BSBI News

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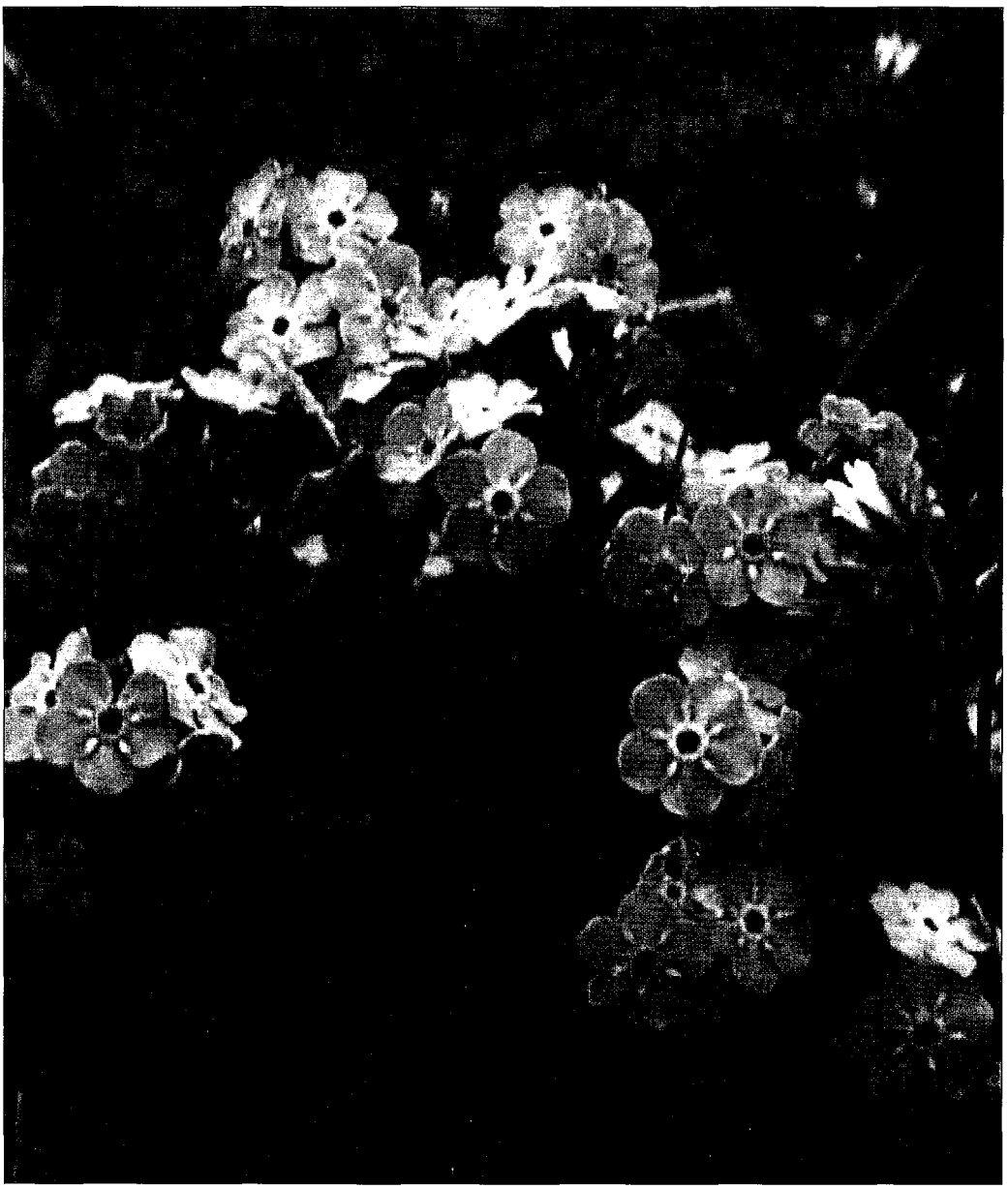
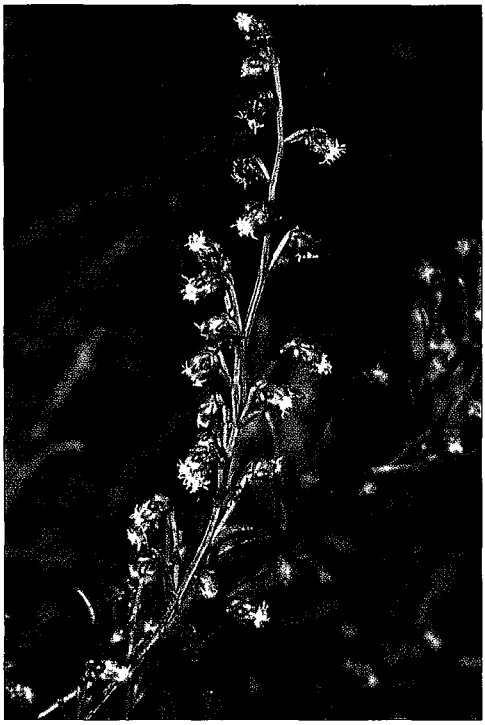
Botanical Society of the British Isles



Edited by Leander Wolstenholme & Gwynn Ellis

Artemisia campestris subsp. *maritima* on Crosby Sand-dunes, Merseyside (v.c. 59)



Artemisia campestris subsp. *maritima* in full flower on 11th September on Crosby Dunes (v.c. 59)
All three photos see p. 3, P.H. Smith © 2005

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Cover picture – *Myosotis alpestris* on Little Fell, Northern Pennines (p. 7). Photo L. Robinson © 2005

Receiving Editor *BSBI News*

GWYNN ELLIS, General Editor

It is with a great sense of loss and regret that I have to announce that Leander will be relinquising the post of Receiving Editor, *BSBI News* from April 2007, or sooner if a replacement can be found. Pressure of work and the increasing needs of a young family have forced him, reluctantly, to reach this decision.

This will be the 60th issue of *BSBI News* that I have edited and I can honestly say that the last 11 have been the most enjoyable. It is always good to have a colleague to confer with and Leander, by taking over responsibility for the receipt of contributions (always), their acceptance (usually) and suggesting ways of improvement (sometimes), has lessened my load considerably. He has also scanned much of the hard copy received and typed handwritten notes.

He was also very involved with the change over to the new format and took the lead on many design changes.

I will greatly miss Leander and his contribution to the continued success of *BSBI News* and would like to take this opportunity to thank him for all that he has done over the past 3½ years and eleven issues.

It could prove difficult to replace Leander but I am delighted to report that there is a possible successor 'waiting in the wings' and I hope we will be able to make a positive announcement in the next issue.

In the meantime, please continue to send your contributions to Leander, who will acknowledge receipt and then pass them on to me.

Editorial

DR LEANDER WOLSTENHOLME & GWYNN ELLIS

Apologies: To Clare O'Reilly who points out that her note on *Symphytum officinale* subsp. *bohemicum* (*BSBI News* **102**: 46-48) was wrongly included in the aliens section – a seemingly trivial matter but as she rightly says 'it's a native taxon, hence it needs recording so that it can be considered for Red List status.'

And to Fred Rumsey for mis-attributing his BSBI exhibition poster to John Edgington (*BSBI News* **102**: 64).

Plant Records in *Watsonia* – Please note that the Plant Records Editor and *Carex* and *Calamagrostis* Referee, Mike Porter, has a new email address: mike@carex.wanadoo.co.uk

Plant Records for inclusion in *Watsonia* **(26(3))** should reach Mike by October 31st 2006.

Colour in News – Our thanks to those who responded to the note in the last issue. We now have several members interested in helping to chase up colour images, although no one has yet volunteered to be in charge! With all the changes this issue there was no time to involve them, but next time ... .

Where are they now? – The following members have moved without letting us know their new addresses. Any help in tracing them would be much appreciated.

78335 – Mr J.A.M. Campbell, 16a Suffolk Avenue, Shirley, Southampton, Hants, SO15 5EG
62285 – Mr P. Cannon, 1 Coombe Rise, Shenfield, Essex, CM15 8JJ
92753 – Dr B. Gove, 105 Manor House, Silwood Park, Buckhurst Road, Ascot, Berks, SL5 7PY
98654 – Miss L. Hull, 20 Hothfield Court, APPLEBY, Cumbria, CA16 6JO
88144 – Miss L. Hutchby, 8 Bullington End Road, Castlethorpe, Milton Keynes, Bucks, MK19 7ER
93512 – Mr R. Kennedy, 11 Edmund Street, Walsden, Todmorden, OL14 7ST
99626 – Mrs T. & Mr S. Penfield, 2 Croftside, YORK, YO26 5LT
102236 – Miss J. Peyton, 19 Cam Close, St IVES, Cambs., PE27 3FG
79960 – Mr N. Rumens, 27 Stag Way, Funtley, Fareham, Hampshire, PO15 6TW
99596 – Ms M. Scholten, 52 Oakfield Road, Selly Park, BIRMINGHAM, B29 7EQ
90262 – Mr M. Stevenson, 68 Hough Path Road, Merrow, Guildford, GU1 2QL
35032 – Mr J.A. Wild, 05130 Sigoyer, FRANCE

Artemisia campestris subsp. *maritima*, new to Britain, on the Sefton Coast, Merseyside

PHILIP H. SMITH, *9 Hayward Court, Watchyard Lane, Formby, Liverpool L37 3QP*
MICHAEL P. WILCOX, *32 Shawbridge Street, Clitheroe, Lancashire, BB7 1LZ*

While recording for the new Flora of South Lancashire (v.c. 59) at Crosby Sand-dunes, Merseyside, on 17th April 2004, we found a patch of an *Artemisia* which we did not recognise at SJ311.982. Material sent to Eric Clement was identified as *Artemisia campestris* subsp. *maritima* (Field Wormwood), a subsp. new to Britain. Subsequent searches located no further individuals and, by July 2005, the original patch measured about 200 × 170cm. On 6th June 2005, the patch was observed to be infested with the nymphs of cercopid bugs producing much 'cuckoo-spit'. However, this appeared to have little adverse effect and the plant was photographed in full flower on 11th September 2005 (see inside front cover).

