increasing flood risk and crowding out native species. It is sold in some specialist garden centres in the UK but its sale is likely to be banned shortly following recent public consultations and the conclusion of a risk assessment which found that the species poses a high risk to Britain.

Several small 'wild' populations have become established in England and Wales in the past few years and it is vital that action is taken early to remove these before they spread

out of control like other aquatic plants such as *Crassula helmsii* and *Hydrocotyle ranunculoides*. To this end the Environment Agency is currently attempting to eradicate the plant at the eight known sites. However, there are likely to be other sites that are not known and we need the help of BSBI recorders in detecting and reporting these (see inside Back Cover).

We are therefore appealing for information as rapidly as possible on any sites in which *Ludwigia grandiflora/peplodes* is growing wild. Can you please pass on any sightings to the GB non-native species secretariat: nss@csl.gov.uk.

NOTICES

BSBI Conference: Berwick-upon-Tweed, 9-10 May, 2009

Alien Trees and Shrubs

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The spring conference next year will be held on the Scottish border at Berwick, and will focus on the alien trees and shrubs that are so much part of the British landscape today and how BSBI records them. The Saturday will be indoors in the fine Guild Hall in the centre of this historic town and there will be excursions on the Sunday. We are planning a questionnaire on the extent to which alien trees and shrubs naturalise and we will report on that. There will also be talks and exhibits on relevant topics (and the formal BSBI AGM). Please consider taking part by mounting an exhibit or giving a talk (just contact me and we can take it from there). The outings will include a visit to a state-of-the-art commercial nursery growing an astonishing range of species for farmers and foresters (rather than gardeners), and a visit to Kyle Woods, which has some remarkable

stands of over-mature conifers, with abundant regeneration. There will be an opportunity to walk the ancient walls of the town, to learn their botanical history, as well as their military history, and to take in the sea air. If there is a demand there may be an excursion to St Abbs Head NNR on the Monday with super sea birds and coastal plants.

Berwick-upon-Tweed is easy to reach by road or rail. There is plenty of accommodation in and around the town and we have booked a limited number of budget rooms at The Castle Hotel (where Lowry, the artist, used to stay) which are available to be booked on a first-come-first-served basis from me. It would be good to hear now if you expect to come even if you will arrange your own accommodation or travel on the day. A formal booking form will be issued with the next *BSBI News*.

BSBI field trip to Tiree (v.c.103), 14-20 July 2009: registration of interest

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I am hoping to take a field trip to Tiree next July, staying at the Alan Stevenson House at Hynish, SW Tiree. You can find details about this house on www.hynishcentre.co.uk It is owned and run by the Hebridean Trust, which has a connection with Morton Boyd, formerly a Scottish ecologist. The accommodation is in bunk rooms, and there are 4 bedrooms with 2 bunks and 4 with 4 bunks. However, having stayed there previously, I would suggest that all rooms should have just 2 people in them. That gives a total of 16 that can be accommodated. There is a kitchen, dining room, large sitting room, recreational/lecture room, and laundry/drying room. The good news is that they do full board, so breakfast (not cooked, but plenty provided), materials for packed

lunches, and 2 course evening meal all provided for us at a cost of about £31 per person per day, which is very reasonable. I have provisionally booked the House for this period, but in order to secure it for then, I need to make a deposit of a third of the total cost within the next month (the BSBI Treasurer is willing to help here).

But before I go ahead and ask for his help financially, I would like to know whether there is sufficient interest to run the trip. Therefore I am asking for people who would like to come to Tiree to let me know ASAP, please., by email or by post. I would hope that we could share cars, as the costs of taking them across on the ferry is not cheap. We would enjoy the botanical delights of the island, do some

detailed recording of the rarer species and specialities for the Threatened Plants project and CRPR, and consider whether to produce a tetrad flora, following on from David Pearman's and Chris Preston's Flora, which

uses a 10km square basis, but does have detailed information also. I hope there would be time to include the birds, archaeology, and entomology to a certain extent also.

Hoping to hear from you.

Excursion to the Páramos of Northern Castile – May 2009

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A one-week field meeting in northern Spain is proposed for spring 2009, to run from Wednesday 13 May to Wednesday 20 May.

The high limestone plateaux of northern Castile comprise a fabulous mosaic of low-intensity cereal cultivations teeming with colourful arable weeds, limestone outcrops and precipitous river gorges harbouring dense gallery forests. From our base in the charmingly restored convent of Santa María de Mave we will be ideally located to venture out into the surrounding tablelands, including visits to the renowned limestone 'sculpture city' of Las Tuerces, the impressive canyon carved out by the infant Ebro and the high plateau of the Páramo de La Lora. We will also take time out to visit some of the many splendid Romanesque churches of the region.

The limestone outcrops are populated by clumps of the scarlet-flowered *Paeonia officinalis* ssp. *microcarpa*, *Tulipa sylvestris* ssp. *australis* (Wild Tulip), *Narcissus triandrus* (Angel's-tears) and sheets of orchids, among them *Orchis purpurea*, *Orchis provincialis*, *Dactylorhiza insularis*, *Neotinea maculata*, *Ophrys sphegodes* and *Ophrys lutea*, while the canyon carved out by the infant Ebro is simply spectacular; we aim to stroll through its depths in search of *Lathraea clandestina* (Purple Toothwort), *Limodorum abortivum* (Violet Limodore) and *Orchis militaris* (Military

Orchid), with the cliffs themselves festooned with *Sarcocapnos enneaphylla* and the Iberian endemic saxifrage *Saxifraga cuneata*.

We might also visit the acid uplands of Alto Campóo for the diminutive *Narcissus asturiensis* and *Erythronium dens-canis* (Dog's-tooth-violet), as well as the pass of Piedrasluengas, where limestone outcrops are studded with local endemics *Anemone pavoniana* and *Draba dedeana*, while wet meadows host *Viola bubanii* (Violet Mountain Pansy) and *Narcissus pseudonarcissus* ssp. *nobilis*.

The convent of Santa María de Mave is a comfortable, family-run establishment; all rooms are en suite and its restaurant has an excellent reputation. The cost will be £850 per person, plus a single-room supplement of £100, to cover half-board accommodation, picnic lunches, transport by hired minibus throughout, all entry fees and the services of the leaders (principal leader Teresa Farino), but excluding flights to Madrid and travel insurance (obligatory).

An early indication of your interest is necessary in order to secure the appropriate accommodation, particularly if you are travelling alone, as single rooms are limited.

For further details, please contact me by post, phone or email as given above.

**CONTRIBUTIONS INTENDED FOR
BSBI NEWS 110 should reach the Receiving Editor before
December 1st**

REQUESTS & OFFERS

Sir John St. Aubyn’s (1758 - 1839) herbarium

Plymouth City Museum and Art Gallery are currently undertaking a large project on a collection previously owned by Sir John St. Aubyn, the 5th Baronet (1758–1839). Recently they secured a grant from the Esmée Fairbairn Foundation to enable the museum’s natural history department to conduct a variety of work on his herbarium and mineral collection. Sir John St Aubyn’s herbarium gives us a fascinating glimpse into the botanical world in the 18th century. It contains not only plants that have been collected locally, but also specimens which have been collected from early plant nurseries and important gardens. Currently, there is much interest in the cultivars mounted inside the herbarium, as they indicate the growing enthusiasm for obtaining new plants and their availability during that time. There is also a lot of attention towards the phenological data

within Sir John’s notes, and the previous distributions of plant species that are now threatened.

As part of the project, Plymouth City Museum and Art Gallery is trying to locate other herbarium specimens from Sir John’s collection which he may have given to friends or exchanged with other collectors. We hope to locate as many specimens as we can so that Sir John’s collection is fully documented. 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.

For more information about the St. Aubyn Project, please contact Plymouth City Museum and Art Gallery on 01752 304765 or email: st.aubyn@plymouth.gov.uk

You can also visit our website: <http://www.plymouth.gov.uk/museumstaubyncollection>

Genetic identification of *Pyrola* species – request for material

JANE SQUIRRELL, *Royal Botanic Garden Edinburgh, 20A Inverleith Row, Edinburgh, EH3 5LR*

Identification of *Pyrola* species can be difficult when plants are in a vegetative state, which is often the case for these shy-flowering species. Consequently, accurate distributions, and hence formulation of conservation action, are being hampered by the inability to correctly identify plants to species level.

The Royal Botanic Garden, Edinburgh (RBGE) has developed a simple test that can distinguish all three British *Pyrola* species, *P. media* (Intermediate Wintergreen), *P. minor* (Common Wintergreen) and *P. rotundifolia* (Larger Wintergreen), and is offering a service to

identify plants genetically to assist in Scottish Natural Heritage’s Species Action Framework project. This project has highlighted *P. media* as one of a suite of species for conservation action.

If you find a *Pyrola* plant that you cannot identify, please send either a fresh leaf (by first class post), a recently dried leaf, or a silica-dried leaf (silica gel is available upon request) to: Jane Squirrell, Royal Botanic Garden Edinburgh, 20A Inverleith Row, Edinburgh, EH3 5LR. For more information contact Jane at the above address or via email: J.Squirrell@rbge.org.uk

Bees and Botany - 2

JOHN BADMIN, *Coppice Place, Selling, Kent, ME13 9RP*

Re: *BSBI News* 108: 56, Christopher Lowe and other BSBI members may wish to know that the Royal Entomological Society will be holding a Special Interest Group one-day meeting on Insect Pollination that includes the British Flora

at Rothamsted Experimental Station, Harpenden, Herts. on Wednesday 3rd December. Botanists are most welcome to attend, admission free. Please book beforehand. See programme details at www.royensoc.co.uk

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 editor 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.

Isles of Scilly (v.c.1b), 10th - 17th May

ROSEMARY PARSLow, with contributions from Sue Helm, Jane Croft and other members of the group

Fifteen members and partners were booked to visit the Isles of Scilly. Most were travelling by RMV *Scillonian*, others by air. Unfortunately some of the latter were delayed by sea fog. Despite the initial weather problems, by the beginning of the week the sun came out and rewarded us with the blue skies and turquoise seas of Scilly at its most benign. There are many islands in the archipelago, of which only five are inhabited: St Mary's, the largest, where most of the population lives, and four small 'off islands'. Of the other hundred or more islands about thirty or so support some vegetation and the rest are bare granite rocks populated by sea birds and seals.

The vegetation on the Isles of Scilly has many similarities with West Cornwall, with heathland, coastal habitats and arable fields. But there are even more plants with Mediterranean and Lusitanian origins, and also many common plants are absent or rare. The mild climate, with virtually no frost or snow, enables many plants to grow throughout the winter and favours winter annuals and introduced exotics. These latter have in many cases escaped into the countryside and have become established as part of the flora. There are also Scilly forms of some butterflies etc. We met some of these – speckled wood, common blue and grass egg (larvae). We also met typical insects; oil beetles, rose chafer and green tiger beetles.

Saturday 10th May - Hugh Town

Those travelling on the RMV *Scillonian* left Penzance in dense sea fog to sail to the Isles of Scilly. Due to the fog, once we left the quay in Penzance we saw nothing of the Cornish coast or the view until we were entering the

harbour on St Mary's 2½ hours later! It was only too clear those travelling by air were going to be delayed. So, although the view was still obscured by sea fog during the afternoon, we had an introductory walk around the Garrison walls on the headland above the town. Here, among the coastal bracken were *Scrophularia scorodonia* (Balm-leaved Figwort), *Allium roseum* (Rosy Garlic) and the ubiquitous *Allium triquetrum* (Three-cornered Leek). A slight detour near the Woolback Battery (now used as volunteer accommodation by the Isles of Scilly Wildlife Trust) took in a large clump of *Allium ampeloprasum ampeloprasum* (Wild Leek) at one of its few sites on the island. The tops of the granite walls of the former Garrison support an interesting flora. Here species such as *Trifolium occidentale* (Western Clover), *Lotus corniculatus* (Birds-foot Trefoil), *Silene gallica* (Small-flowered Catchfly), *Vulpia bromoides* (Squirrel-tail Fescue), *Aira praecox* (Early Hair-grass), *A. caryophyllea* (Silvery Hair-grass) and *Jasione montana* (Sheep's-bit) flourish. At Morning Point, among the native species are drifts of *Drosanthemum floribunda* (Pale Dew-plant), one of the many naturalised succulents common in Scilly, *Muehlenbeckia complexa* (Wire Plant), *Carpobrotus edulis* (Hottentot Fig), as well as native plants such as *Asplenium adiantum-nigrum* (Black Spleenwort). An immature Iceland Gull on the rocks offshore was a bonus for the birdwatchers in the group.

Sunday 11th May - Bryher

With the sea calm, we decided to visit Bryher, one of the smaller 'off islands'. It took us about 20 minutes by one of the 'tripper' boat,

large open launches that ferry visitors around the islands. Following the coast path to the south of the island, a large colony of *Orobanche minor* var. *maritima* (coastal form of Common Broomrape) under a hedge attracted attention. In the sandy path we also found small plants of *Trifolium suffocatum* (Suffocated Clover) and a few late *Poa infirma* (Early Meadow-grass). Then, as the landscape became more coastal, *Scilla verna* (Spring Squill), *Trifolium repens* ‘Townsendii’ (red White Clover), *Trifolium subterraneum* (Burrowing or Subterranean Clover) and *T. occidentale* (Western Clover) became common. Arriving at Rushy Bay, we started searching for *Viola kitaibeliana* (Dwarf Pansy), which was having a poor year in the dune grassland where it grows, having been inundated by sea water during the winter. One perfect flower found among the other tiny plants growing here was much admired and photographed. On a nearby hill were good stands of *Ornithopus pinnatus* (Orange Bird’s-foot) and *O. perpusillus* (Bird’s-foot). Then we walked to Bryher Pool, the only true saline lagoon in Scilly. Along the leat that connects it to the sea is a narrow fringe with saltmarsh plants, including *Puccinellia maritima* (Common Saltmarsh-grass), *Juncus gerardii* (Saltmarsh Rush), *Glaux maritima* (Sea Milkwort), *Spergularia marina* (Lesser Sea-spurrey) and *Juncus maritimus* (Sea Rush).

Crossing the island towards the quay took us through fields deliciously scented by *Chamaemelum nobile* (Chamomile). There was time for tea at Fraggie Rock cafe among gaggles of tame House Sparrows before catching the boat back to St Mary’s.

Monday 12th May – St Agnes

Today we crossed Smith Sound to the small island of St Agnes. The island is dominated by the white-painted lighthouse (now a daymark) on the hill in the middle of the island. As we walked up from the quay we saw bulb fields full of *Gladiolus communis* ssp. *byzantinus* (Whistling Jacks) by the road. We had permission to walk around the farm, and among fields of narcissus and flowering pinks we were able to see the arable plant

communities at close hand. Species including *Briza minor* (Lesser Quaking-grass), *Silene gallica* (Small-flowered Catchfly), *Lavatera cretica* (Small Tree-mallow), *Erodium moschatum* (Musk Stork’s-bill), *Polycarpon tetraphyllum* (Four-leaved Allseed), *Chrysanthemum segetum* (Corn Marigold), *Sherardia arvensis* (Field Madder), *Ranunculus sardous* (Hairy Buttercup), *Anisantha diandra* (Great Brome), as well as the fumitories *Fumaria muralis boraei* and *F. bastardii* were all abundant among the crop.

From the bulb farm we walked to the Coastguard’s cafe where the last of our missing group who had arrived in Scilly early that morning caught up with us. After lunch, it was down the lane to the open heathland of Wingletang Down. This is the only area where *Ophioglossum lusitanicum* (Least Adder’s-tongue) grows, and we were lucky to find a few yellowing sterile fronds still visible. In the same patch of turf were also the emerging tips of *O. azoricum* (Small Adder’s-tongue) fronds and a scatter of *Ornithopus pinnatus*. Continuing south, we reached small bays with coastal plants: *Crambe maritima* (Sea Kale), *Euphorbia portlandica* (Portland Spurge) and *E. paralias* (Sea Spurge). In a damp area where a wet seepage emerges were more *Ophioglossum azoricum* and *Hydrocotyle vulgaris* (Marsh Pennywort).

In the evening there was a chance to go on a ‘Shearwater special’. This was a boat trip out around the islands of Annet and the Western Rocks to look out for Puffins, Manx Shearwaters and other birds. A real treat was the summer plumage Great Northern Divers. The only plants noted were the distant pink glow of *Armeria maritima* (Thrift) on Annet and a distant view of *Lavatera arborea* (Tree-mallow) on the rocky island of Mellegan, with its colony of Cormorants and Shags.

Tuesday 13th May – Samson

With the weather set fair today was an opportunity to spend the whole day on the uninhabited island of Samson. A minor excitement was caused by some of the group getting left behind on the quay – luckily another boat was coming in the same direction and a mid-ocean

transfer took place! The launch decanted us into a rubber dingy offshore and we were taken into the beach where we landed in the waves, more or less dry shod. Samson was abandoned by its inhabitants during the 1850s, their ruined cottages still standing on the hillsides. We walked along paths through dunes, scrub, heathland and coastal grassland, very slowly making our way to a vantage point below the southern hill where we picnicked in glorious sunshine. Exploration of the hill top and around the ruins and even Bronze Age remains turned up many interesting plants for our list including *Primula vulgaris* (Primrose) and a patch of yellow *Iris* sp., relicts from the former inhabitants' gardens. Then a slow return to the landing beach via the shore where probable *Rumex rupestris* (Shore Dock) plants were pointed out - it was too early to sort them out from *R. crispus littoreus* (Curled Dock). A scramble back through the surf into the dingy and then the launch back to Hugh Town.

Wednesday 14th May – Tresco

Undeterred by the damp, chilly conditions, we boarded the boat from Hugh Town quay and huddled in waterproofs for the short crossing to Tresco. The island boasts fine white sandy beaches, areas of heathland, the largest area of open water on Scilly and the famous Abbey Gardens. Arriving at New Grimsby we set out for the gardens (signposted 25 minutes) with the hope of finding some interesting plants en-route.

Just up from the beach a small clump of spiky *Fascicularia bicolor* (Rhodostachys) caught our eyes, originally planted on the island but now extensive over areas of dune. *Polycarpon tetraphyllum* was abundant at the base of a wall as we took the path behind Great Pool, with its numerous waterfowl. This pathway is tree lined – in Scilly terms one of the most 'wooded' areas on the islands, and there was some hope of finding woodland plants such as *Veronica montana* (Wood Speedwell) that are evidence of a woodland past. A large and beautiful sweep of *Carex divulsa* ssp. *divulsa* (Grey Sedge) was much admired, and a short distance on from this we found a fine purple-flowered *Solanum lacini-*

atum (Kangaroo-apple), another escapee from the gardens.

Botanising pace being somewhat slower than normal walking pace, we reached the Abbey Gardens by lunchtime and split into two groups, with some choosing to visit the gardens and others to search the muddy edges of the Great Pool. Here *Samolus valerandi* (Brooklime), *Bidens tripartita* (Trifid Bur-marigold) and the less welcome *Azolla filiculoides* (Water Fern) were found. The old bulb fields by the pool turned up some new species for Tresco with *Juncus tenuis* (Slender Rush) and *Alopecurus myosuroides* (Black-grass) probably unwittingly brought in by accident recently.

Those who had visited the Abbey Gardens had not only seen a wealth of gorgeous plants from warmer climates thriving in the shelter of the terraced gardens, but had also identified some of the native plants that are weeds in the gardens! One of the most interesting was *Viola reichenbachiana* (Early Dog-violet), a rare plant in Scilly.

Wandering back on the beach some were looking not only for plants but for cowrie shells often washed up here. At the quay we re-grouped and headed back for St Mary's.

Thursday 15th May – St Martin's

Approaching the island of St Martin's we could see ahead of us the red and white tower of the 17th century Daymark on Chapel Down before arriving at Higher Town Quay, at the western edge of the white-sanded Par Beach. St Martin's is the third largest of the Isles of Scilly, being approximately 3km long by 1.5km wide, so we felt confident that we could manage a good botanical exploration of much of the area. However, we had only reached the wasteland (caused by disturbance from rebuilding the quay) near the public conveniences before we were all deeply involved in discussions on *Fumaria*! Here we found *F. capreolata* (White Ramping-fumitory) displaying the characteristic 'turning back' of the pale pink and white flowers after reaching maturity; also *F. bastardii* (Tall Ramping-fumitory) and *F. muralis* ssp. *boraei* (Common Ramping-fumitory). Several species of *Allium*

were also found growing together here: *Allium roseum*, tall *A. ampeloprasum* var. *babingtonii* (Babington's Leek), the head still at the 'nightcap' stage before opening to show both flowers and bulbils; and the ubiquitous *Allium triquetrum*.

Crossing the island's cricket pitch, we could smell the bruised *Chamaemelum nobile* beneath our knees as we knelt to find the tiny rosettes of *Plantago coronopus* (Buck's-horn Plantain), *Geranium molle* (Dove's-foot Crane's-bill), *Trifolium micranthum* (Slender Trefoil), *T. subterraneum* (Subterranean Clover), but were too early in the season to see the buried seed heads of the latter.

We reached the stone-edged brackish pool in the of the field to find it covered in flowering *Ranunculus baudotii* (Brackish Water-crow-foot) with *Potamogeton pectinatus* (Fennel Pondweed), also tolerant of brackish conditions. A Blackcap sang to us as we recorded!

We walked along Higher Town Lane between tall hedges of the *Pittosporum crassifolium* (Karo), with its three-valved fruits and black, sticky seeds well-liked by the island's thrushes and Blackbirds. Stone walls then replaced the hedges, and we were fascinated by the huge fleshy rosettes of *Aeonium cuneatum* (Pastel del Risco). This Canary Islands native is now very well naturalised in Scilly and is sometimes called Cliff Pasty, a timely reminder to us to visit the St Martin's award-winning bakery to buy our pasties for lunch, which turned out to be far too large for the average rucksack!!!

Before lunch, however, we had an arranged visit to Churchtown Farm to see some of the arable plants that occur at the edges of the small, stone-walled or hedged bulb fields. As on St Agnes, these plants have been threatened in the past by extensive use of sprays, but fortunately many have survived and changing methods of flower-farming have allowed some colonies to persist. We were able to see a good stand of naturalised *Ranunculus marginatus* var. *trachycarpus* (St Martin's Buttercup), a downy plant with large flowers showing strongly reflexed sepals and, close by, the native *R. parviflorus* (Small-flowered

Buttercup). Some of these small fields were very species-rich, demonstrating the ability of some arable species to produce large quantities of seed, which can persist for many years.

On to The Plains overlooking the Great Bay and White Island we ate our pasties in the shelter of *Ulex europaeus* (Common Gorse) bushes, before recording some of the coastal turf species. *Ornithopus pinnatus* grew together with *O. perpusillus*, and near the tracks were *Vulpia bromoides*, *Aira praecox* and *Carex arenaria* (Sand Sedge), prostrate, ground-hugging plants, all clearly well adapted to this windswept hillside. A small group of *Pilosella officinarum* (Mouse-ear Hawkweed) plants was found in the dune grassland here, its only known site in Scilly.

In several areas we came upon a few 'cast-outs', such as *Carpobrotus acinaciformis* (Sally-my-handsome), which is capable of vigorous growth, thus stifling the native vegetation, and small stands of *Ixia campanulata* (Red Corn-lily), with *Oxalis articulata* (Pink-sorrel) occurring under some weather-beaten pine trees.

Our final searches were made in another area of small bulb fields near to Lower Town, many of them hedge-lined for shelter with *Euonymus japonica* (Evergreen Spindle), and here we found a few plants of *Scandix pecten-veneris* (Shepherd's-needle) (see Colour Section, Plate 2), a plant not seen before by some of our group who lived away from its distributional range.

A most satisfying day ended with tea at St Martin's Hotel near to Lower Town Quay. From here our boat arrived to take us back to St Mary's.

Friday 16th May – St Mary's

We took the 'community' bus to the top of the village of Maypole. Then we walked down a path through the Holy Vale Nature Trial, picking a way through the elm trees growing along the raised track and admiring the huge *Apium nodiflorum* (Fool's Watercress), *Oenanthe crocata* (Hemlock Water-dropwort) and *Rorippa nasturtium-aquaticum* (Watercress) plants in the stream below. Following the stream, we then crossed into the Higher

Moors Nature Reserve, with *Salix cinerea oleifolia* (Grey Willow) carr and wetland plants. The enormous *Carex paniculata* (Tussock Sedge) tussocks attracted a lot of interest, as most of them overtopped us! Also along the paths we saw *Apium inundatum* (Lesser Marshwort). In the *Phragmites australis* (Reed) and *Juncus maritimus* beds grow fine *Osmunda regalis* (Royal Fern), *Athyrium filix-femina* (Lady-fern) and a range of wetland species.

The stream discharges into a large, reed-fringed lake, Porth Hellick Pool, noted for attracting rare water birds during migration times. Beyond the pool is the large rocky Porth (bay) Hellick where we found *Honckenyia peploides* (Sea Sandwort) growing through the sand and a fringe of the exotics *Fascicularia bicolor* and *Carpobrotus edulis* (Hottentot Fig) along the rim of the beach. There were less beach plants generally this spring due to the winter storms.

From Porth Hellick it was over the heathland of Salakee Down and a lovely example of the wind-eroded 'waved heath', past some small, wet pits with *Ophioglossum azoricum*. Then crossing the end of the Airfield runway controlled by the pedestrian traffic lights – one of the party nearly hesitating too long when the warning buzzer sounded and a small aircraft appeared! The cliff path continued along typical maritime grassland and granite carns and outcrops until as we came to Porth Minick with *Crambe maritima* in flower, and a number of plants of *Lathyrus japonicus* ssp. *maritimus* (Sea Pea), recently returned after many years. Nearby an alien fern *Cyrtomium falcatum* (House Holly-fern), long naturalised in the rocks, attracted interest.