Associated vascular taxa were identified on 30th May and 11th July 2005 and are listed in Table 1.

The surrounding habitat is fixed-dune reprofiled during the construction of a pumping station in 1995/96. Evidently, the dune was reseeded at the time as several non-natives are prominent in the sward, including *Festuca brevipila* (Hard Fescue), *Medicago sativa*, (Lucerne), *Melilotus albus* (White Melilot) and *Lotus corniculatus* var. *sativus* (a tall form of Bird's-foot-trefoil). Nearby is a sizeable population of *Apera interrupta* (Dense Silky-bent), a non-native grass that occurs predominantly in eastern England. It seems likely that this and also the Field Wormwood had their origin in the seed mixture used around the pumping station.

The nationally rare British taxon, which is largely confined to Breckland, is *A. campestris* subsp. *campestris*. According to *Flora Europaea*, subsp. *maritima* is distinguished from subsp. *campestris* by having short, fleshy leaf-lobes which are convex but not keeled, whereas the latter has keeled leaf-lobes that are not fleshy.

Interestingly, *A. campestris* has been recorded twice before as a casual in South Lancashire: on waste tips at Bradford Park, Leverhulme Park in 1908 (South Lancashire Flora Project) and as subsp. *campestris* at Garston Docks in 1934 (Savidge *et al.* 1963).

References:

SAVIDGE, J.P., HEYWOOD, V.H. & GORDON, V. 1963. *Travis's Flora of South Lancashire.* Liverpool Botanical Society, Liverpool.

Table 1. Vascular associates of *Artemisia campestris* subsp. *maritima* at Crosby sand-dunes

Aira caryophyllea	*Lotus corniculatus*
Aira praecox	*Medicago sativa*
Ammophila arenaria	*Melilotus albus*
Anisantha sterilis	*Plantago lanceolata*
Anthyllis vulneraria	*Rumex crispus*
Cerastium fontanum	*Senecio jacobaea*
Crepis capillaris	*Senecio squalidus*
Elytrigia repens	*Taraxacum officinale* agg.
Festuca rubra	*Trifolium dubium*
Holcus lanatus	*Trifolium pratense*
Hypochaeris radicata	*Vicia sativa*
Leymus arenarius	

Could *Artemisia campestris* subsp. *maritima* be native?

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

In order to protect our fast-diminishing precious wild habitats it is important that we should carefully consider the possible nativity of as many plant taxa as possible. Very few folk want to protect our *alien* species in their newly adopted home!

One strong candidate appears to me to be *Artemisia campestris* L. subsp. *maritima* Arcangeli, yet it is unmentioned in all our recent Floras. Philip Smith tells us (*BSBI News* **102**: 6) that it *still* occurs on the Sefton Coast (v.c. 59) as a 'nationally rare' and 'vulnerable' taxon with a local status of 'rare', but is stigmatised as a 'non-native or introduced native taxon'.

Flora Europaea **4**: 186 (1976) lists the world distribution of this plant as 'W. coast of Europe northwards to the Netherlands.' Britain fits comfortably within this natural distribution. French Floras give the habitat as maritime sands of the Atlantic coast. In The Netherlands it is treated as both a native (e.g. *Gorteria* **2**: 116, 1965) and as an adventive (e.g. *Gorteria* **6**: 49, 1972). In Belgium it was recently found by F. Verloove as a small population in maritime dunes at La Panne 'où elle semble en voie de naturalisation' – see J. Lambinon in *Dumortiera* **85–87**: 31 (2005). Clearly, it can have a weedy appearance, but the habitat is invariant.

A glance at our hefty *New Atlas* (2002), p. 646, shows up several 'alien' records for *Artemisia campestris* around our coasts. How many of these are of subsp. *maritima*? I have seen only one certain specimen, now in **Herb. EJC**, that apparently remains unpublished (but see p. 3 and photos inside front cover): Among fixed sand dunes, near Crosby (Hightown area), SJ311.982, v.c. 59, July 2004, *coll.* M. Wilcox & P.M. Smith. It was collected as *A.* ?*abrotanum*, but differed in not being aromatic even when fresh, and it appeared ± woody all the way up the stems.

Our subsp. *campestris* (Field Wormwood) is an undisputed native, restricted to short sandy grassland in E. Anglia – it does not occur on the dunes. The two subspecies are easily separated when fresh, *viz.* vegetatively:

Leaf-lobes fleshy, convex but not keeled beneath	subsp. *maritima*
Leaf-lobes not fleshy, keeled beneath	subsp. *campestris*

No intermediate plants appear to be on record in Europe, and hence specific rank might be more appropriate. The name *A. lloydii* was provided by G. Rouy, *Flore de France*, vol. 8, p. 296 (1903) according to www.ipni.org; but, herein, it is described as a 'forme' of *A. campestris*, and was changed to 'proles (race)' in his *Conspectus de la flore de France*, p. 141 (1927). The first treatment as a full species appears to be in *Index Kewensis* supplement 6, p. 20 (1926) where it was (accidentally!) listed as a species by A.W. Hill – i.e. the correct author citation (which no one uses?) is *A. lloydii* (G. Rouy) A.W. Hill. No English name exists – but Sand-dune Wormwood would be an obvious choice.

But, under any name, it is worthy of our efforts to preserve it in its few precarious sites.

Sagina maritima another possible roadside halophyte

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

On May 29th last I was walking along the north-west side of the A351 south of Stoborough when I noticed a *Sagina* growing in a narrow fairly bare area just above the kerb. Close examination proved it to be *S. maritima* (Sea Pearlwort), and the colony extended for 125m, beyond which the kerb had been discontinued. A constant associate was *Plantago coronopus* (Buck's-horn Plantain); in one place there was also *Catapodium maritimum* (Sea Fern-grass), but a heavy shower put an end to searches for more of the latter.

The *New Atlas* shows that it had begun to be found on roadsides in Scotland and northern England. Maybe it is widespread in such localities. They are noisy and risky places to botanise, and impossible on motorways, except for motorway maintenance personnel (Jam makers since 1963, as one of their vans once said). For unlike *Cochlearia danica* (Danish Scurvygrass) and other salt-verge species, the *Sagina* is definitely not recognisable from a moving car.

Reference

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Damage to the Northern Pennines by the use of Motorcycles and Quad-bikes

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Introduction

In the past few hundred years the Pennines have been used by farmers for grazing their animals and managed by landowners for grouse shooting. The farmers and keepers always accessed this isolated area via footpaths, bridleways and farm tracks on foot or on horseback up to around the 1930s and 1940s when motorised transport began to be used such as tractors and four-wheel drive vehicles and more recently quad-bikes. For many years there have been motorcyclists venturing on to the fells. Indeed one of us can remember seeing groups on the summit plateau of Cross Fell almost twenty years ago, causing damage to the shallow peat. Earlier this year a group of motor cyclists camped overnight on the same summit.

The formation of the Pennine Way in 1965 opened up the area to fell-walkers and as a result parts of this long distance path between Cross Fell and Little Dun Fell, Little Dun Fell and Great Dun Fell and parts of Knock Fell had paving stones laid to stop the quite serious erosion caused by walkers' feet. Motor cyclists are keen to pit themselves and their machines against the obstacles presented by the landscape itself, and so obviously will not keep to the paved way, which in any case has many stretches in the form of steps intended for walkers, not wheeled traffic.

Erosion of the wettest ground is one of the most damaging features of the bikers activities. Since 2000, damage by motorcycles and quad-bikes has increased dramatically. There are now organised groups who arrive in cars and vans with low-loaders in tow and up to twenty scramble bikes on board (see photo below).

Low-loaders and vans parked on Melmerby Green. Photo © L. Robinson, 2005.

They access the open fell via farm tracks, footpaths, bridleways, the Pennine Way, Maiden Way and the A686 Hartside summit. Such off-road enthusiasts come from as far away as Bolton in Lancashire and Liverpool. When challenged the bikers maintain they have the right to be there, one group causing damage to a farmer's allotment above Ousby stating that 'we have the right to roam'.

Under section 34 of the Road Traffic Act 1988 it is an offence to drive a motor vehicle without permission on to common land, moorland or land of any description that does not form part of a road. It is also an offence under that section to drive a motor vehicle on a footpath or bridleway. Unfortunately this did not apply to off-road vehicles, and some motorcycles, e.g. scramble motorcycles, are classified as off-road vehicles so an amendment to section 34 was included in the Countryside and Rights of Way Act 2000 which had the effect of extending to off-road vehicles the offence under section 34 of the 1988 Act. This came into force on 1 February 2001.