The group next were impressed by the drifts of *Drosanthemum floribundum* (Pale Dewplant) growing over the rocks at Tolman Point. Many other aliens along the path caught our attention, also the red-blotched

flowers of *Silene gallica* var. *quinquevulnera* (Small-flowered Catchfly) that had escaped from a nearby garden (this form is no longer known in the wild in Scilly but has been conserved in several gardens). Lunch at Old Town made a welcome stop, and a chance to enjoy the sea views. Our way back to Hugh Town was then through another nature reserve, Lower Moors and back along the sea front to our guest house.

Saturday Friday 17th May – St Mary's

Our last day. Some of the party left on early flights, so just a small party remained to enjoy the sunshine on St Mary's. We set off by the bus again to near the north of the island near the Telegraph tower. From here we walked to the English Heritage site on Halangy Down. Here there is a large chambered tomb – Bant's Carn and below on the slopes the ruins of a Romano-British village. The surrounding area and the monuments are surrounded by a rich mosaic of coastal grassland and heath, with *Euphrasia* sp. (Eyebright), *Pedicularis sylvestris* (Lousewort), *Polygala* spp. (milkworts) growing among *Calluna vulgaris* (Ling) and *Erica cinerea* (Bell Heather). At the bottom of the slope we found a few tiny plants of *Crassula decumbens* (Scilly Pigmy-weed) on the track (see Colour Section, Plate 2). In a nearby bulb field were more - slightly larger - plants of the *Crassula* and some arable plants we had not already seen elsewhere, including *Spergularia arvensis* (Corn Spurrey) and *Anchusa arvensis* (Small Bugloss).

Then it was back to the road, taking in *Ulex gallii* (Western Gorse) on the way, past a field glowing with golden *Chrysanthemum segetum*, and then down the road to lunch at Juliet's Garden overlooking wonderful views across the harbour and the distant islands. After that it was back to Hugh Town and, in mid-afternoon, boarding the *Scillonian* to return to Penzance.

Grass identification day for beginners, Fingringhoe Wick Nature Reserve, S. Essex (v.c.18), 9th June

MELODY LOVELACE

The Grass Identification Day for Beginners at Fingringhoe Wick Nature Reserve was an intensive but very rewarding day. Seven participants joined the tutor, Steve Clarkson, in an airy room in the visitor centre for the morning and half the afternoon of hands-on grass identification in the 'classroom'. The remainder of the day was spent outside, putting newly-acquired knowledge to the test.

Steve's format for the day was simple and logical; we were shown how to distinguish a grass from a sedge or rush; we learnt the names of the different parts of grasses; we were given photocopies of the Poaceae pages from John Hayward's *A new key to wild flowers* and shown how to use it; finally Steve presented us with recently-picked examples of many of the most common grasses, which we examined for their specific characteristics and identified using the Hayward key.

Steve had structured the identification part of the day by taking common genera in turn, and looking at the common grasses within each genus. Thus we learnt, for example, the similarity between *Poa* species of the pro-shaped leaf-tips, but also the important identi-

fying differences of ligule shape, and the arrangement of spikelets that divides *Lolium* from *Elytrigia* species. Giving us the time to look closely at examples, and to compare one species with another, was a strong point of this course. Altogether 39 species were considered, the majority using fresh specimens.

After this mammoth session, we went outside into the visitor centre car park and were challenged by Steve to find as many species as he had found there. This was an interesting exercise, throwing up the possibility of finding the same species in different stages of growth, but not recognising it as such! The end of the day was spent in a pleasant walk around the reserve, through its scrub and grassland habitats, and down to the edge of the river estuary, looking for new grasses not already seen.

Steve Clarkson is to be congratulated for making the day enjoyable but purposeful. The amount of preparation he had obviously put into it was appreciated by all of us, and his focused delivery and unfaltering knowledge of grasses made learning about them all the easier.

Girvan, Ayrshire (v.c.75), 20th – 22nd June

DAVID LANG

Ten BSBI members accompanied the Scottish Officer and the local vice-county recorder for a weekend field meeting in the Girvan area of south Ayrshire over the weekend of 21st – 22nd June, the purpose of which was to record some tetrads which had not previously been covered in any systematic way.

For the first day, the group was split into two to cover a tetrad centred round the Scottish Wildlife Trust (SWT) Grey Hill Reserve, south of Girvan, which also lies within the Lendalfoot Hills Complex European Special Area of Conservation. The SAC has been designated for its mix of upland habitats lying over an ultra-basic geology, unusual fro both

Ayrshire and the west of Scotland. While Scottish Officer Jim McIntosh led the first group over the ridge towards exploring the seaward side of Grey Hill, your reporter took the other group northwards along Lochton Burn, before passing over Cairn Hill.

On the lower slopes and flushes, while both groups encountered the area's diverse sedge flora, including *Carex paniculata* (Greater Tussock-sedge) and *C. xfulva* (hybrid Tawny x Yellow-sedge), only the former group re-discovered *C. diandra* (Lesser Tussock-sedge), one of the more unusual species of the site. Moving up the sides of the hills, both parties encountered rocky outcrops and steeply-

sloping little streamside glens, where frequent *Juniperus communis* (Juniper) shrubs had been grazed prostrate, and the serpentinite specialist *Minuartia verna* (Spring Sandwort) grew on the edges of the rocks. The surrounding calcareous upland grassland was also diverse and attractive, with *Helianthemum nummularium* (Common Rock-rose) and *Gymnadenia conopsea* (Fragrant Orchid), as well as *Antennaria dioica* (Mountain Everlasting) on the thinner soils.

Jim's party had the greater success in re-finding some of the site's notable species, such as *Cryptogramma crispa* (Parsley-fern) and *Utricularia minor* (Lesser Bladderwort), while the other passed over Cairn Hill to begin recording a second tetrad around the woodland between Ardmillan Castle and Byne Hill. In all, 239 taxa were recorded for the target tetrad, making it a very successful exercise.

On the Sunday, the promised rain arrived, but, undaunted, the group was again split in two, this time to achieve maximum coverage of a second tetrad between Feoch Meadows and Darnaconna. The first group concentrated on the meadows themselves, consisting largely of rush pasture with diverse neutral grassland knolls, which are again managed as a wildlife reserve by the Scottish Wildlife Trust. The second group began around Loch Crongart.

The drier areas within the Feoch Meadows exhibited abundant orchids, including

Pseudorchis albida (Small-white Orchid), *Platanthera chlorantha* (Greater Butterfly-orchid) and *Gymnadenia conopsea* again. However, previously-recorded *Coeloglossum viride* (Frog Orchid) could not be re-found. The site has been known to support large populations of *Meum athamanticum* (Spignel), a declining species that still has a stronghold in Ayrshire, so it was disappointing to note that no more than one or two individuals could be re-located at the traditional sites. An additional cause for concern was the forestry brash that had accumulated and obscured most of the site's *Antennaria dioica* population by a streamside outcrop. The reserve manager, who had accompanied us the day before, was duly notified.

The Loch Crongart group themselves made a number of interesting discoveries, including *Rhynchospora alba* (White Beak-sedge) by the side of a ditch, *Andromeda polifolia* (Bog-rosemary) in an area of raised heath, and the willow hybrid *Salix ×pontederiana* (*S. cinerea* × *S. purpurea*) (Grey × Purple Willow) in a small, disused quarry, all new records for the hectad.

All in all, despite the unremitting downpour on the Sunday, the trip was very successful in terms of progressing the systematic recording of the vice-county, and I am hopeful that those who participated enjoyed themselves to boot.

Penbryn, Cardiganshire (v.c.46), 5th July

ARTHUR CHATER

Eleven members and friends met at the National Trust car-park at Llanborth, Penbryn, to explore vegetation of the sea cliffs, and to look in particular at some of the coastal variants of familiar species. By the road down to the shore, Roger Maskew demonstrated *Rosa ×irregularis* (*R. arvensis* × *canina*) (hybrid Field × Dog-rose). There were several plants of *Pimpinella saxifraga* var. *ovata* (Burnet-saxifrage), an uncommon plant of the south and west coasts, first recorded here by J.H. Salter in 1930, and, as noted by him, very similar to *P. major* (Greater Burnet-saxifrage) in being glabrous and in having hollow stems and large

fruits. Elsewhere we saw both var. *saxifraga* and var. *dissecta*. On the small sand dune, we admired *Calystegia soldanella* (Sea Bindweed) in flower, saw *Vulpia fasciculata* (Dune Fescue), and Steve Chambers demonstrated the leaf characters of *Leymus arenarius* (Lyme-grass), *Ammophila arenaria* (Marram) and *Elytrigia juncea* (Sand Couch). At the mouth of the stream were possible plants of the prostrate *Polygonum littorale* (a knotgrass). Suspected *Plantago major* ssp. *intermedia* (Greater Plantain) later proved to have too few seeds in the capsule and was just ssp. *major*. Where sand was blown up onto the generally

acidic Ordovician cliffs, there was a distinctly calcicole flora, including *Anacamptis pyramidalis* (Pyramidal Orchid) and *Anthyllis vulneraria* ssp. *vulneraria* var. *langei* (Kidney Vetch). *Euphorbia portlandica* (Portland Spurge) was abundant in places, and there was the unusual sight of it growing together with *E. amygdaloides* (Wood Spurge). There were fine plants of *Hieracium rubicundiforme* (Rubicund Hawkweed), here at its southern limit in Britain, colonies of *Orobanche hederaceae* (Ivy Broomrape) in the colonies of *Hedera helix* ssp. *hibernica* (Atlantic Ivy) and *Jasione montana* var. *latifolia* (Sheep's-bit), *Lotus corniculatus* var. *crassifolius* (Common Bird's-foot Trefoil) and *Festuca rubra* ssp. *Juncea* (Red Fescue) on the ledges. Ray Woods found a most unusual 'Rose Plantain', with the inflorescence transformed into a flat rosette of leaves, on *Plantago coronopus* (Buck's-horn Plantain), rather than on *Plantago lanceolata* (Ribwort Plantain) or *P. major*, which do occasionally exhibit this monstrosity.

After sunshine in the morning, rain set in at lunch time, and there were heavy showers as we walked north along the coast path. Damp stretches had *Glyceria declinata* (Small Sweet-grass), *Juncus bufonius* Toad Rush), *Isolepis setacea* (Bristle Club-rush), *Anagallis tenella* (Bog Pimpernel) and *Ranunculus hederaceus* (Ivy-leaved Crowfoot). Drier stretches had *Spergularia rubra* (Sand Spurrey) and *Polygonum arenastrum* (Equal-leaved Knotgrass). *Centaurea debeauxii* var. *nemorialis* (Chalk Knapweed) was in some quantity in herb-rich grassland, where a new colony of *Orchis morio* (Green-winged Orchid) was found by Marek Podsielnik. On the exposed grassy slope above Carreg y Nodwydd were the rosettes of the prostrate, late-flowering *Succisa pratensis* var. *arenaria* (Devil's-bit Scabious), *Dactylis glomerata* var. *collina* (Cock's-foot), a reduced form of *Angelica sylvestris* (Wild Angelica), and, on the cliffs, big swathes of *Spergularia rupicola* (Rock Sea-spurrey).

RSPB Lakenheath, Suffolk (v.c.26), 6th July

JONATHAN SHANKLIN

A decade ago, RSPB Lakenheath was an arable farm growing carrots, but having been converted back to peat fen, it is now a fantastic haven for birds. Although designed to attract Bittern, it is perhaps best known for the first breeding record of Common Crane in the UK for 400 years.

A large group of botanists met up with the warden, Norman Sills, who explained a little of the history of the site, from its beginnings in the fenland, through the drainage by the Adventurers, to its post war conversion into farmland. Following the restoration back to fen, he noted the surprising return of many aquatic species, which had lain dormant in the peat for decades. Lying on the boundary between the sandy Breckland and peat Fenland, the site has also regained many of the Breckland specialists. We were fortunate to have Arthur Copping in the party, and he first introduced us to the grasses within a stone's throw of the car park. These included Breckland rarities such as *Aira caryophyllea* (Silver Hair-grass), *Anisantha*

tectorum (Drooping Brome) and both *Apera interrupta* (Dense Silky-bent) and *Apera spicaventi* (Loose Silky-bent). We also found *Filago minima* (Small Cudweed) and *Hypochaeris glabra* (Smooth Cat's-ear). Moving into the reserve, we spotted *Medicago minima* (Bur Medick), a rare Breckland specialist, on the side of the main track through the reserve, along with *Trifolium scabrum* (Rough Clover). Near a large stand of *Populus ×canadensis* (Hybrid Black-poplar), originally planted by Bryant & May for matchsticks, Norman showed us the planted specimens of *Senecio paludosus* (Fen Ragwort), which the RSPB is trying to reintroduce to the reserve, although at the moment the plants need help to survive. The wise returned to the visitor centre for lunch, as the heaviest rain of the day descended on those picnicking outside. By the time we had finished lunch, the rain had eased, and it stayed mainly dry for the rest of the day. Norman led us along the track again, to a damp meadow constrained by ditches. Here we found several of the aquatics,

including *Ranunculus aquatilis* (Common Water-crowfoot), *Rorippa microphylla* (Narrow-fruited Water-cress) and *Samolus valerandi* (Brookweed); and were able to debate the distinction between *Veronica anagallis-aquatica* and *V. catenata* (Blue and Pink Water-speedwells). Although we didn't make any really systematic record of the site,

altogether we noted 164 species during the day, with a further 39 noted during a casual walk after the rest of the party had set off home.