Description of area

The area covered by this report stretches from Green Fell above Ousby, south along the summits via Cross Fell, Little Dun Fell, Great Dun Fell and Knock Fell veering east to Dufton Fell and on towards Meldon Fell.

Most of this ground is above 600m with Cross Fell the highest point at 893m. It consists mainly of the uplifted bands of Carboniferous limestone, gritstone and shale, with lines of variously enriched springs flowing from just below the summits giving rise to extensive flushed areas down the slopes, many with rare and protected species in their communities. These vulnerable habitats, totally dependent on their fragile drainage systems, are without doubt most at risk of damage by motorcycles.

The summits, especially Cross Fell with its extensive plateau and to a lesser extent, Little Dun Fell, have a drier *Racomitrium lanuginosum* (Woolly Fringe Moss)/*Carex bigelowii* (Stiff Sedge) sward on their tops whilst Green Fell, Dufton Fell, Meldon Fell and the Bulman Hills (one of the most spectacular examples of giant glacial erratics known in the northern Pennines) have areas of limestone grassland

with several rare species. Both these habitats have numerous motorcycle tracks criss-crossing them.

The blanket bog communities are mainly on the lower slopes and their very nature tends to discourage the motor cyclists, exceptions being areas such as the Trout Beck track from Great Dun Fell down to the Moor House access road at Trout Beck bridge. This area has had considerable damage to some eroded peat areas and old mine heaps (see photo below).

Damage down Trout Beck on Moor House National Nature Reserve. Photo © J. Adamson, 2005

Melmerby and Ousby Fell have illegal gravel roads which were built in 2004 without planning permission by shooting interests, from the new Ousby Shooting Lodge to Black Burn Hut, and in 2005 from the Ousby Shooting Lodge down Swarth Beck to the top of the waterfall. According to one source a track formed by motorcycle use is visible from Black Burn hut to Greg's Hut on the Pennine Way thus giving an easily accessed circular route into what was once an essentially isolated area and part of the 'Moor House and Cross Fell Site of Special Scientific Interest'. Although these roads are gated, scramble bikes can easily by-pass them.

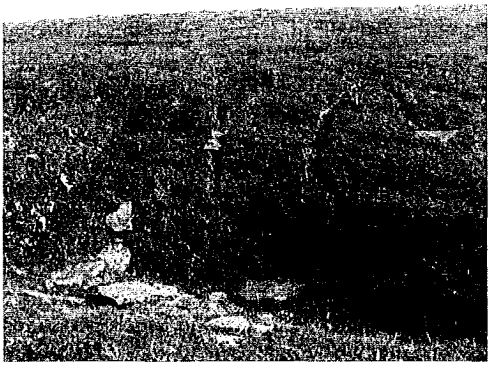
Damage to habitats

Green Fell (above Ousby)

All the flushes on the northern and western side of Green Fell are criss-crossed with motorcycle tracks. One flush on the north facing slope has the very rare arctic grass *Alopecurus borealis* (Alpine Foxtail) and *Carex vaginata* (Sheathed Sedge) discovered as recently as 2002. In 2002 this flush had a deep tyre track obviously caused by a scramble bike skidding, sliding and churning up the mud and vegetation all the way up its centre – a 'scar' still visible in 2004. Other flushes on the west side of Green Fell have many tyre marks through them and onto the limestone grassland summit. All these flushes have the two previously mentioned species in them, and *Saxifraga hypnoides* (Mossy Saxifrage), *Sedum villosum* (Hairy Stonecrop), *Valeriana dioica* (Marsh Valerian), *Viola palustris* (Marsh Violet) and other species (LR 2003). The limestone grassland has the rare *Alchemilla glomerulans* (a Lady's-mantle), *Botrychium lunaria* (Moonwort) and *Gentianella amarella* (Autumn Gentian) as well as commoner limestone grassland species.

Cross Fell

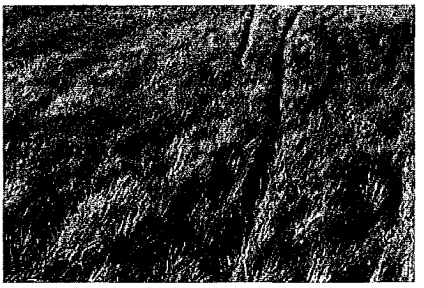
The flat plateau of Cross Fell is well described by the late Derek Ratcliffe in his book 'Lakeland', Chapter 10 'The Pennines'. The 'Woolly Fringe Moss heath' he describes as declining is now recovering well due to reduced grazing since foot and mouth disease in 2001 but it is well tyre-marked by much motorcycle activity.



Tyre marks on Cross Fell plateau. Photo © L. Robinson, 2005

On the northern flank the flushes again have taken the brunt of the damage. The extensive 'quaking bog' has effectively been partially drained by tyre channels running through it.

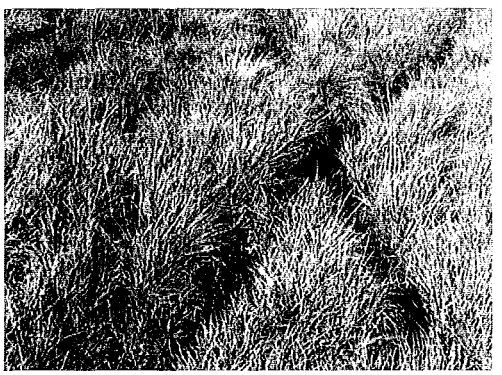
One of these flushes has a large population of Alpine Foxtail, with hundreds of heads, first reported in 2002. This flush too has motorcycle tracks running through it.



'Quaking bog' being partially drained by tyre channels. Photo © L. Robinson, 2005

On the southern slopes of Cross Fell facing Little Dun Fell deep ruts have been made through some fine *Sphagnum* lawns with peaty debris churned up by the revving wheels and thrown onto the surface giving an unpleasant damaged appearance to a previously pristine site.

Just below this area more ruts have effectively re-directed a small drainage channel from running down the east side of the fells to the west (see photos below).



Deep tyre ruts re-directing water flow. Both photos © L. Robinson, 2005

Areas between Cross Fell and Great Dun Fell

The motorcycle and quad-bike damage is at its most obvious in these areas. FJR notes how deep tyre ruts have damaged an area of montane mire. There are extensive flushed areas on all sides of these summits varying in pH, the more calcareous flushes on the eastern flanks of these fells supporting *Saxifraga hirculus* (Marsh Saxifrage), *Sedum villosum*, *Juncus triglumis* (Three-flowered Rush), *Epilobium alsinifolium* (Chickweed Willowherb), *Epilobium anagallidifolium* (Alpine Willowherb), *Alopecurus borealis* and many other associated species all dependent on the fragile drainage systems above them remaining intact.

Another remarkable flush with thousands of heads of *Alopecurus borealis* extends from a spring on the north side of Great Dun Fell, just below the summit almost to the lowest point between Great Dun Fell and Little Dun Fell. Even more remarkable was the discovery in 2005 in the same flush, of four extensive patches of *Carex aquatilis* (Water Sedge), covering an area of 860m^2, not previously recorded in England in a montane locality (FJR 2005): previous sites are by rivers or in lakeside swamps. Unfortunately this flush has seen a lot of motorcycle and quad-bike damage. In early 2006 a tractor and trailer was driven through the main *Carex aquatilis* patch causing some deep ruts. This use was sanctioned by English Nature in connection with the erection of a new fence and gate at Tees Head north of Little Dun Fell, which is to be part of the 'reheafing' of sheep to particular ranges. Unfortunately, the boggy nature of the ground at the saddles limits the options for routes across the ground for wheeled vehicles. For legitimate uses such as this, much care needs to be taken in attempting to find a drier route avoiding the more sensitive areas.

On the south facing slope of Little Dun Fell to the east of the Pennine Way bikers have run through a fine base-rich flush system with the rare Arctic-alpine moss *Meesia uliginosa*. Their tracks are not only destroying the plants but radically altering the dynamics of the drainage of these flushes.

Knock Ore Gill & Green Castle

This area has some of the best *Saxifraga hirculus* flushes on the western side of the Pennines. In 2003 and 2004 it was noted that a quad-bike had been attempting to ride up one of these steep flushes. In August 2005 over the bank holiday week-end even more serious damage was done to this flush by people sliding down on a discarded towel; only time will tell whether this will heal or wash out (see photo p. 8). Species present in these flushes include *Alopecurus borealis*, *Carex vaginata*, *Catabrosa aquatica* (Water Whorl-grass), *Juncus triglumis*, *Saxifraga hypnoides* and *Sedum villosum*. A small colony of *Myosotis alpestris* (Alpine forget-me-not) has a few visible motorcycle tracks passing nearby (see Cover photo).

Saxifraga hirculus flush damaged by persons sliding down on a towel. Photo © L. Robinson

Knock Fell, Dufton Fell and Meldon Fell

There is evidence of motorcycle tracks along the summit grasslands and limestone grasslands but not on the same scale as the Dun Fells, Cross Fell or Green Fell. Again there are important flushes along here with *Saxifraga hirculus*, *Alopecurus borealis*, *Carex vaginata, Trollius europaeus* (Globeflower) and *Euphrasia scottica* (an Eyebright), rare in the high flushes. There are also important limestone grasslands with *Carex capillaris* (Hair Sedge) and the very rare and protected *Gentiana verna* (Spring Gentian) (see Colour Section, Plate 1).

Near Knock Coal Shop there is an example of the kind of damage any interference to the natural drainage causes to these important habitats: a flush with *Alopecurus borealis* and *Saxifraga hirculus* has had a moor grip (drainage channel) dug across it. Immediately below this point the mineral rich water is drained off by the grip, and the flush below this point has reverted to acid mire identical to huge areas nearby. The result has been not simply to destroy part of a site with some very rare plants but also to drain away the mineral-rich water which provided the only nutrient inputs into what is otherwise impoverished acid heath (FJR 2004).

Bird life

Numbers and variety of birds are low along the main routes followed by bikers. However these include a number of important species. The Golden Plover is a nesting bird of the slopes and plateaux. It is a species of conservation concern and has a declining population. Increasing disturbance has been implicated in its decline, of which the noise and intrusion of bikers may be an important part. There is also the obvious risk of direct damage to nests, young, and nesting habitat. The Dotterel is now almost extinct as a nesting bird along the range and as with the Golden Plover the same threats from bikers apply. Other species of conservation concern which nest in areas actually or potentially disturbed or damaged by motorcycles are Dunlin, Short-eared Owl, Ring Ouzel, Merlin and Snipe. Breeding along Trout Beck are Common Sandpipers, Dippers, Ring Ouzel, Oystercatcher, Pied and Grey Wagtails and Teal. This is another area much affected by motorcycle intrusion.

Conclusions

This area is almost all under National Nature Reserve, Site of Special Scientific Interest or Special Area of Conservation designations, and also in an Area of Outstanding Natural Beauty. Ultimately the County Councils are legally bound to protect these areas. The failure to prevent the illegal Melmerby and Ousby Fell road from forming a circular route with the Pennine Way has left the area very vulnerable to this sort of vehicle damage.

Perhaps locking of some gates and erection of notices at access points stating the illegality of using them would help, although a notice put up by the Police at the entrance to the private track to Ousby Shedder was torn down.

The Parish Councils along with the Commoners along the fell bottom are keen to stop these motor cyclists after numerous complaints of damage. They are actively encouraging members of the public to report bikers to the Police and ask for their calls to be 'logged'. Some members of the public are already photographing and videoing these bikes and attempting to note number plates.

Acknowledgements

We would like to thank Mr. J. Adamson, Centre of Ecology & Hydrology, Lancaster University for the use of his photo of damage down Trout Beck on Moor House National Nature Reserve.

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A wet May and *Poa trivialis*

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

Five Floras in my possession give the maximum height of *Poa trivialis* (Rough Meadow-grass) as respectively 60, 60, 90, 90, or 100cm. This year, with May being very wet, several around a manured climbing rose in our garden reached well over 100cm. The tallest reached 169cm.

... Yes, I do not do much weeding!

Pores for thought: Can you separate *Convolvulus* and *Calystegia* vegetatively?

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Non-flowering bindweeds can easily be confused in the field, particularly when recording atypical or poor specimens. Thankfully, the presence and arrangement of **stomata** can help clinch identification. Stomata (singular **stoma**) are pores on the leaf surface used for respiration during photosynthesis. The actual opening may be closed to prevent dehydration but this makes no difference to our field observations. Contrary to popular belief, stomata are indeed a field character – not just a microscopic one – and can normally easily be seen as little white dots under a hand lens (best ×20). It is primarily the larger sized pair of guard cells that surround the pore that we actually see.

The majority of our vascular flora is **amphistomous** (stomata present on both sides of the leaf, although often in unequal proportions) or **hypostomous** (stomata on the lower (abaxial) side of the leaves only). **Epistomous** species (those with stomata on the upper (adaxial) side of the leaves only) are generally rare although some grasses, and aquatic plants with floating leaves, qualify in this category (totally submerged aquatic plants do not develop stomata since they would effectively drown). As a general rule, stomata are arranged in parallel lines in monocots (many exceptions!) and are randomly scattered in dicots.

The presence of stomata below is generally little use for identification (except for their absence in grasses) and the structure of the cuticle can make them appear obscure or absent. It is thus the presence, or absence, of stomata above that is the useful character. A classic example is *Carex* since there are only 6 species in the British flora with stomata on the upper leaf surface (try and find them all – *C. curta*, *C. nigra*, *C. aquatilis*, *C. rostrata*, *C. recta* and *C. salina*).

There are many examples where stomata provide the best vegetative character. For example, the leaves of *Thymus polytrichus* (Wild Thyme) have stomata on the upper surface, most unlike the remarkably similar leaves of *Thymus pulegioides* (Large Thyme) in which they are absent.

Calystegia and *Convolvulus* provide a perfect example of how examination of stomata can be utilised in identification. *Convolvulus arvensis* (Field Bindweed) has stomata scattered all over the upper surface of each leaf, whilst *Calystegia sepium* (Hedge Bindweed) and *C. silvatica* (Large Bindweed) have the stomata confined above to just the margins of the larger veins. *C. pulchra* (Hairy Bindweed) has stomata absent above (petiole or stem hairs alone are not

diagnostic since they are also present in *C. sepium* subsp. *roseata*).

The leaves of each species are illustrated below. The shape of the typical leaf sinus has also been drawn so each species can be reliably identified. The size of the stomata has been exaggerated for easy viewing!

The information can be summarised in the following vegetative key:

- Stomata scattered all over lf surface above
  Petiole glabrous
  Lf sinus triangular
  Convolvulus arvensis
- Stomata confined to the margins of the larger veins above (occ ± absent)
  Petiole with at least some hairs
  Lf sinus triangular
  Calystegia sepium subsp. *roseata*
  Petiole glabrous
  Lf sinus triangular *Calystegia sepium*
  Lf sinus square *Calystegia silvatica*
- Stomata absent above
  Petiole with at least some hairs
  Lf sinus square *Calystegia pulchra*

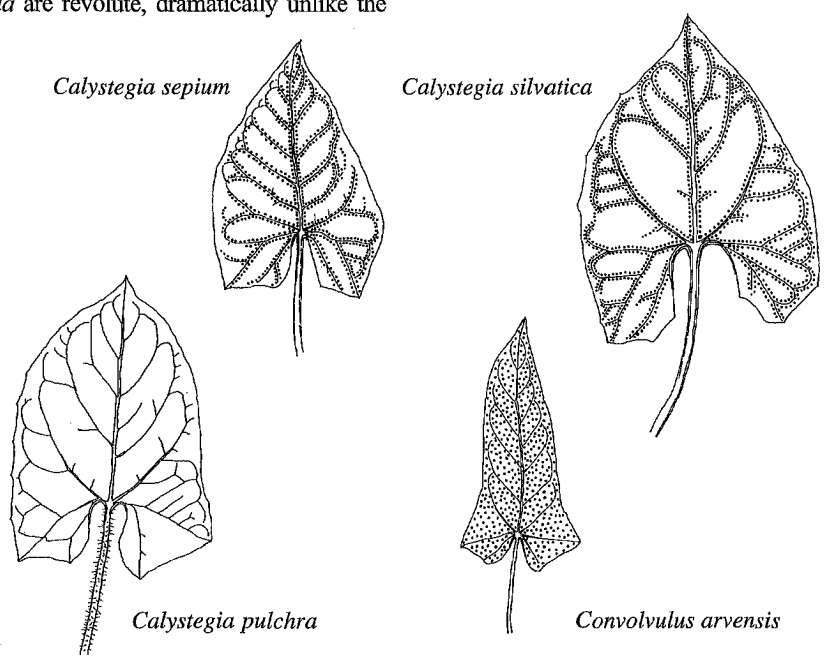
Incidentally, *Fallopia convolvulus* (Black-bindweed) (Polygonaceae) should also get a brief mention, as this can be confused with *Convolvulus arvensis* (and also has stomata scattered above!). The vernation (see *BSBI News*: **102** pp. 17-20) provides an excellent clue since the young leaves of *Fallopia* are revolute, dramatically unlike the rolled (convolute) leaves of Convolvulaceae. The absence of white latex (present in Covolvulaceae) and the presence of fused stipules (an ochrea) confirm the i.d.

Observers should be aware of the fact that, in many species, the presence of stomata above can be extremely variable. Many leaves of *Sonchus oleraceus* (Smooth Sow-thistle) may have stomata present or absent above yet they are usually absent in *S. asper* (Prickly Sow-thistle) and *S. arvensis* (Perennial Sow-thistle). A little background reading hints that exposure to increased light levels is perhaps the primary cause for such variance, yet I am still to be convinced.

Stomata should not be confused with the many types of true excretory glands, which can also be valuable identification characters. Hydathodes, which exude water and minerals, and the salt glands in *Limonium* (Sea-lavenders) and *Tamarix* (Tamarisk) are soon identifiable with a little experience.

As ever, I would welcome any correspondence from field botanists and plant anatomists' on the variability, and usefulness, of stomatal presence (and any explanation).