The full species list for the day is available on the Cambridge Natural History Society web pages www.cnhs.org.uk, under 'field studies'.

OVERSEAS FIELD MEETING REPORT: 2008

Valle de Benasque, Aragonese Pyrenees, Spain, 25th June – 1st July

PAUL BARTLETT, VIRGINIA BIRD, ELIZABETH CLARK, ARTHUR COPPING, JANE AND MAURICE CROFT, JOHN AND DOROTHY EDGINGTON, ANNETTE FORD, STUART HEDLEY, SHIRLEY WATSON AND MARY & DAVID WILLIS, edited by TERESA FARINO

Twelve members joined leaders Teresa Farino and Stuart Hedley for a week to explore the Posets–Maladeta Natural Park and valley of Benasque, in the Aragonese Pyrenees. Heavy falls of snow around Easter, followed by six weeks' rain during May and the early part of June meant that the flora we encountered was more typical of late May than late June, with several species of *Narcissus* still in flower. Nevertheless, splendid weather accompanied us during the week, with the exception of a violent hailstorm on the final day, and we saw more than 500 species of vascular plant, including a large number of Pyrenean endemics.

25th June : Plan d'Están

Our first morning dawned fine and clear, with an air of excitement and anticipation among us. All around us were magnificent views of snow-capped mountains, with bright ribbons of mountain streams tumbling through dark pine forests to the intense green of the valley floor. We drove northwards up the classic U-shaped glaciated valley of the Río Ésera, soon leaving behind the rapidly-developing, but still small and compact village of Benasque, our base for the week.

Our first stop was initiated by a slow-moving herd of beef cattle moving up to their summer pastures, which occupied the whole of the road ahead. A lush road-side meadow provided us with an interesting tall-herb assemblage of *Trollius europaeus* (Globe-

flower), *Astrantia major* (*Astrantia*), *Salvia pratensis* (Meadow Clary), *Phyteuma orbiculare* (Round-headed Rampion) and *Valeriana officinalis* (Common Valerian), with the shorter marginal sward hosting the first of many *Platanthera chlorantha* (Greater Butterfly-orchid) and a few 'gone-over' *Coeloglossum viride* (Frog Orchid).

Once the road was clear, we headed up to the top of the valley and then eastwards through some very disturbed metamorphic rocks to an area of limestone outcrops above Los Llanos de l'Hospital – always good for plant growth and diversity – surrounded by more acid boggy areas. A huge variety of plants was seen here, with European and Alpine species growing alongside those found in Britain.

For examples of the latter, looking larger, better and brighter than our own, we saw *Helleborus viridis* (Green Hellebore), drifts of *Primula farinosa* (Bird's-eye Primrose), *Geum rivale* (Water Avens), *Potentilla rupestris* (Rock Cinquefoil; protected in the UK by Schedule 8 of the Wildlife and Countryside Act, 1981, but relatively common in this part of Spain), *Anthyllis vulneraria* (Kidney Vetch), in its alternative strip of an attractive shade of pink, *Gentiana verna* (Spring Gentian) and *Erimus alpinus* (Fairy Foxglove).

Continental and Alpine species included the delightful *Anemone narcissiflora* (Narcissus-flowered Anemone), *Arenaria tetraquetra* (Imbricate Sandwort), *Viola biflora* (Yellow

Wood Violet), the lime-encrusting *Saxifraga paniculata* (Livelong Saxifrage) and clumps of the more tender *S. moschata* (White Musky Saxifrage); the charming, white-flowered Afro-Iberian endemic *Potentilla alchimilloides* (Alchemilla-leaved Cinquefoil), the prostrate and sweetly-scented *Daphne cneorum* (Garland Flower), *Veronica aphylla* (Leafless-stemmed Speedwell), the large *Gentiana acaulis* (Trumpet Gentian), *Aster alpinus* (Alpine Aster), the mat-forming *Globularia repens* and much larger *G. nudicaulis* (Leafless-stemmed Globularia), *Brimeura amethystina* (Pyrenean Hyacinth), a few *Fritillaria pyrenaica* (Pyrenean Snakeshead), and many more too numerous to mention.

Orchids were also well represented, with *Gymnadenia conopsea* (Fragrant Orchid), some fresh *Coeloglossum viride*, the deep-red *Nigritella austriaca* ssp. *iberica*, *Orchis pallens* (Pale-flowered Orchid), *Orchis ustulata* (Burnt Orchid), *Dactylorhiza sambucina* (Elder-flowered Orchid) and *Dactylorhiza majalis* (Broad-leaved Marsh-orchid). While botanising we also had good views of Alpine Marmots (*Marmota marmota*) – attractive, interesting, and very ‘cuddly’ – provoking discussion on the precise description of their alarm calls: do they pipe, whistle, squeak, or whatever?

A lunch break was taken in a delightful shady spot near the stream. Teresa’s picnics are now legendary, and this one, the first of many throughout the week, was a stupendous feast, such that progress was somewhat slower for a time afterwards, but we were soon refreshed by the richness of the flora. This time we headed back along the road towards Los Llanos de l’Hospital, stopping in more acid terrain under open *Pinus uncinata* (Mountain Pine and *Abies alba* (European Silver-fir) forest. The under-storey here was carpeted with *Rhododendron ferrugineum* (Alpenrose), predominantly pink-flowered, but sometimes white, interspersed here and there with *Daphne mezereum* (Mezereon), clumps of *Pulsatilla alpina* ssp. *cantabrica*, with huge white blooms often exceeding 5cm in diameter, the shaggy lilac flowers of *Thalic-*

trum aquilegifolium (French Meadow-rue) and the less conspicuous *Homogyne alpina* (Purple Colt’s-foot).

At the foot of a shady limestone cliff we located the curious *Ranunculus thora* (Thore’s Buttercup), identified by its broad, *Caltha*-like leaves from which emerge slender stalks topped by diminutive yellow flowers, as well as the Pyrenean endemic *Saxifraga umbrosa* (Wood Saxifrage) and *Scilla lilio-hyacinthus* (Pyrenean Squill).

26th June: dry meadows and scrub above Benasque

A stony path, once a mule track, winds down to Benasque from the modern road to Cerler, through a sweet-smelling scrub of decidedly Mediterranean character, dominated by *Buxus sempervirens* (Box), scattered *Amelanchier ovalis* (Snowy Mespilus) *Lonicera xylosteum* (Fly Honeysuckle) and *L. pyrenaica* ssp. *pyrenaica* (Pyrenean Honeysuckle), the latter an attractive endemic with campanulate pinkish flowers.

As we wound steadily downwards, we admired many of the same orchids seen on the limestone on the first day, plus *Lilium martagon* (Martagon Lily, sadly not quite in flower), and a species of *Anthericum* that had us very much confused: was it *A. liliago* (St Bernard’s Lily), or did those long-branched inflorescences mean it was the rather dubious taxon *Anthericum ramosum*? Consulting the local floras didn’t shed much light on the problem, as other characters such as flower size and whether the seed capsules were globose or trigonous appeared to be exceedingly variable between branched and unbranched plants.

Other noteworthy plants here were the (misleadingly-named) *Arabis pauciflora*, almost always seen growing with *A. turrita* (Tower Cress), the curious shrubby plantain *Plantago sempervirens* and the (very aptly-named) *Luzula nivea* (Snowy Wood-rush), with stunning white flower heads. More colour was provided by *Dianthus carthusianorum* (Carthusian Pink), beneath whose flower-head Mary spotted a yellow crab-spider waiting to pounce on an unwary polli-

nator, *D. monspessulanus* (Fringed Pink), *Polygala nicaeensis* (Nice milkwort), *Emerus major* (Scorpion Senna), the yellow rest-harrow *Ononis aragonensis*, the sainfoin *Onobrychis supina*, with its attendant Osiris Blue (*Cupido osiris*) butterflies, and *Linum narbonense* (Beautiful Flax). One of the more distinctive broomrapes, *Orobanche gracilis* (Slender Broomrape), was parasitic upon various legumes along the way.

The highlight of the morning was undoubtedly the species-rich hay meadows beside the path. The experience of walking through chest-high stands of *Astrantia major* and *Laserpitium latifolium* (Broad-leaved Sermountain) will not be quickly forgotten, while a closer look revealed *Listera ovata* (Twayblade) and the semi-parasitic *Thesium pyrenaicum* ssp. *pyrenaicum* (Pyrenean Bastard-toadflax) among the stands of the yellow rattle *Rhinanthus pumilus* ssp. *pumilus* (= *R. mediterraneus*), itself a hemi-parasite of grasses. Delayed only slightly by the first mammal of the day, a (dead) Garden Dormouse (*Eliomys quercinus*), we entered Benasque past *Vicia onobrychioides* (False Sainfoin), *Euphorbia characias* (Mediterranean Spurge) and *Astragalus glycyphyllos* (Wild Liquorice).

Having overcome the logistical problem of retrieving our transport from the top of the hill, we drove up the valley to the wet pastures of Los Baños de Benasque. The herd of cattle we had followed yesterday was by now in residence, watching our riverside lunch with interest and much ringing of cow bells. In ungrazed, rather damp areas we found the diminutive *Persicaria vivipara* (Alpine Bistort) and huge-leaved *Rumex pseudoalpinus* (Monk's-rhubarb), plus *Tetragonolobus maritimus* (Dragon's-teeth), *Lathyrus occidentalis* (Yellow Pea), *Bartsia alpina* (Alpine Bartsia), *Tofieldia calyculata* (Tofield's asphodel) and *Triglochin palustre* (Marsh Arrowgrass), as well as plenty of *Primula farinosa* and *Dactylorhiza majalis*. On nearby lime-rich rocks there was a good display of the charming Pyrenean endemic *Ramonda myconi* (Ramonda), while Shirley tracked down two

interesting calcicoles: the exceedingly hairy, lemon-flowered *Potentilla nivalis* and *Sideritis hyssopifolia* (Hyssop-leaved Sideritis). A more acid boulder choke turned up *Meconopsis cambrica* (Welsh Poppy). The drive back gave us yet another chance to admire and photograph the enormous panicles of *Saxifraga longifolia* (Pyrenean Saxifrage) on cliffs near Benasque.

27th June: Forau de Aiguallut

After a night of thunder and lightning the day dawned grey and drizzly and rather cool. We drove up to the end of the Ésera valley in order to walk along the trail from La Besurta to the Forau de Aiguallut, where meltwater from the Aneto glacier disappears down a sink-hole, to reappear five kilometres away in the Vall d'Aran, on the north side of the main Pyrenean axis. En route we stopped by the roadside to see a fine specimen of *Atropa belladonna* (Deadly Nightshade), where we also compared the two similar purple labiates *Acinos alpinus* (Alpine Calamint) and *Calamintha acinos* (Basil Thyme).

In response to the persistent drizzle, thirteen members of the group started out on the trail to the Forau in waterproofs and boots, while our guide wielded an umbrella and wore her habitual sandals. She obviously had a much better idea of the local weather patterns and by mid-morning proved to be by far the most suitably clad person. While Maurice and Dorothy welcomed the chance to stretch their legs on a proper walk at last, the botanists really had a field day. First off, under John's expert guidance, a shady boulder-choke provided us with the opportunity to compare and contrast many species of fern growing in close proximity (see box). Drier habitats were decorated by the relatively huge flowers of *Geum montanum* (Alpine Avens) and *Gentiana alpina* (Southern Gentian) (such 'giantism' is a distinct bid to attract the rather scarce pollinators of high-mountain habitats), as well as cushions of *Silene acaulis* (Moss Campion) and Mountain House-leek (*Sempervivum montanum*) (see Colour Section, Plate 2).

Marshy areas along the edges of the stream hosted *Viola palustris* (Marsh Violet) and an

abundance of *Bartsia alpina*, while shady rock faces were also of note for their assemblage of *Soldanella alpina* (Alpine Snowbell), *Primula hirsuta* and *P. integrifolia* (Entire-leaved Primrose), *Polygonatum verticillatum* (Whorled Solomon's-seal), *Allium victorialis* (Alpine Leek) and the delightful, sprawling *Streptopus amplexifolius* (Streptopus), with its distinctive kinked pedicels. Also, after searching in vain on the previous day for *Pseudorchis albida* (Small-white Orchid), Paul encountered more than 20 spikes growing in a single square metre, while a small stand of almost immaculate *Narcissus poeticus* (Pheasant's-eye Daffodil) provided a wonderful photographic opportunity.