Many thanks to Sue Nicholls of the Institute of Analytical Plant Illustration for providing such indispensable illustrations, and to Eric Clement for his valued comments. More information on *Calystegia*, particularly on hybrids can be found in *Watsonia* **23**: 161-185 (Brummitt & Chater, 2000).



Leaves of the four taxa keyed out above showing stomata and hairs, del. S. Nicholls © 2006

The end of an unusual *Symphytum* in S.E. Yorkshire, v.c. 61

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The recent article by Clare O'Reilly on *Symphytum officinale* subsp. *bohemicum* reminded me of my *own* experience with a strange *Symphytum*. In 1968–1970, I, like many others, joined in Dr Franklyn Perring's survey of *Symphytum officinale* and *S.* ×*uplandicum*. At that time it was thought that the first mentioned did not occur north of a line from the River Severn to the Wash, but I claimed the plant for land at Woodhall Farm near Wressle (SE69.31). There is a more detailed account in Chicken (1997). Briefly the main points and dates are as follows.

In 1974 a plant was sent to Dr Perring to grow on. In 1975 I was fortunate to get a chromosome count determined by G.E. Marks at the John Innes Institute, the result was 2n=48 which supported my view. However it was not then accepted. In 1990 it appeared in Dr Eva Crackles *Flora of the East Riding of Yorkshire* as *S. officinale* determined by Perring. Apparently it had been decided to call the plant this for recording purposes, but Dr Perring still felt that hybridity was involved. At his request I sent further plants for his garden (1999) and I obtained a further chromosome count, this time from Dr J.P. Bailey at Leicester University, and again 2n=48. The last I heard was that the plants were alive having been cared for by Mrs Perring during the drought while he had been away for eight weeks.

In an old paper (Bucknall 1913) there is a short reference to *S.* var. *lanceolatum* Weinm. and a suggestion that S. *officinale*, the variety, and *S. uliginosum* give a series of forms. Since the last is in Holland and the Woodhall plants are thought to have originated with manure from Holland via Hull, maybe there is a clue here. Knowing I intended to write this, I thought I had better check the site. Sadly the whole 0.4km of plants was replaced by a hawthorn hedge. What a pity to lose plants that had survived for possibly a century. I found one poor plant with one corolla, length 11.0mm, that, I guess is the end of the Woodhall story.

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Rumex maritimus returns to Patching Pond

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Rumex maritimus (Golden Dock) used to occur on the muddy edges at the far north-eastern corner of Patching Pond, West Sussex (v.c. 13). We last saw it there on 30 July 1985, with 2 plants in late flower at TQ089.058.

In April 2000 we reported *Zizania latifolia* (Manchurian Wild Rice) as growing abundantly all around the margins of the pond (Hollings & Hollings, 2000); it had first been noted there by H.K. Airey-Shaw in 1947, but since then it seems not to have been observed. A vast grass that never flowers in U.K. and has razor-edged leaves attracts little interest.

The fishing at Patching Pond is leased by the Worthing Piscatorial Society, and the Secretary told us that he remembers the 'giant rush' from the early 1960s, when he became Secretary. It was not then much of a problem, but in the following years it became a very serious one, growing to 2.5m tall, advancing by aggressive rhizomes, both into the banks and underwater, and preventing access for the anglers. From time to time, mechanical diggers had tried to dig out the rhizomes, but the plant had always returned. In recent years, more strenuous efforts had been used, with large diggers deep-excavating the rhizomes, and dumping the dredgings onto the flat ground just to the west of the pond. Here, the soft muddy deposit settled to an almost level surface, and *Zizania* resumed growth happily, now covering an area of several hectares with dense foliage – perhaps the biggest crop outside China. But *Rumex maritimus* had now apparently vanished from its former site.

It occurred to us that the diggers must have scooped up, with all that mud and plant material, a lot of the local soil seed-bank, and as seeds of *Rumex* species are known to survive many years in soil, perhaps some could have germi-

nated after all this disturbance. We visited the pond on 29 July 2005, but saw no sign of *Rumex maritimus*, either at its old site or on the edges of the big *Zizania* dump. Notices warned people to keep off the deep, soft mud. Our next visit was on 26 September, and almost at once we found a nice plant of *R. maritimus* in flower and fruit, on the west bank of the pond, just a couple of metres outside the *Zizania* area (see inside back cover). This whole area had now dried out, and was firm enough to enter. *Zizania* plants, now 30-80cm tall, dominated the area, with many other species in support: assorted *Chenopodiums*, *Atriplexes*, with *Rumex obtusifolius*, *R. conglomeratus* and many other weeds. At first, the *R. maritimus* plants were not obvious, but once we 'got our eyes in', we saw hundreds. Golden Docks extended over 275m N to S, by 10 to 25m E to W, and sample counts indicated some 390 to 780 Golden Docks overall (see photo 1 below). They ranged from inconspicuous young plants only *c.*20cm tall, with golden-green flower spikes (see inside back cover), to more obvious big 'candelabra-shaped' individuals with chestnut-brown ripe fruiting stems, and up to 60cm tall (see Colour photos, inside back cover). The wide range of plant sizes indicated that germination had not been synchronous, and had occurred much later in the season than would normally be expected. By late October, the plants were in late fruit; many had shed nearly all their 'fruits' leaving bare stems that were quite inconspicuous. But we never found the Golden Dock again at its original site, at the NE corner of the pond, and we saw no plants of *Rumex palustris*, which also used to occur there in the 1970s. It will be interesting to see whether the Golden Dock appears again on the *Zizania* dredgings, or whether the 2005 mass germination was just a 'one off' event.

P.S. We revisited this site on 11 July 2006. The *Zizania* and other plants had formed a rank and near-impenetrable mass of vegetation, but around one margin we noted at least 12 plants of *Rumex maritimus* in flower.

Reference

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Photo 1. Several *Rumex maritimus* plants in late fruit on part of the area where dredgings of *Zizania latifolia* were dumped and have become established. Patching Pond (v.c. 13), photo © M. Hollings 2005

Isolepis cernua: do different?

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Isolepis cernua (Slender Club-rush) has an intriguing distribution in Britain, being confined to the coastal regions of Ireland, the west coast of Britain from the Outer Hebrides south to Cornwall, and then along the south coast to Hampshire and the Isle of Wight. It is also locally common inland in the New Forest, but what is an otherwise perfect 'Oceanic' or 'Atlantic' distribution is spoilt by its occurrence in both West and East Norfolk (*New Atlas*). In Norfolk it was unknown prior to 1914, but has since been recorded from eight sites: in West Norfolk from Scarning and Potter's Fens and in East Norfolk from Holt, Booton Common, Buxton Heath, Beeston Bog, Bryants Heath (Felmingham) and Hevingham (Petch & Swann 1968); it was noted as still being present at Beeston and Buxton Heath by Beckett, Bull & Stevenson (1999). The record for Holt is not localised, but a manuscript book held by the biology department of Gresham's School, Holt, has a record of the species for 1926 by C.P. Petch (then a pupil at Gresham's) for Holt Lowes, an area of heath, secondary scrub and fen that was set aside by the 1807 Enclosure Act as a 'Poors Allotment' and is now an SSSI.

Despite fairly intensive recording at Holt Lowes, *Isolepis cernua* was not, to my knowledge, found there again until I came across it in June 2002. In the preceding period substantial management work had been undertaken by the Norfolk Wildlife Trust and this included the felling and removal of secondary woodland that had invaded former areas of open mire vegetation. It was in one such area (at TG089.373) that I found several plants that I suspected to be *I. cernua* (having seen the species previously at Beeston Bog). Keen to be sure of the identification, I examined them critically, and was convinced with the exception of one feature. Rather than having two stamens, the plants had three (see Colour Section, Plate 1. Fig. 1). In the description of the genus *Isolepis*, Stace (1991) gives the number of stamens as '1-2' and this is repeated in Stace (2004). Indeed, the other references that I had to hand give the number of stamens in *Isolepis* as 1-2 (CTM) or two (Rose 1989). Notwithstanding this discrepancy, I identified the plants as *I. cernua* based on the appearance of the mature nut, which was warm brown, minutely dotted with minute papillae (a little darker brown, with prominent ribs in *I. setacea*) (see Colour Section, Plate 1. Fig 2).

My interest in Slender Club-rush aroused, I have been looking more closely at the species and have found that plants from Beeston Common also have three stamens per floret (see Colour Section, Plate 1. Fig. 3). I would have claimed that this was another case of Norfolk's 'do different' approach but plants seen in the New Forest (Boundway Hill) in 2004 also showed three stamens!

I have also noticed that another, albeit less critical, identification feature appears to be unreliable. Stace (2004) states that the main bract is 'at most only slightly longer than inflorescence' and this is also a key character in Rose (1989), the only other easily available reference to the genus. This character is far from infallible, however, as at least occasionally some spikes on Norfolk plants have a 'stem' (i.e. main bract) that can extend well beyond the spikelet. (See Colour Section, Plate 1. Fig. 4)

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An old and mysterious record of *Senecio paludosus* from v.c. 20

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Researchers compiling data on *Senecio paludosus* (Fen Ragwort) for conservation programmes came across a specimen of this rare plant buried in the herbarium of the Royal Botanic Garden, Edinburgh, claiming to come from Hertfordshire. However, it was not until Dr Stuart Warrington of the National Trust drew my attention to this reference that news of its

existence surfaced. The specimen was reputed to have been collected in 1932 in a gravel pit at Ware, Hertfordshire by persons unknown.