The day was fabulous for animals too. We had all been greatly amused on the drive up to see an Alpine Marmot on a nearby outcrop, looking out at us and flapping its tail in a gesture of what appeared to be defiance or irritation. We then saw what was probably a Bank Vole (*Clethrionomys glareolus*), which allowed us to get quite close to photograph it, and later on, our way back down, we watched a Red Squirrel (*Sciurus vulgaris*) waiting to cross the path on which we were walking. There were young Pyrenean Brook Newts (*Euproctus asper*) and Common Frogs (*Rana temporaria*) in the pools and streams.

We also saw a number of different birds during the day, including Serin (*Serinus serinus*), Citril Finch (*Serinus citrinella*), Northern Wheatear (*Oenanthe oenanthe*), Dunnock (*Prunella modularis*) and Black Redstart (*Phoenicurus ochruros*) – the last in a family group with parent birds feeding their young. Flying around the cliffs were Choughs (*Pyrrhocorax pyrrhocorax*) and a total of seven Griffon Vultures (*Gyps fulvus*). For Annette, however, the highlight of the day was the behaviour of one particular bird – a Dipper (*Cinclus cinclus*) in the centre of the sink-hole pool itself, where it was diving deep into the clear water. We could even see it using its wings like a penguin to 'fly' through the water, then coming up to the surface with its catch.

A final bonus after our leisurely lunch was the extensive stand of *Convallaria majalis* (Lily-of-the-valley) that Stuart found for us on a steep, west-facing stream, only a stone's throw from the car park.

28th June: Sierra de Chía

The dramatic limestone ridge of the Sierra de Chía lies to the south-west of Benasque, where a completely different range of habitats awaited us. Leaving the main road near Castejón de Sos, we made our first stop in open woods of *Quercus faginea* (Lusitanian Oak), where we found *Bituminaria bituminosa* (Pitch Trefoil), the curious, burnt sienna-coloured *Tragopogon crocifolius* and *Aphyllanthes monspeliensis*, (Blue Aphyllanthes) growing in the dry, stony terrain, to the trilling accompaniment of a Bonelli's Warbler (*Phylloscopus bonelli*). The distinctive, spiky grass *Echinaria capitata* was perhaps Arthur's find of the day, as he had never seen it before, while Liz was delighted to finally be able to photograph *Antirrhinum majus* (Snapdragon) at close quarters.

Winding gradually up the hillside, through the little stone village of Chía and beyond, we could see many hay meadows below us and noticed much mowing activity in the area. The larger, flatter meadows were being cut using tractors with various attachments, but we suspected that the smaller, more floristically rich meadows on the steeper slopes were probably still scythed by hand.

We explored a small bracken-edged track off the road where it was now very warm and sunny: perfect conditions for butterflies such as White Admiral (*Limenitis camilla*) and Provence Orange-tip (*Anthocharis euphenoides*). This was an old quarry site, full of species able to withstand the dry conditions, including the ever-impressive *Saxifraga longifolia*, *Lathyrus sylvestris*, (Narrow-leaved Everlasting-pea), *Ajuga chamaepitys* (Ground-pine), *Teucrium botrys* (Cut-leaved Germander) and *Lavandula angustifolia* (Common Lavender).

Here too we encountered the viciously spiny 'mother-in-law's cushions' of *Echinopartum horridum* (*Echinopartum*) – just coming into

flower – that would soon clothe the hillsides in a mantle of yellow. Above us circled a pair of huge-winged Lammergeiers (*Gypaetus barbatus*). As many of us had never seen these vultures before, botanising was suspended for some time!

Climbing higher up the northern flanks of the Sierra, at about 1500m we stopped once more to examine the loose limestone screes, where we found the tiny, sticky columbine *Aquilegia viscosa* ssp. *hirsutissima*, some stunning mauve cones of *Campanula speciosa* (Pyrenean Bellflower), the yellow bells of *Ononis bubanii* (Pyrenean Golden Drop) and the purple-and-white-flowered *Scutellaria alpina* (Alpine Skullcap). In addition to these colourful species we discovered *Borderea pyrenaica* (Pyrenean Yam) – a most curious member of the Dioscoreaceae, whose bryony-like leaves and tiny 3-winged capsules sprawled across the screes – accompanied by the grey-leaved *Crepis pygmaea* (Pygmy Hawk's-beard).

At 1750m we found typical limestone montane plants such as *Antennaria dioica* (Mountain Everlasting), *Saxifraga paniculata* and *Potentilla alchimilloides*, as well as our first *Dryas octopetala* (Mountain Avens). Moving up to the highest point of the road, at the Puerto de Sahún (2000m), we had amazing views of the surrounding peaks – including Monte Perdido to the west – while Egyptian Vultures (*Neophron percnopterus*) circled overhead and a herd of Swiss Brown cows grazed below, their resonant bells echoing across the valley.

Our delicious picnic lunch (langoustines today!) gave us the energy to make a final ascent of the rocky slopes in search of more rare alpine plants. We climbed over a veritable carpet of *Daphne cneorum* and clutched hold of the tussocks of the deceptively spiny *Festuca gautieri* (Spiky Fescue). *Dryas octopetala* became more abundant, accompanied by swathes of *Salix reticulata* (Net-leaved Willow) and *S. pyrenaica* (Pyrenean Willow), and eventually we encountered the first *Leontopodium alpinum* (Edelweiss), just coming into flower and

growing together with *Saxifraga oppositifolia* (Purple Saxifrage), *Androsace villosa* and the endemic *A. pyrenaica* (Pyrenean Rock-jasmine), all in very rocky and exposed situations. Our final ascent rewarded us with a few tiny plants of *Soldanella alpina*, whose flowers were just beginning to fade but were still easily recognizable, while back near the minibus, we found the striking little purple-and-orange-flowered *Linaria alpina* (Alpine Toadflax).

29th June: Selva Negra

The day started with an uphill walk from Cerler, looking towards the snow-capped Posets Massif, to a *Pinus uncinata* wood. The roadside verges and meadows were filled with a familiar glorious array of plants and butterflies, including species such as the handsome umbellifer *Laserpitium siler*. Where base-rich flushes emerged through the cliff we found the feathery leaved, sulphur-yellow *Pedicularis foliosa* (Leafy Lousewort), *Dactylorhiza incarnata* (Early Marsh-orchid) and *D. elata* (Robust Marsh-orchid). The Pyrenean endemic *Saxifraga chusii* (French Saxifrage) flourished in profusion on a cool and dripping cliff-face.

Three adult Lammergeiers (possibly two males and one female) were clearly visible on the nearby ochre-coloured cliffs, where they probably nest. These 'bearded vultures' habitually drop bones from a great height in order to feed on the marrow and then ingest the fragments. They are among the most threatened birds in Europe.

As the height increased *Arctostaphylos uva-ursi* (Bearberry) straggled down the banks, while crevices in the drier cliffs harboured some spectacular clumps of the pinkish-white *Antirrhinum sempervirens* (Rock Snapdragon) and the slender, woody *Fumana procumbens*.

While we were resting in the shade, snacking on dates and cashews, Paul, John and David, who in the meantime had forged ahead in search of wintergreens, reappeared ahead of us, urging us on to see what they had found. At their bidding, we clambered inelegantly into an almost vertical pinewood, where we were rewarded with *Pyrola chlorantha* (Pale-

green Wintergreen), *Orthilia secunda* (Serrated Wintergreen, also known as Yeavinger Bells) and, last but not least, *Moneses uniflora* (One-flowered Wintergreen, or St Olaf's Candlestick) (see Colour Section, Plate 2): tiny gems that could all too easily be overlooked in the gloom.

The afternoon saw us descending below the lower limit of the *Pinus uncinata* along a shady woodland track from Cerler to Anciles, where the main trees were *Betula pendula* (Silver Birch) and *Populus tremula* (Aspen), with *Buxus sempervirens* and coppiced *Corylus avellana* (Hazel) in the under-storey. *Orthilia secunda* was again seen here, growing together with *Pyrola minor* (Common Wintergreen), *Actaea spicata* (Baneberry), the attractive *Paris quadrifolia* (Herb-Paris) and *Neottia nidus-avis* (Bird's-nest Orchid).

As we emerged from this enchanting wood we encountered *Campanula trachelium* (Nettle-leaved Bellflower), *C. patula* (Spreading Bellflower), and *C. glomerata* (Clustered Bellflower), after which we just had time for a quick exploration of the attractive village of Anciles, dominated by early sixteenth-century stone buildings.

The day ended noisily and triumphantly when Spain won the European Cup.

30th June – Ampriú

Our final day. We drove back up the road through Cerler and carried on to the ski station at Ampriú, close to 2000m. Because the chair lift was closed until early July, we instead scrambled up into the surrounding meadows, where we found ourselves surrounded by great drifts of *Paradisea liliastrum* (St Bruno's Lily), totally living up to its name in glory and contrasting beautifully with the sheets of purplish *Geranium sylvaticum* (Wood Crane's-bill), drifts of pale-blue *Brimeura amethystina* and dozens of dark-red *Nigritella austriaca* ssp. *iberica*.

Among many species we had already seen – some useful last-minute revision – were two tall plants of particular interest, both tantalisingly close to being in flower: *Gentiana lutea* (Great Yellow Gentian) and *Iris latifolia* (rather inappropriately known as English Iris). The same was unfortunately true of the stands of *Veratrum album* (White False-helleborine) that occupied rather damper areas. Virginia and Jane noticed that its shoots were covered in aphids that were being actively milked by ants, undoubtedly the same sort that viciously attacked any human feet that paused in the same spot for more than a second or two.

A Whinchat (*Saxicola rubers*) posed on a fence-post, and a few butterflies and moths, notably Black-veined Moth (*Siona lineata*) and Mazarine Blue (*Cyaniris semiargus*), braved the rather cool conditions.

Climbing through rather coarser herbage, we encountered a single robust plant of tall *Scorzonera aristata* (Bearded Viper's-grass), with our first *Adonis pyrenaica* (Pyrenean Pheasant's-eye) causing great excitement. We also found *Ononis cristata* (Mt. Cenis Restharrow) on drier slopes, with great patches of *Pedicularis mixta* combined with fleshy-pink flowered *Dactylorhiza incarnata* and deep purple *D. majalis* along the margins of the small streams that carved their way down the hill.

At this point the thunder grumbling around the peaks finally developed into a full-blown hail-storm, driving us into the shelter of the overhanging roof of the nearby ski station, where we tucked into our last picnic of the week, washed down with Spanish *cava*. As we loaded up the minibuses to return to base, a last Alpine Marmot piped its farewell from the top of a large boulder. Back in Benasque, the *fiesta* was finally drawing to a close, with a band performing on the steps of our hotel: a brilliant finale.

Pteridophytes of Benasque

The *Atlas de la Flora del Pireneo Aragonés* (Vol. 1: 1997) lists 39 species of ferns, horsetails and clubmosses from the Benasque valley. In our

short visit we saw all but ten of these, including such scarce British species as *Equisetum variegatum* (Variegated Horsetail) and *Asplenium septentrionale* (Forked Splenwort), though

some familiar plants, notably *A. scolopendrium* (Hart's-tongue) and *Blechnum spicant* (Hard-fern), eluded us.

On the whole, habitat preferences were as expected: *Equisetum hyemale* (Rough Horsetail), *E. arvensis* (Field Horsetail) and *E. palustre* (Marsh Horsetail) in water meadows, with *Selaginella selaginoides* (Lesser Clubmoss) in flushes, *Cryptogramma crista* (Parsley Fern) as a pioneer plant of acidic boulder scree, *Phegopteris connectilis* (Beech Fern) and *Gymnocarpium dryopteris* (Oak Fern), often growing together, under damp, shaded rocks, and *Botrychium lunaria* (Moonwort) and *Gymnocarpium robertianum* (Limestone Fern) in calcareous screes.

But there were some surprises for British botanists: it was late in the trip before we saw *Pteridium aquilinum* (Bracken) for the first time, whereas *Polystichum lonchitis* (Holly-fern) was abundant, sometimes occurring in close association with *Asplenium septentrionale*. At one site en route to the Forau de Aiguallut, *Athyrium filix-femina* (Lady-fern) and its montane congener *A. distentifolium* (Alpine Lady-fern) grew together, as did *Dryopteris filix-mas* (Male-fern), with its high-altitude relative *D. oreades* (Mountain Male-fern), giving the opportunity to demonstrate the differences, mainly in sporangial character, between both pairs of look-alikes.

In Benasque village, *Cystopteris fragilis* (Brittle Bladder-fern) vied with *Ceterach officinarum* (Rustyback) as the commonest wall fern, while at around 2200m on the Sierra de Chia it occurred in a form close to *C. fragilis* ssp. *alpina*, considered to be an extremely scarce taxon in Aragón. *Polypodium interjectum* (Intermediate Polypody) was present as well as *P. vulgare* (Polypody), although the *Atlas* records only the aggregate species.