The unlikely nature of the record necessitated some further study. Contact was made with Douglas McKean at Edinburgh, who had confirmed its identity earlier, and he kindly supplied me with further details. The specimen had been identified as *S. paludosus* some time in the last 30 years by the late A.J.C. Grierson. Further examination of the specimen confirmed that it had emanated from the herbarium of Enid McAllister Hall, much of whose herbarium is known to have been acquired by Edinburgh. She and her brother, Hugh Phillips, were local botanists of some distinction at one time in Hitchin, and a further major part of their joint herbaria was bequeathed to Hitchin Museum in the 1950s. The label on the specimen has the same handwriting as many of the plants in the Phillips Herbarium, now in North Hertfordshire Museums Service, so, although its collector is not named, it is fairly certainly a specimen collected by one of the family locally. The specimen label says merely that it was collected at a gravel pit at Ware, Herts. [TL31], on 11th August 1932. However, at the time it was misidentified by the person that collected and/or mounted it as *Solidago canadensis*! Presumably this was because it has rather narrow, serrated leaves that are not dissimilar to those of the Golden-rod, and because of the lack of any decent reference material for the latter at the time.

There is no doubt about the identity of the plant. It would seem to have been a rather small specimen, not having the large, deeply serrate leaves characteristic of more vigorous plants. However, its occurrence at Ware would seem to be a most unlikely one, especially at that time. Although Ware now has abundant wet gravel pits with some good 'fen' vegetation round about, in 1932 the only gravel pit near the town was on plateau gravels, west of the town, not in the valleys of any of the local rivers. There is no real evidence of any permanent wetlands in these pits (although temporary ones may have existed). In addition, the Ware area was, and had been for a century before, well botanised by very capable people. The Revd W.H. Coleman had examined the wetlands of the Lea Valley near Ware in great detail in the earlier 19th century along with his colleague Revd R.H. Webb, both of whom were local. In the early part of the 20th century, right through the period when this plant was found, both A.V. Graveson and his son, A.W. Graveson, collected extensively around Ware, and the latter had in particular spent much time at the gravel pits there collecting aliens. None had reported any sign of such a plant. There is however an enigmatic reference to the even less likely *Senecio palustris* in the diary of one local botanist, H.F. Hayllar, some of whose herbarium still survives, in the Lea Valley not far away at Hoddesdon in 1909, although there does not appear to be any specimen to substantiate such a claim.

So, what are we to make of this record? Enid McAllister Hall and her son were meticulous plants people, if not expert botanists. Their specimens are well labelled. If it was a mistake, it was evidently unknowing, because they never realised what it was. It might conceivably have come from another locality and been mixed in the mounting. On the other hand, it just might have arrived and remained at a temporary wetland in the gravel pit for a year or two, without others knowing about it. After all, no other good local botanist would have made a special visit to see a plant of Canadian Golden-rod!

We will probably never know. However, it does require us to put a footnote in the forthcoming '*Flora of Hertfordshire*' that such a specimen exists, and that, just maybe, it was a genuinely wild, if transient escape of a national rarity in v.c. 20!

Viola reichenbachiana in *Plant Crib 1998*

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Over recent years I have examined several populations of *Viola. reichenbachiana* in Dorset, and one in South Yorkshire, in which some of the plants have spurs of the same colour as the rest of the petals. I thought that they might have been hybrids with *V. riviniana* (*V.* ×*bavarica*). This seemed even more likely when I counted the seeds, and found that they averaged 15 to 16 in a capsule, whereas *Plant Crib 1998* gives 11 for *V. reichenbachiana* and 19 for *V. riviniana.*

However pollen staining this year, following Brenda Harold's most helpful instructions (*BSBI News* **101**: 16-17), showed that all populations were fertile and thus, taking other features into account, are *V. reichenbachiana.*

Reference:

RICH, T.C.G. & JERMY, A.C. 1998. *Plant Crib 1998.* BSBI, London.

Carex acutiformis

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The article on pages 344-5 of *Plant Crib 1998* is most helpful, but there is just one point which does not seem to work, at least in this area. I find that in *Carex acutiformis* the aerenchyma pattern is usually clearly visible just above the ligule, and from both inside and outside the sheath. (However in one population perversely it is not clearly visible either above or below the ligule!)

Reference:

RICH, T.C.G. & JERMY, A.C. 1998. *Plant Crib 1998*. BSBI, London

Grid square nomenclature

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BSBI members pioneered the use of ten kilometre by ten kilometre grid squares for recording distributions with the Old Atlas (Perring & Walters 1962) where the bulk of the field records were made between 1954 and 1958. From 1956 botanists conducting local surveys began using two kilometre by two kilometre squares. Some history of that is in the *New Atlas* (Preston *et al.* 2002, p. 8). In the new Change atlas (Braithwaite *et al.* 2006) these squares are called tetrads and either 10-km squares or hectads. This note is about the origin and validity of the –ad names. Tetrad has become a generally accepted term but hectad is still controversial.

Tetrad is the easier of the two. It seems to have first been used by E.S. Edees in Staffordshire in about 1956 (Preston *et al.* 2002) though his Flora was published much later (Edees 1972). The first Flora with the word is by J.G. Dony (1967) and he also invented the system of labelling the 25 tetrads in a 10-km square with capital letters, sometimes called DINTY, around 1960 (pers. comm. to TJJ). Tetrad is a standard English word meaning a group of four or the number four (Oxford English Dictionary Online http//:dictionary. oed.com) and that dictionary gives the meaning here as f. *Ecol.*, first published in Hawkes & Readett (1963). However, tetrad also appears in the dictionary entry '–ad, *suffix*[1]' 'forming ... Collective numerals, as ... *monad, ... dyad, triad, tetrad, pentad, hebdomad, chiliad, myriad,* etc.'

The commonest objection to hectad is that it is an unfamiliar neologism while the commonest objection to not using it is that 10-km square is inaccurate, the proper name should be something like the phrase in our first line, e.g. Williamson (2002) 'hectads (10-km × 10-km grid squares)'. The Old Atlas (Perring & Walters 1962) called them 10-kilometer grid squares or 10-kilometre squares while the *New Atlas* (Preston *et al.* 2002), after saying (p. 3) 'the 10 × 10 km squares of the (British) Ordnance Survey National Grid', refers to them in the text as 10-km squares but on the maps as 10 km^2. Neither uses hectad. Hectad was invented by the late Guy Messenger (Messenger 1987) 'The HECTAD is a 10 km square in any system in which the TETRAD is a 2km square.' He justifies it by first pointing out that in TETRAD 'both its syllables are soundly based on good Greek' and that is indeed so for both the dictionary entries mentioned above. He then argues 'when you multiply a unit by 100 you give the unit name the prefix Hecto–' and so you do, or Hect– in front of a vowel, but Hecto– doesn't lead to Hectad. That argument only leads to hectad if you regard it as Hect– in front of –ad. Hectad is not in the Oxford English Dictionary (yet) but it could be argued that it is covered by the etc. in the examples of –ad given above. No doubt both 10-km sq and hectad will continue in common use whatever one may feel about them and some of us do have strong feelings.

The list above of –ad words from a dictionary gives two other square measures that could be, and sometimes are, used: monad for 1km × 1km and myriad for 100km × 100km (one meaning of myriad is 10,000). Both seem a bit dubious in view of the other meanings of those words. Messenger (1987) suggested haplad for 1km × 1km but that would be cognate with tetraplad not tetrad; hapl- is single, mon- is one. The other terms in the list above, for collections of two, three, five, seven and a thousand, are all for non-square numbers and so cannot be used in grid square mapping. It would seem that 5km × 5km and 50km × 50km units would only have very obscure Greek –ad terms.

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Reporting on Local Change

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The report on Local Change

The recently published account of the Local Change project (Braithwaite *et al.* 2006) is now out. It is an attractive book packed with interesting information. It is based on two sets of data – the BSBI Monitoring Scheme in 1987-8 and the BSBI Local Change survey in 2003-4. The Monitoring Scheme had established a baseline for the occurrence of taxa in a large sample of tetrads countrywide. In the Local Change project, much the same tetrads were surveyed again. Clear and colourful distribution maps are provided for many taxa, showing three categories of data – gains (tetrads noted in Local Change but not in Monitoring Scheme); losses (tetrads noted in Monitoring Scheme but not in Local Change); and refinds (tetrads noted in both surveys). The three categories combined show all the tetrads for a taxon from both surveys combined.

This article should not be taken as a complete review of the Local Change report. The report pursues a number of other issues not mentioned here. Though my main emphasis here lies in problems with it, I would recommend the report as a fascinating account of an important project which tells us a great deal about our flora and discusses key issues and problems in the process of recording it.

Problems with the report

The original plan for the Local Change project seemed simple and obvious – the data would be compared with those from the Monitoring Scheme data to obtain measures of change for individual species and for habitats. Things turned out not to be so manageable.

The recording in Local Change produced a significantly greater range of records for most taxa than did the Monitoring Scheme. This suggests that recording in Local Change was more comprehensive than that in the Monitoring Scheme, so that the two sets of figures were not comparable and could not validly be used to measure change. However, the authors must have felt, at this stage, that they were committed to producing actual numerical indices of change. Instead of concluding that the results didn't allow them to do this satisfactorily and concentrating just on what the raw data could tell them about change, they set out to derive indices of change which they thought would have been obtained if the recording levels had been the same in both projects. They did this by applying mathematical formulae which at first give an impression of scientific accuracy and objectivity. However, the results of mathematical procedures depend on what is put in, and this depends on the assumptions of those who make the input. As I understand it, the formulae in this case were based on at least three assumptions, which are:

- To quote – 'there are no real gains for species with net losses and no real losses for species with net gains'. If 'net' means the raw number of tetrads for a taxon and 'real' means what they would be if the two sets of records had been comparable, the assumption is difficult to accept. If there was over-recording in Local Change relative to the Monitoring Scheme, then some, possible many, species with small net gains could well have suffered real losses. When confronted with what may or may not be a different wording of this assumption elsewhere in the book – 'the taxa which suffer real losses have no real gains' and 'the taxa which have real gains suffer no real losses' – I could not even make out what it means.

- The pattern of change for taxa whose distribution appeared not to have changed much between the two surveys can be used as a guide to the 'real' change in distribution of the other taxa. The authors make it clear, in Appendix 2 and in their conclusions and recommendations, that this assumption may not be true and cannot be verified. Unless I have misunderstood something, therefore, the numerical indices of change presented throughout the book are representing data which do not exist and which we have no objective reason for supposing would be obtained in any survey.
- The indices of change were expressed as proportions or percentages. A change in, say, 4 tetrads, could translate into a percentage change of some size for a rare taxon but make no significant difference in the case of a widespread taxon. The authors therefore used another formula to change the raw data for rare taxa to give comparable measures for these two categories. This appears to be an extension of the process of deriving change indices which represent non-existent data.

Using the report's data

One result of the approaches described above could be a devaluation of the importance of the raw data actually obtained. Fortunately, however, the authors of the report do make use of them. They record the tetrad gains and losses for individual taxa, and refer to them in their taxon summaries. It is also possible to discover how many tetrads were recorded for a particular taxon in Local Change – you just add the 'gains' to the 'refinds'. Likewise, for the Monitoring Scheme, you add the 'losses' to the 'refinds'.

There are a number of ways of approaching the raw data which allow us to be pleased that the level of recording in Local Change was so much higher than previously, rather than disappointed, as the authors apparently were. While on the surface these approaches appear to be less precise than the numerical indices in the report, they may be closer to reality. All are covered in the report despite the authors' reservations about validity. They are:

- There is a great deal of information on what has been found and where during a survey of commendable thoroughness.
- The raw losses and gains can be considered as they stand, bearing in mind that, because of improved recording: the losses are more likely to be real than the gains; the greater the size of a gain, the greater are its chances of being a real one; care should be taken in interpreting the results for rarer taxa.
- The two sets of data combined give a useful picture of the total recorded range of occurrence for each taxon from 1997-2003.
- While there are deficiencies in the data, these can be viewed positively as raising questions which need further investigation.
- The data provide a helpful supplement to those for hectads in the *New Atlas* (Preston *et al.* 2002).
- The raw data provide information on some rare and scarce taxa.

Suggestions for further analysis

Though it seems unlikely that valid mathematical indices of absolute change can be calculated from surveys of this kind, it is possible to calculate them for change in individual or groups of taxa relative to other taxa or to the whole body of taxa. Indeed, it could be argued that this was what the authors of the report were really doing. Below is a method which I suggest produces valid mathematical indices of such change directly from the raw data without any adjustments and with simple mathematics which does not cut off most readers from understanding what is happening. I offer it step by step for comment.

1. Take the raw number of tetrads recorded for each individual taxon in the Monitoring Scheme. Call this the **Monitoring Scheme Taxon Tetrad Score.**
2. Add together the individual Monitoring Scheme Taxon Tetrad Scores. Call the summed scores the **Monitoring Scheme Taxon Tetrad Scores Total.**
3. For each individual taxon, express the Monitoring Scheme Taxon Tetrad Score as a percentage of the Monitoring Scheme Tetrad Scores Total. Call this the **Monitoring Scheme Taxon Tetrad Score Percentage.**
4. Repeat steps 1-3 with the Local Change raw scores to obtain a **Local Change Taxon Tetrad Score** for each individual taxon, a **Local Change Taxon Tetrad Scores Total**, and, for each individual taxon, a **Local Change Taxon Tetrad Score Percentage.**
5. For each individual taxon, subtract the Monitoring Scheme Taxon Tetrad Score Percentage from the Local Change Taxon Tetrad Score Percentage. Call the result the **Relative Taxon Percentage Change.** It will be positive for an increase and negative for a decrease.

The resulting indices would, as far as I can see, be independent of differences in recording level. They could be subjected to further processing as indicated below:

- By making the same calculations for selected groups, rather than individual taxa, the Relative Percentage Change could be calculated for the assemblage of species found in a particular habitat, or for any other grouping.
- The Relative Percentage Changes could be converted to any other scale desired.
- The results could be subjected to statistical procedures to see how far changes were likely to be due to chance factors rather than be real.

Indices of this kind would be valuable in helping decide, in combination with other data, which taxa or groups of taxa to worry about most.

I looked at the possibility of carrying out the suggested analyses myself, but the data entry required would be an impossibly long task for me. The authors of the report, however, could presumably do it very quickly from whatever spreadsheet or database they used, since all necessary information should be entered already.

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The Maps Scheme

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One of the benefits of maintaining an up-to-date database of biological records is that one can rapidly detect changes in the abundance of a taxon. This is certainly true for the BSBI Maps Scheme (known the Atlas Updating Project).

The Maps Scheme database holds data in four different date classes, before 1970; 1970-1986; 1987-1999 and 2000 onwards. The data from 2000 onwards is far from complete; it has only about 30% of the data compared with 1987-1999. Despite this incompleteness, it is sufficient to detect taxa that are increasing. I used a basic change index to compare the relative change in the number of hectads that each taxon was recorded in. The method I used highlights taxa whose distribution is small, but is increasing fast. For the results presented here, I compare distribution in the date classes 1987-1999 and 2000 onwards.

The analysis is complicated by changes in recording practices and changes in the taxonomy. Critical taxa, hybrids and subspecies were all stripped out of the results, because of the inconsistency of recording. Likewise, wholly planted taxa were removed and others were removed because the numbers of hectads they have been recorded in is so small (≤10). Some rare natives were removed because there have been particular efforts to re-record these. The remaining top 40 taxa can be seen in table 1.

Note that there is some bias in the results towards taxa from the south of England, because there is a bias in the submission of post-1999 data towards this region. I expect the rest of us will catch up.

I'll largely let the results speak for themselves. However, I should point out another useful function of the Maps Scheme. It helps validate records and highlight errors. For example, it was surprising that *Symphytum asperum* came so high on the list of spreading species. *S.* ×*uplandicum* is often mistaken for *S. asperum*, so this apparent increase is now under investigation by the *Symphytum* referee (Clare O'Reilly). The Maps Scheme database has help correct numerous other errors in submitted data.

In the future, the Map Scheme database will require proper study; meanwhile, it is possible, with a simple analysis, to alert us to changes in Britain's flora. Anyone wanting more details of these apparently spreading taxa should first look on the Maps Scheme website (www.bsbiatlas.org.uk). You are also welcome to contact me for details. Please continue to contribute records and many thanks to those who have already contributed.

Table 1. The top 40 species in the Maps Scheme database with the highest proportional increase in the number of hectads they have been found in. The columns state the number of hectads each species has been recorded in for each date class. Consider that the geographic coverage for the date class '2000 onwards' is only about 30% of that for the previous date classes.

Taxon	**1970-1986**	**1987-1999**	**2000 on**
Conyza bilbaoana	0	7	43
Verbena bonariensis	4	10	39
Bidens ferulifolia	0	4	15
Persicaria capitata	0	15	41
Cardamine corymbosa	0	24	60
Chenopodium quinoa	0	14	24
Senecio inaequidens	3	27	43
Symphytum asperum	4	13	19
Scilla lilio-hyacinthus	1	10	13
Eryngium planum	6	9	11
Polypogon viridis	17	68	80
Yucca recurvifolia	3	14	16
Conyza bonariensis	5	11	12
Berberis julianae	2	13	14
Polygonum maritimum	3	11	11
Echium pininana	8	25	25
Cortaderia richardii	0	25	23
Poa infirma	4	68	61
Cordyline australis	7	39	34
Hydrocotyle ranunculoides	0	51	44
Physalis peruviana	10	27	23
Euphoria oblongata	0	18	15
Symphytum bulbosum	1	12	10
Smyrnium perfoliatum	5	17	13
Conyza sumatrensis	5	191	145
Cyperus eragrostis	11	66	49
Chionodoxa luciliae	5	15	11
Sagittaria latifolia	4	17	12
Ambrosia artemisiifolia	25	90	62
Crassula tillaea	3	96	66
Allium subhirsutum	2	31	21
Iris orientalis	2	35	23
Lonicera pileata	1	61	40
Echinochloa crus-galli	51	235	152
Pontederia cordata	2	35	22
Sonchus palustris	8	34	21
Geranium purpureum	12	57	35
Sisyrinchium striatum	6	56	34
Cortaderia selloana	13	193	109
Phacelia tanacetifolia	20	175	97

A Time For Reflection

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Two articles in *BSBI News* **101**: ('When is the Best Time to Find Plants?' and 'Grassland Plant Phenologies') generated a series of loosely-connected ideas, based on several years' experience as a botanical surveyor, both in and out of the optimum period. Much of this account is derived from, and directed towards, detailed ('Phase II'-type) investigations. Some of it states the obvious – my apologies to experienced field-workers for this – but is recorded to establish a sort of continuum of thought.