Although we failed to find either *Asplenium petrarchae* or *A. seelosii* ssp. *glabrum* – the latter being very scarce in Aragón – we did find two possible sites for *Woodsia* above the Hospital de Benasque. The species listed in the *Atlas* is *Woodsia alpina* (Alpine Woodsia), while a single record of the much rarer *W. glabella* ssp. *pulchella*, otherwise known in Spain only from Barcelona Province, is said to derive from a misidentification of *Asplenium fontanum* (Smooth Rock Spleenwort), which we found frequently on calcareous outcrops. However our specimens from one site have been determined by Fred Rumsey as *Asplenium viride* (Green Spleenwort) while those from the second, though morphologically closer to *Woodsia glabella*, are probably the same, so the *Woodsia* (of either species) eluded us.

DIARY

N.B. These dates are often supplementary to those in the 2008 Calendar in *BSBI Year Book 2008* and include provisional dates of the BSBI's Permanent Working Committees.

8 Oct	Records Committee, London	29 Oct	Executive Committee, London
11 Oct	Committee for Wales, Aberystwyth	1 Nov	Scottish AEM & AGM, Edinburgh
15 Oct	Publications Committee, London	1 Nov	Committee for Scotland, Edinburgh
25 Oct	Understanding our alien flora Conference, London	12 Nov	Council, London
		22 Nov	Annual Exhibition Meeting, Leeds

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OBITUARY NOTES

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

Vera Gordon's Memorial meeting

Joan Vincent, Liverpool Botanical Society, writes:

On March 15th about 20 members of the Liverpool Botanical Society met in the entrance of Ness Gardens in order to attend a tree planting in memory of Vera Gordon. As a member of the society for over 70 years and secretary for 60 of those years it seemed appropriate to remember her in this way.

Quercus robur had been chosen as a suitable tree. Vera would have approved of a native plant and one said to support more life than any other. Many of us remember how she used to point out the various oak galls to us on field meetings.

The Liverpool University Botanical Gardens at Ness seemed the right place too. This was the University which awarded Vera an honorary degree for services to botany, and the gardens contain plants collected from many parts of the world familiar to her from her many botanising trips.

The site chosen overlooks the River Dee and the lovely Welsh hills. Vera's brother Ron was invited to do the honours and plant the tree, between leading Rambler's Association walks. At 88 he obviously has the typically energetic Gordon genes, so that digging the hole through hard, stony ground proved no problem. The tree was duly planted and other members then added their spadeful of soil. Ron gave an entertaining account of growing up with Vera. Not only was her interest in plants clear from an early age, but Vera would collect a wide range of fungi for the family meals and they had sufficient faith in her to eat everything.

Most of us then retired to the restaurant where over lunch we could talk of experiences shared – field meetings remembered for rain-drenched treks or occasional mishaps and the delight of unexpected plant discoveries. Through it all Vera's enthusiasm for her subject would always inspire us to look more closely and appreciate our floral heritage.

This day was a happy occasion and we hope that visitors to these gardens will enjoy seeing

Vera's oak tree grow and mature. At present her name is attached to a branch. Later we hope for a small plaque in the ground. Above all it will remind us of a true amateur botanist – described for another by Vera (quoting Professor Comer), as one in whom 'the light shines brightest.'

With regret we report the deaths of:

Mrs Irene (Rene) Weston, a member since 1964 and we are grateful to David Pearman for the following note:

We are very sorry to hear of the death of Rene Weston, who joined Joan Gibbons as the recorder for both parts of Lincolnshire in 1982, took over on her own in 1985, and carried on till 2001 in N Lincs and 2006 in S. Lincs. This meant that she helped me with all the recent major projects - Scarce Plants, the Red Data Book, and lastly, the New Atlas. The two Lincolns combined are the largest area in Britain, and therefore she had to produce the greatest number of 10km Mastercards – 90 – and I well remember the final letter with the last batch, and the relief. I was so touched that we sent her a bouquet!

Since then she has been working for some years with Paul Kirby on trying to sort out the computerisation of both Joan's and her own detailed records; it will be really exciting to have more comprehensive data for Lincolnshire in the system.

Dr Richard E. Thomas, a member since 1963 who lived at Orchil House, Draco, Perthshire, and we are grateful to Alistair Godfrey for the following note:

We are sorry to hear of the death, after a long illness, of Richard Thomas.

Lecturer in Management Science in the Department of Management, University of Stirling, or Lecturer in Business Management for short.

Richard followed Alan Robson, who was the Vice-county Recorder for all the Perthshire Vice-counties. With the concentration on smaller units, Richard and his fellow recorders increased the coverage over Perthshire and he



Vera Gordon with her characteristic beaming smile on the day she received her Honorary degree (above) and in the field recording plants (below). Both photos © P. Lockwood.

added a great number of records personally and with his wife Joanna, in the company of visiting botanists and on excursions of the BSBI. This effort culminated in the publication of *The Checklist of the Plants of Perthshire* in 1992 with his fellow recorders, and the further collation of records contributed a great number of records to the new Atlas, demonstrating that the flora of Mid-Perthshire is not only one of the most varied in Scotland, but also within the British Isles. Richard was also Bulletin Editor of the Perthshire Society of Natural Science Botanical Section and led many of its excursions. He was also Chairman of BSBI Committee for Scotland 1984-5, having been Vice-chairman 1982-84 and again 1985-86. Richard's interests and natural curiosity were wide ranging, he travelled widely abroad taking advantage to study the ornithology of Cyprus while on national service, botanising in Norway and enjoying solar eclipses in Africa and elsewhere. Richard will be sadly missed; he is survived by his wife Joanna, daughters Susie and Jess and their children. A collection is being taken in Richard's memory to help complete the cataloguing of the herbaria held by Perth Museum. Members wishing to make a donation should contact the Curator of Natural History, Mark Simmons, MJSimmons@pkc.gov.uk

Terry Wells, a member since 1962 and we thank Kevin Walker for the following note:

It is with great sadness that we report the death of Terry Wells who passed away on the 4th of September, 2008. Terry will be best known to members as the Vice-county Recorder for Huntingdonshire (v.c.31), a position he held from 1967 to 2007 when he resigned due to ill-health. Terry's flora of the county was published in 2003. Outside the Society Terry was better known as an outstanding grassland ecologist. Based at Monks Wood Experimental Station for much of his career Terry carried out pioneering work on the effects of grazing on chalk grassland, orchid demography and more latterly grassland re-creation. He was also a key surveyor for the *Nature Conservation Review* and the *National Vegetation Classification* drew

heavily on his work. In later life Terry developed a passion for fungi, a love he shared with his wife Sheila, an expert in the field and constant companion on both botanical and mycological forays. Terry was an inspirational scientist as well as a dedicated amateur botanist who contributed much to our understanding of the British flora. His knowledge, kindness and warm good humour will be very much missed by all who knew him. We send our sincerest condolences to his friends and family.

A full obituary will follow shortly in *Watsonia*.

It is also with much regret that we report the following deaths since the last issue: **Mr D. Cathro** of the Strathclyde Region of Scotland, a member since 1988; **Mr E. Kearns** of Stockport, a member since 1990; **Mr R. Lawton** of Cardigan, a member since 1980; **Mr G.H. Morgan** of Dersingham, a member since 1967; **Miss D.A. Phillips** of Leicester, a member since 1991; **Miss M.R. Shaw** of Sheffield, a member since 1982; **Mr S.R. Turner** of Shrewsbury, a member since 1981 and **Dr (Mrs) J.W. Bonnard** of Alderney, a member since 1986, the wife of Brian Bonnard V.c. Recorder for Alderney. We send our sympathy to him, and to the families of all those members mentioned above.

Although not a member, we are sorry to report the death of **John Marsden**, the Secretary and very public face of the Linnean Society from 1989 to 2004 and David Pearman writes:

I appreciate that he might be known to only a relatively few members of the Society, but the Linnean is our principal London meeting venue, as well as the host of many conferences.

I found him always welcoming and interested both in one as a person and in the occasion that had drawn one to the premises! The obituary in *The Times* (28th August 2008) set him on a much broader stage than that which I had seen, and makes very interesting reading.

His last service there was overseeing (or rather seeing off) of the threat to the Linnean's (and that of the other learned societies) continued occupation of Burlington House, suggested by Prescott and his cohorts.

BOOK NOTES

Coste's Flora of France available free online

JULIET BAILEY, Little Haresfield Farm, Standish, Stonehouse, Gloucester, GL10 3DR

Members might like to know that a French friend has told me that the 1937 edition of the excellent illustrated French flora *Flore descriptive et illustrée de la France de la Corse et des contrées limitrophes* by L'abbé H. Coste in 3 volumes plus index is available

in pdf form for free download from:

http://www.tela-botanica.org/page:flore_de_coste
Members should note that the pdf files are quite large and only really suitable for download via broadband.

Bishop's *New Flora of Gloucestershire*, part 2

We have available a small number of copies of the above, published in 2008 as part of the Gloucestershire Naturalist series. This volume comprises solely distribution maps. These remaining copies have slight printer's

imperfections and are offered at the reduced price of £9:00 including postage. Cheques to Gloucestershire Naturalists Society, from C. & M.A.R.Kitchen, The Cottage, Bevington, Berkeley, Glos., GL13 9RB.

Offered to a good home

RUTH RACE (Mrs), 12 Auden Close, Lincoln, LN2 4BS; 01522 524077

One copy each of the *Atlas of the British Flora* 1st ed. (1962), with all its overlays; and the 1976 reprint (with one overlay), are available

for free to interested persons. Recipients must either collect, or pay postage. Please contact as above.

RECORDERS AND RECORDING

Panel of Referees and Specialists

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

A few changes to the Referees' Section in the 2008 Yearbook:

Margaret Bradshaw has written to ask if we can change her requirements for *Alchemilla* specimens to: 'Radical leaves with complete petiole, an inflorescence with open flowers/fruits'. Her email address is: mebhilltop@btinternet.com.

Luke Bristow's address has changed to: 12 Western Road, Burnham-on-Crouch, Essex, CM0 8JE; luke.bristow@virgin.net

Brenda Harold's email address has been changed to: brendaharold@btinternet.com

Chris Preston's address has changed to Biological Records Centre, Centre for Ecology and Hydrology, Maclean Building, Benson

Lane, Crowmarsh Gifford, Wallingford, Oxfordshire, OX10 8BB.

Chris Stapleton has resigned as referee for bamboos. He says he no longer has easy access to herbarium specimens, as he isn't now working at Kew. We are grateful for his help with this group.

Finally, you may have seen in the last *BSBI News* that Mr J.F.M. Cannon died in March this year. He had been the general referee for Apiaceae from at least 1975, and we owe him a big debt of gratitude. We have a second general referee for Apiaceae in Mervyn Southam, as well as Tony O'Mahony for *Apium* and Dick Brummitt for *Heracleum*.

Panel of Vice-county Recorders

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

Changes of Address

V.c.14 (East Sussex). Paul Harmes, Flat 7,
Park View, 5, Offham Terrace, Lewes, BN7
2QP.

V.c.50 (Denbs). Mrs Delyth Williams, Bryn
Siriol, Craig Fechan, RUTHIN, LL15 2HA
(I inadvertently gave her old address).

V.c.98 (Main Agyll). Mr Carl Farmer, Flat
7, Polfearn House, Taynuilt, PA35 1JQ. (I
had spelt Taynuilt incorrectly).

PROFILES OF NEW HONORARY MEMBERS ELECTED AT THE 2008 AGM

Catriona Murray

LYNNE FARRELL

Catriona first joined the BSBI in 1960 and has been vice-county recorder for North Ebudes for over 40 years, retiring recently in April 2006. She was born in Glasgow and studied in Edinburgh before becoming a teacher of mathematics in North Uist. She married Robin, who was a teacher at Portree High School on Skye, and at their croft at Prabost they continued meteorological readings for many years, constructed a colourful garden and raised three children.

Catriona became interested in plants at a young age, encouraged by her mother and Win Muirhead. She visited the Julian Alps with Mary Briggs initially and kept returning there, having become keen on the mountain flora. Franklyn Perring was also a help, and specimens were often sent to him to check. Franklyn and Catriona later discovered they had a common interest in the Monach Isles. However, she was largely self-taught, and was spurred into learning more about grasses, sedges, rushes and ferns when supplied with copies of 10km square cards done by Win Muirhead in the 1950s. She thought that her subsequent records cards would be 'empty' without these groups! Her interest in *Koenigia islandica*, which occurs on Skye and Mull only in the British Isles, was stimulated by a printed note with which she disagreed, and she

decided to investigate further, searching for the species on Trotternish ridge most years afterwards.

One of her botanical highlights was finding Lightfoot's Bearberry on an outlier of the Kyleakin Hills, 200 years after the original record was made. Alf Slack, another keen mountain botanist had begun the search in 1986.

Catriona concentrated initially on Skye and co-authored 'The Botanist on Skye' with John Birks, first published in 1974, and recently updated to include plants of several of the other islands in her patch - Raasay, Rona, Eigg, Muck, Canna, Scalpay and Soay - in the 2005 edition.

When I first met Catriona she was certainly a 'mountain goat' and being based at Monks Wood in the flat fenland at that time, I lagged behind on ascents of the Storr and the Cullins. Her fitness was partly due to the daily ascent of Ben Tote behind her house to record some of the weather readings, although she is also a keen Scottish country dancer and I am sure that helped too. Although she is small in physical stature, she stands tall in the list of mountain botanists, and she was never slow to set off into the major hills of Skye in search of records, and to help new and younger botanists to find their feet.

Philip Oswald

CHRIS PRESTON

Philip Oswald has been an active member of the BSBI since he joined in 1952. He is one of the dwindling band who collected records for both the 1962 and the 2002 atlases. He contributed chapters to the *Ecological Flora of the Shropshire region* and *The Flora of Montgomeryshire* and since he retired he has been a member of the very active botany group of the U3A in Cambridge. On the national scale, I'm sure that many members look forward, as I do, to his occasional papers, usually devoted to the unravelling of a complex problem by detailed historical research. I wonder how many readers detect in these papers his particular delight in correcting errors made by illustrious botanists in the past, or accepted by them without question? A classicist by training, Philip has also translated many descriptions of new taxa into Latin, including 23 pages of new hawkweed descriptions in Volume 4 of Sell & Murrell's *Flora of Great Britain and Ireland*. He regularly writes or checks the Latin for *Watsonia* and the *Botanical Journal of the Linnean Society*.

All this makes Philip a valued member of the botanical community, but it would not, perhaps, qualify him for honorary membership. The main reason for nominating him today is that since 1993 he has been editor of the BSBI Handbooks, a job he is gradually relinquishing as the titles he has taken responsibility for appear in print. He was ideally qualified for this job, having edited many of the Nature Conservancy Council's publications until he retired when that organisation was disbanded in 1991. Several of these were very influential, and none more so than *The Flow Country*, which was published in 1988 and helped ensure the protection of much of the remaining peatland from afforestation. (The truths it outlined were so unpalatable to some that it is believed to have been partly responsible for the government's decision to break up the NCC). As well as mastering the

technicalities of publication, Philip gained much valuable experience in NCC in dealing with the vagaries of authors, another vital aspect of the editor's task.

The first Handbook Philip saw through the press happened to be my *Pondweeds* volume. I already knew Philip as editor of *Nature in Cambridgeshire*, so I was accustomed to his high editorial standards, his ability to spot authors' errors and the immense efforts he often took to correct them. In dealing with *Pondweeds* I soon came to appreciate his ability to see the book as a whole, and thus to realise at once how a proposed change in one element of it would affect the rest. You might think that this was a normal or even a necessary qualification for an editor or publisher, but it actually seems to be one of the rarest of gifts. It is certainly missing from the large and rigidly compartmentalised commercial or academic publishing houses. In my (admittedly very limited) experience only Basil Harley of Harley Books, happily also honoured recently by the Linnean Society, compares with Philip in this respect. Since *Pondweeds*, Philip has edited *Sea Beans and Nickar Nuts, Dandelions, Sedges* (ed. 3) and *Water-starworts* [sic], all rather different but all edited to the same very high standard. During his period as editor printing technology has been constantly changing, but by hard work and determination Philip has ridden successive waves of innovation with apparent aplomb.

Few of us can appreciate the sheer amount of hard work that Philip has devoted to the Handbooks, whether negotiating with authors, assessing designs, vetting successive drafts of the text, seeing titles through the press or checking publicity material. It is a great pleasure to nominate him for Honorary Membership of the BSBI, and to couple with this nomination our thanks for his past services and our best wishes for his future botanical endeavours.

Richard Pryce

GWYNN ELLIS

A profile of Richard Pryce appeared in *BSBI News* 90 (April 2002) which outlined his botanical progress from birth in 1949 in Battersea, London, a degree in Geology at Swansea University, joining BSBI in 1974, appointment as BSBI Recorder for Carmarthenshire in 1978, launch of the Carmarthenshire Flora project in 1981, publication of Carmarthenshire Rare Plant Register in 1984 followed by a much improved and enlarged version in 1999, and the inauguration of the much acclaimed Carmarthen Recording Weekends, now stretched to a week and more or less permanently based at the superb Glynhir Mansion.

Redundancy from the National Coal Board on privatisation was a blessing in disguise as he quickly founded Pryce Consultant Ecologists in 1994 which has gone from strength to strength and has become firmly established as one of the premier Environmental Consultancies in South Wales.

He is a Chartered Environmentalist, a Chartered Biologist, a Member of the Institute of Ecology and Environmental Management, a Member of the Institute of Biology, a Fellow of the Linnean Society of London and a

member of the Geologists' Association as well as being a member of BSBI.

In May 2002 he was elected President of the BSBI, a post he filled with distinction for three years. Perhaps the most significant event during his tenure was the publication of the *New Atlas of the British & Irish Flora* launched at Kew and Glasnevin in 2002.

In spite of all the work involved in his consultancy, with Flora recording and with innumerable BSBI committees, he still found time to get married, and he and Kath tied the knot – where else than at Glynhir Mansion – in 2004.

Since standing down as President in 2005, Richard has been appointed to BSBI Records Committee, BSBI Council and is now Secretary of the BSBI Committee for Wales and continues as editor of the *BSBI Welsh Bulletin*.

Work has continued apace (I think) on recording for the Flora of Carmarthenshire although Richard admits that it has been a long and difficult pregnancy and there is little prospect of an imminent birth – some inducement may be necessary.

I am delighted to sponsor his nomination as Honorary Member of BSBI.

NOTES FROM THE OFFICERS

From the Head of Research and Development – KEVIN WALKER

97 Dragon Parade, Harrogate, North Yorkshire HG1 5DG; kevinwalker@bsbi.org.uk

The Threatened Plants Project (TPP) – update

As I write (late-July), the field season is in full swing and many recorders have been in touch to say that surveys for the Threatened Plants Project are well underway. Early indications are that we should have a good spread of populations for the 10 species we are covering this year. *Astragalus danicus* (Purple Milk-vetch) (see Colour Section, Plate 4 in particular, seems to have been popular, probably because it is a 'good day' species – always a good find, and usually in a nice habitat (four

counties list it as an axiophyte). Yet, in south-east England, it is in dire trouble. Charles Babington's *Flora of Cambridgeshire* reminds us just how long it has been in decline: as far back as 1860 he wrote 'Until recently (within 60 years) most of the chalk district was open and covered with a beautiful coating of turf, profusely decorated with *Anemone Pulsatilla* [*Pulsatilla vulgaris* (Pasqueflower)], *Astragalus Hypoglottis* [*Astragalus danicus*], and other interesting plants. It is now converted into arable land, and its peculiar plants mostly confined to

small waste spots by road-sides, pits, and the very few banks which are too steep for the plough.’ It seems that many of Babington’s sites are now gone, and so it is good to hear that there are still flourishing coastal populations in northern England and Scotland.

Seasons can have a dramatic effect on survey results, and 2008 seems to have been no exception. Some of you have commented on what a bad year it has been for *Ophrys insectifera* (Fly Orchid) (see Colour Section, Plate 4), especially in the southeast. In at least two counties in the north it has disappeared altogether, even on sites where the vegetation appears the same. Similar results are likely for *Monotropa hypopitys* (Yellow Bird’s-nest), a notoriously fickle species in appearance from year to year. Consequently, many recorders have reported very low re-find rates for both species. Interestingly Bryan Edwards has sent a record of this species growing in a ‘fairy ring’ in Dorset (see Front Cover) where it is presumably parasitic on the fungus *Tricholoma* (see article by Philip Jones in this issue, p. 40). If you do find *Monotropa* growing in this way, please try and identify the subspecies and the fungal associate and send the records to Philip.

Targeted surveys such as the TPP help to challenge views about species in ways that *ad hoc* recording could never do. The preliminary results for *Crepis mollis* (Northern Hawk’s-beard) (see Colour Section, Plate 4) are a case in point. The map in the *New Atlas* shows a drastic decline since the 1970s. Yet it is a species that is very easy to miss. Most plants occur with other composites (and Dipsi-cales) from which it can be difficult to tell it apart (e.g. *Crepis paludosa* (Marsh Hawk’s-beard), *Centaurea nigra* (Common Knapweed), *Hieracium* spp. (hawkweeds), *Hypochaeris radicata* (Cat’s-ear), *Leontodon hispidus* (Rough Hawkbit), *Succisa pratensis* (Devil’s-bit Scabious)). This can make it damned hard to find, especially on large sites where you only have very scant details to go on. To make matters worse, many populations occur in meadows that are cut for hay! However, after careful searching, it has turned

up in many of its old haunts, suggesting that it might not be as rare as we first feared.

Results for *Blysmus compressus* (Flat-sedge) (see Colour Section, Plate 4) have produced some insights into rarity at different scales. The hectad map shows it to be very widespread in the north and west, but on the ground it is actually thinly spread, with usually no more than a few populations in each tetrad. Although some populations can be quite large, most are localised, rarely extending more than a hundred metres in narrow transition zones along watercourses and marshes. Phil Smith informs me that dune populations on the Sefton Coast are much more extensive, but are restricted to fewer tetrads. Species with this single large/several small-type of distribution are genuinely threatened: small populations are unable to recover from extreme events, whereas large ones can be wiped out by a single event.

We hope to analyse the data from this year’s survey over the winter, so if you have completed forms for the project please return them to me by the end of September.

Recording Scales

The scale at which we record plants is so central to what we do that it is surprising that it receives so little attention. Historically, we have tended to record common and widespread species in hectads (to 2 figs within a 100km square), and all rare and scarce species to within 100m squares (to 6 figures within a 100km square). This has allowed us to produce atlases, whilst at the same time keeping a track of the locations of rarer species. But wouldn’t it be wonderful to have an 8 figure grid reference for every rarity? Some recorders now work routinely at the tetrad scale, and, with the advent of cheap hand-held GPS, record the location of any interesting species (county rarity, hybrids, interesting aliens) to within 10m grid cells (i.e. 8 figures within a 100km square). This has allowed us to produce national tetrad maps (see: <http://www.bsbi.org.uk/html/atlas.html>) that display fascinating biogeographic patterns that are not clear at the hectad scale (look at the tetrad maps for *Adoxa moschatellina*

(Moschatel) or *Lathraea squamaria* (Toothwort) for example).

A sensible approach is to relate recording scale to the rarity of the species. Michael Braithwaite has done some interesting work on this in v.c.81 and suggests a more structured approach – tetrad or monad for widespread species, 100m for localised species and 10m for rare and scarce. This summer, I used this approach to map the distribution of *Crepis mollis* in Yorkshire (Table 1). At most sites the 10m grids tell us an awful lot more about its extent and abundance. These are mapped by taking GPS readings at regular intervals. This quickly generates lots of 8

figure grid references, so for ease of inputting these can be converted to a proportion out of 100 within each 100m square. Therefore, at Firth Wood 48 *Crepis* plants are scattered over nearly 3 ha (14 10m grid cells in 6 100m grid cells), whereas at Bounty the density is much higher, with 200 plants in 18 10m grid cells in just under a hectare. This approach is simple to do and provides some really useful information. We plan to discuss many of these issues at a workshop titled 'Recording scale and techniques' at the Recorders' Conference later this month, so if you have used similar approaches then please come along and tell us all about them.

Table 1. The size and extent of *Crepis mollis* populations in Mid-west (v.c.64) and North-west Yorkshire (v.c.65)

Population	Hectad	1 km	100	10m	Plant	Ext (ha)
Colt Park Wood, Ribblesdale	SD77	SD7777	1	1	6	<0.1
Bounty, Wharfedale	SD97	SD9574, SD9474	4	18	200	1.1
Firth Wood, Wharfedale	SD97	SD9475	6	14	48	2.8
Worton Scar, Wensleydale	SD98	SD9689	1	8	44	0.1
Newbiggin Bridge, Teesdale	NY92	NY9027	2	3	7	<0.1
Wynch Bridge, Teesdale	NY92	NY9027	1	2	25	<0.1
Total	4	6	15	41	330	4.02

From the Scottish Officer – JIM MCINTOSH

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The Scottish Project Continues!

The current funding for the SNH/BSBI Scottish Project, which employs me, expires in October 2008. We have just heard that an application for a further term of funding from SNH has been successful. They will support 50% of the project costs – largely based on our continuing involvement with rare and scarce plant monitoring work. Supporting the Vice-county Recorder network will continue to be a major element of this work. The BSBI is the other main contributor, although the Royal Botanic Garden Edinburgh has very kindly agreed to make a significant contribution by providing free office facilities.

The Threatened Plant Pilot Project 2008

Looking for TPP populations this summer has been fascinating. It's taken me to some of the most remote places in Scotland. I've used the opportunity to do some general recording en-route and I've always recorded some other notable species in the process, sometimes when homing in on target species - like Serrated Wintergreen (*Orthilia secunda*) when looking for Intermediate Wintergreen (*Pyrola media*) or Prickly Sedge (*Carex muricata*) when looking for Purple Milk-vetch (*Astragalus danicus*). Other times when looking very closely to list associates – Moonwort (*Botrychium lunaria*) and Heath

Cudweed (*Gnaphalium sylvaticum*) with Field Gentian (*Gentianella campestris*).

I've also learnt a lot about the habitat preferences of the target species and can now predict with some certainty where *Pyrola media* might occur in a landscape. (Usually on free-draining ground where the landscape has prevented intensive management; a particularly steep section of river valley which has prevented grazing or burning for example.)

But one of the most useful things I've learnt has been how to use the GPS 'GOTO' function! This is really invaluable when trying to re-find old records, but you do have to use it with care. A detailed map with the location plotted is essential so that you choose a sensible starting point and don't end up approaching populations from the wrong side of major obstacles like gorges or rivers. The other thing you have to watch out for is that going to the exact grid reference will take you to the south-west corner of the square – which could be up to 1km away from the population with a four figure grid reference. Assuming the reference is accurate and the population is still there!

Whilst it has been gratifying to re-find populations last recorded over 50 years ago, it has been rather sad to confirm the apparent loss of others despite extensive searching. In my case these losses were due to forestry planting and (probably) road maintenance. But it is going to be fascinating to see an analysis of possible reasons for 'null records' from across the country.

Computerisation Project

Work continues apace to capture Scottish Vice-county Recorders paper records electronically, and make them more widely available, to the BSBI, BRC Vascular Plant DataBase, the NBNGateway and to the Vice-county Recorders themselves, of course! During spring contractors completed datasets from Selkirk (v.c.79), Midlothian, (v.c.83), Kincardine (v.c.91), Dumbarton (v.c.99) and Mid Ebudes (v.c.103). Over the summer work has continued on datasets for Peebleshire (v.c.78), Moray (v.c.95), and Dumbarton (v.c.99).

Vice-county Recorders are making final checks to the records collected by the *Plant life of Edinburgh and the Lothians* project and recently computerised by Lothian Wildlife Information Centre. Another one-off project involves mobilising quarter of a million records collected by SNH from their Tayside area files and reports. That dataset is with BRC undergoing technical checks before being disseminated to Vice-county Recorders using MapMate (novelly) and posted on the NBNGateway.

Scottish Annual Meeting – 1st November 2008

Just a quick reminder that you will find a warm welcome north of the border at the BSBI Scottish Annual Meeting at Royal Botanic Garden Edinburgh on Saturday 1 November 2008. The event is held in conjunction with the Botanical Society of Scotland, and is always very lively and enjoyable. To book see the enclosed flier.

Coordinator's Corner

ALEX LOCKTON, 66 North Street, Shrewsbury, Shropshire, SY1 2JL; coordinator@bsbi.org.uk

In my last 'corner' I mentioned that we were experimenting with species accounts on the web, and would find a way forward over the next few months. We're making progress. A good web page turns out to be just the right length – shorter and more readable than, say, a 'Biological Flora' in the *Journal of Ecology*, and rather longer and more informative than an account in an Atlas or a County Flora. There is room for a photo or two, which is not only decorative but can also be used to demon-

strate important features, such as the difference in shape between the flowers of the various bluebells.

One thing we have learned is that people do not want to log onto a web site if they can help it. We created a site where registered users could post their own accounts, but there is a lot of resistance to logging in. People just don't like having yet more user-names and passwords, so, for now, we have reverted to a more simple system that doesn't require a

log-in (although you can still send in feedback, which will be posted on the account).

There is something else very different between a web-based publication and a paper one. On a web site the account can be continuously updated, so it can be more of a discussion than a definitive statement. You can post a question like 'does this plant ever occur in wet woodland' and then, when you've got the answer, simply alter it to 'this plant, very atypically, occurs in a wet woodland in Northumberland' (or whatever). So you don't need to know the answers to all questions before you write something. It is perfectly legitimate – in fact, far more interesting – if you can pose questions. For this reason, they now come under the aegis of the Training & Education Committee, and they are seen as something to encourage new young writers and to stimulate research and worthwhile projects.

Field Identification Skills Certificates

FISCs are another recent project that seems very successful – the tests this year were over-subscribed and there is already interest in next year's. They are proving to be great fun to do, and people come with just the right attitude of good humour and a little apprehension. A FISC is a fairly broad measurement of one's ability – as it should be – and there is always the opportunity to put in a bit of work and get a higher grade next time.

What is original about FISCs is that they are the first time anyone has come up with a process to evaluate a botanist's field skill, and it makes you think quite carefully about how you record. For example, should one try to get to know all the plants of Britain or just the ones in your own county? Do you need to be able to identify aliens, or is it OK to just say 'it's an alien, so it doesn't matter.' In most cases, I think, one starts with the latter position but gradually moves towards the former. It is challenging to find oneself surrounded by people who are way ahead of you, and to realise that, while one might be justifiably proud of one's ability, there is always so much more to learn.

It would be good if a culture of being tested in this way were to permeate the botanical world. A FISC is more like a chess ranking than a driving test – it is not a qualification that you

pass once and then you're 'qualified'. It is part of an ongoing process of improvement. This is a more beneficial way for both professionals and amateurs to think about their field skills.

The BSBI web site is now so widely used that we only advertise them there (which helps to keep the cost down considerably) so keep an eye on www.bsbi.org.uk for details. Many thanks to our dedicated specimen collectors, Clare, Kevin, David, Arthur, Dan and John (I'm not giving their surnames so you can't work out where we get the plants from...) and of course to Sarah Whild and Sue Townsend, who thought up the idea and run the tests.

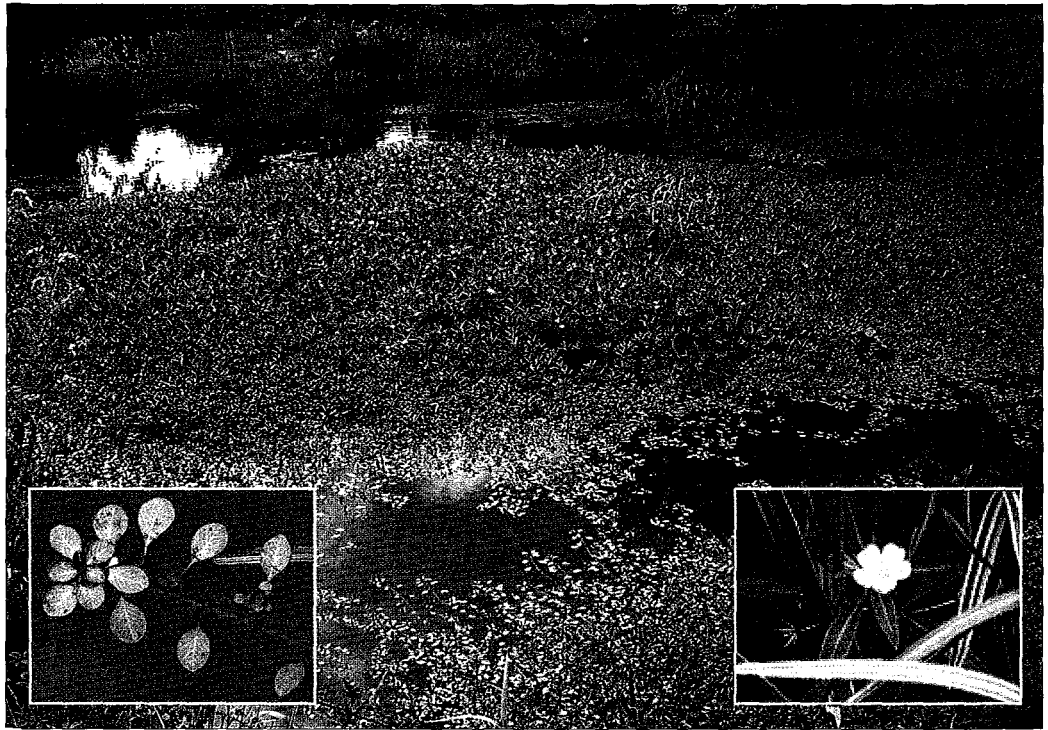
Where is the BSBI heading?

I keep writing about web sites, and occasionally I get a grumble from members that they don't have access to the internet and feel that they are losing out. Well, yes, they are. There is no avoiding that. The BSBI is all about communications. We're a forum for botanists, and the best thing that has ever happened to the society is the creation of the internet. We now get around a million hits a month on our various web sites, including tens of thousands of visitors who are not even members. This reflects the way the society is changing, from being a small core of active British botanists communicating among ourselves, into an outward-facing centre of botanical expertise that provides information to botanists throughout the world.

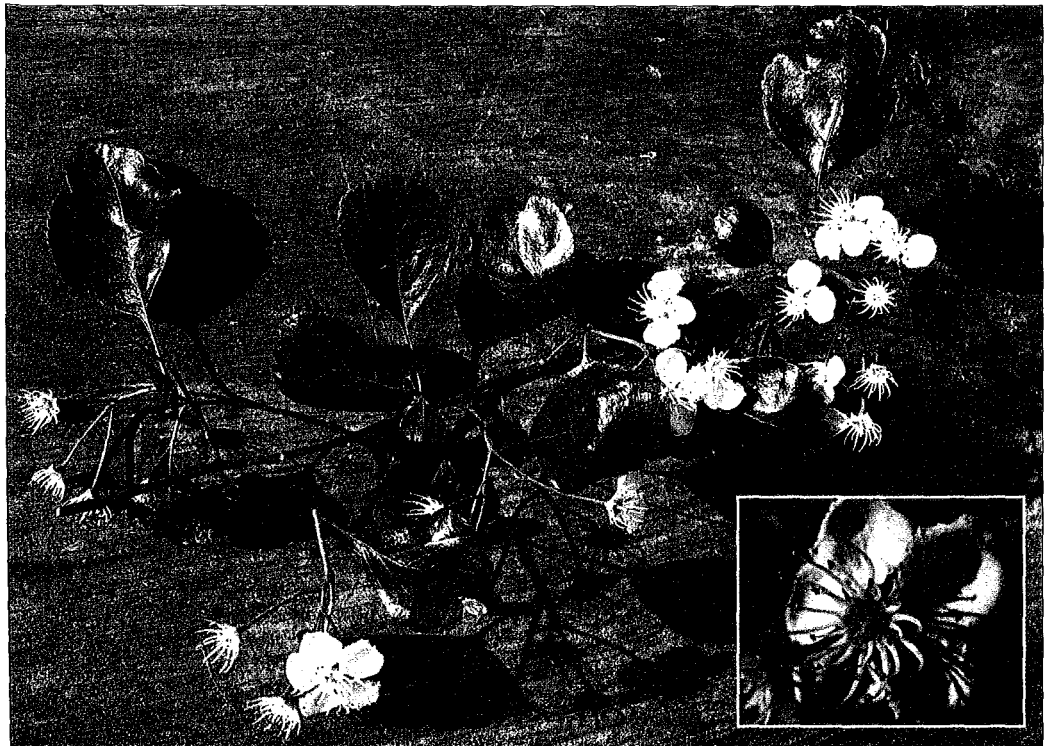
It will be a big change for us but, I think, a welcome one. I was recently giving a demonstration of our web sites to an audience of naturalists from around the world, organised by the Field Studies Council, and it was apparent that many of the things that we have done could easily be replicated by botanical societies elsewhere. *Watsonia* online, for example, costs almost nothing and is read by many more people than the paper version could ever be. In third world countries printing and distribution costs are prohibitive to small societies, whereas an online journal is not only cheaper but in many ways better. Because of our long history, the expertise that is available in the society, and our relative wealth, we have a lot to share and, potentially, a lot to gain from working with a much wider audience.

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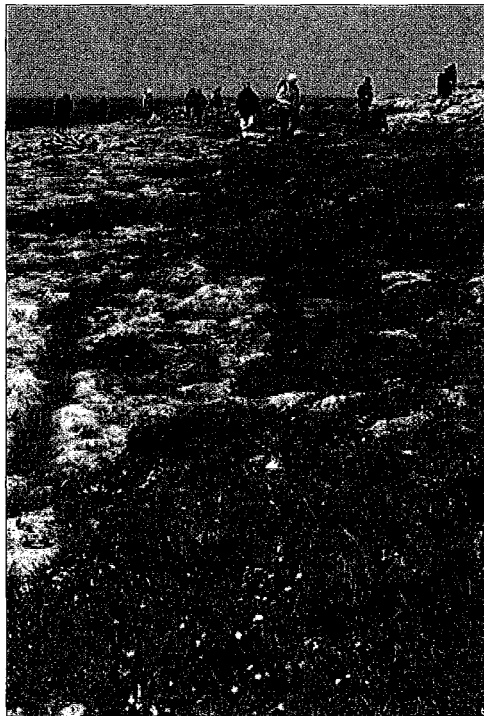
Ludwigia grandiflora floating mat, with detail of floating rosette (left) and flower (right).
Photos N. Moore © 2006 (see p. 58)



Crataegus laevigata at Todmorden (v.c.63). Photos J.P. Marshall © 2007 (see p. 26)



1. Green road location of *Arenaria norvegica*



2. Limestone pavement site of *Arenaria norvegica*



3. *Arenaria norvegica* ssp. *norvegica*

All photos taken at the Burren (v.c.H9) by K. Walker © 2008 (see p. 5)