1. Surveying later than the optimum months has some advantages over early-season efforts. The flowering-parts of many species persist recognizably well into late autumn or even winter and beyond. For example, neutral grassland in Weardale, briefly reconnoitred on 20th April 2006, showed copious quantities of last year's crested dog's tail (*Cynosurus cristatus*), in the form of dead-heads. Recording the species' presence in the sward was certainly feasible, though whether abundances can be safely judged is another matter; and if other species, probably equally prominent in the sward in due course, were not comparably visible, a skewed record would result.

Forbs likewise retain some above-ground features for weeks or longer, but there is inevitably a blank period between the wholesale decay of old material and the emergence of identifiable young growth. Surveys done during this 'inter-regnum' are bound to be deficient, perhaps seriously. Thus the date attached to survey-data, whether a full report or a species-list, is almost as important, maybe *as* important, as the data themselves, particularly where comparisons with other records, or conclusions about site-value, are concerned.

Though it is, indeed, stating the obvious that survey-results vary according to season, a codicil concerning deciduous woodland is appropriate. Various features in this type of habitat are at least as evident in winter as in summer, when '(not) seeing the trees for the leaves' is often a problem. General outline, size (shrub v. canopy-forming mature tree), bark-character, and the arrangement of buds (alternate v. opposite) are all more easily distinguished when woodland is without its foliage. Berries or fruits often persist into winter, and leaves are still copiously present at ground-level, as a confirmation of the species present. This extra visibility in winter facilitates not just the identification of individual trees, but an accurate assessment of abundance. A 'topping-up' visit to record ground flora can be done a few months later.

2. Timing of surveys affects the precise list of species recorded: this has already been alluded to above, and is comprehensively dealt with in Quentin Groom's article. Spring field-work in grassland finds meadow foxtail (*Alopecurus pratensis*), for example, often in considerable quantity, but not (unless one is skilled at, and spends time over, discrimination of very young vegetative growth) the later-appearing common bent (*Agrostis capillaris*) or timothy (*Phleum pratense* subsp. *pratense*).

The latter is very seldom mentioned as a prominent component in neutral grasslands ('MG'-types) in the National Vegetation Community, but my experience is that timothy is often a common and well distributed member of swards later in the season. Admittedly it is a fairly catholic grass, not particularly indicative of semi-naturalness or specific environmental conditions such as damp soil, and so its occurrence is not, perhaps, hugely significant in NVC determinations.

However, its relatively poor showing in almost all NVC categories ('MG6c' and 'MG7b' are the exceptions) has struck me more than once during grassland surveys. Possibly if sampling for neutral grasslands in the NVC project was done early in the season (perhaps to allow surveyors to move to, and concentrate on, other habitats, especially upland areas), *Phleum* became accidentally under-represented.

3. The concept of extrapolating from field-work done at less-than-optimum seasons is an important one, as Quentin Groom comments, and the following experience may (?) be relevant. A programme of River-Corridor Surveys entailed two visits, (relatively) early and late, to assess the floristics (and other conditions such as flow) more fully during the entire summer. Species-lists for individual sections (500 metres) of the drainage-courses amounted to between 25 and 75 on the first session of field-work. Figures are reported from memory, but are not likely to be seriously in error.
I assumed that the later trips would enable the 'poor' sections to catch up, and that the eventual totals would be more narrowly distributed about the mean. Not so: the original 'sixty-plus

species' sites accrued additions quickly and smoothly on the second examination, like a confident batsmen nearing his century. Many of these rich stretches did in fact exceed 100 species in the end, without my exercising a particular search- effort.

In contrast, the lengths with fewer than 50 species on the first visit tended to stay that way. This might have been predictable if they had consisted of, say, 500 metres of dense and monocultural growth such as reed, *Phragmites communis*, but in only one case, so far as I recall, did this condition occur, and then over only part of the length. And it should be borne in mind that the surveys covered both banks and 25 metres of 'Corridor' away from the river, so scope for diversity was not by any means limited.

It may again seem to be stating the obvious, but at the time the discovery took me by surprise; and the experience has been re-enacted, occasionally, since then. Repeat visits to diverse communities that had already shown an impressive species-list during previous surveys often produced at least one or two additions. This happened even when the second look was a casual encounter rather than 'official' and thorough field-work.

DNA Analysis – Some Queries

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I read (*BSBI News* **102**: 69) that it has been decided in the revision of Francis Rose's *The Wildflower Key* to retain the old names for the orchids, rather than replace them with the new, DNA-derived names. I am sure this is best but equally sure that others will disagree! However, when the inter-relationship of only a relatively small number of our native plants has been investigated by these techniques it would seem to me to be wise to wait a bit, otherwise we would have a book in which some of the species are classified by their DNA and the remainder by structural features.

As an organic chemist, inclining to biochemistry, I have some idea of the background to these new techniques but it seems probable that the majority of our members will have little idea of how these analyses are carried out (which probably does not matter), nor, and now I include myself, how decisions are reached when looking at the results. My questions then – what decisions have to be made and how certain are we of what is decided?

All is based on the examination of a series of bands, which can be converted to a series of peaks of varying intensities. But we are looking at similarities and differences, so how different is different? If two specimens are examined, what determines whether they are different species, just subspecies or a single species of different races or origins? There must be borderline cases; if so do all the experts agree? I would welcome an article to tell us no more than briefly how the analyses are carried out, but in more detail how decisions are reached.

The Hillier Herbarium at Ampfield (Hampshire)

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The Sir Harold Hillier Gardens Herbarium is a major new herbarium, with the acronym **HILL**, that was created in June 1995. With over 5000 sheets it now features on the world wide web – see *Index Herbariorum* at The New York Botanic Garden site, NYBG.org. It represents the work of a number of dedicated volunteers, including several BSBI members – a lot of loving care has created some very beautiful (and scientifically valuable) pressed specimens. It mostly features cultivated woody plants. but the rich native and alien flora of the Gardens has also been sampled, and not only for vascular plants – Linda Barker (BSBI) *et al.* have added in the bryophytes and lichens. David Allen has expertly sampled the interesting *Rubus* florula.

The collection includes the official herbarium of the International Oak Society (IOS), hence the 1750 sheets of *Quercus* (600 taxa). This expresses the major interest of Allen Coombes, Botanist, the BSBI referee for this genus. Dorothy Holley (IOS) has vigorously worked on the project since its inauguration and has persuaded many souls (EJC included!) to help out over the years.

Many specimens have been collected outside Britain, so it is an excellent venue to learn herbarium botany – some 212 families and 620 genera of vascular plants are represented, all filed in the standard, Brummitt order of *Vascular plant families and genera* (RBG, Kew, 1992).

More details about the herbarium can be found in *The Plantsman* n.s. **4(4)**: 197 (Dec. 2005) and at www.hillier.hants.gov.uk. This same website also has the extraordinary ability to pinpoint the exact location of all living plants that are established in the gardens. (A similar facility also exists at the RHS Garden, Wisley, Surrey: go for the terminal, called Holly, located in the Garden Library). Invaluable, if you wish to check the ID of some mystery plant that you have found!

Some of the joys of the Hillier Gardens were recently described by Jeremy Spen in *Pentachondra* **36**: 21-22 (May 2006), with, of course, a strong Australasian emphasis. Surprisingly, no official Hillier *Guide* exists.

John Dalton (1766–1844), a self-confessed colour-blind botanist, and a circle of English Lakeland botanists

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Renowned for his 'Atomic Theory', the Cumberland-born scientist John Dalton FRS is sadly neglected in botanical circles. Indeed his interest in plants is rarely mentioned anywhere (see, for example, his entry in *Oxford dictionary of national biography* (Greenaway 2004)); as noted by Simms (1969) no 'appreciation of John Dalton as a botanist' was published among the 'many eulogies' that marked the bicentenary of his birth. Yet, plants had a crucial role in Dalton's 'extraordinary feat of detecting' (Greenaway 2004) that he himself was colour-blind, and he knew the plants of the Lake District well enough to make two herbarium collections, the largest of 864 species containing only 37 that were incorrectly identified (Adamson & Crabtree 1920; Simms 1969). Dalton was indeed a member of a close circle of individuals interested in the Lakeland flora at a period, the late eighteenth century, dismissed by Halliday (1986) as part of a botanically sterile century in which 'the light which [William Nicholson], [Thomas] Lawson and [John] Ray had kindled appears to have flickered if not actually died ...'.

Dalton was born on 6 September 1766 at Eaglesfield near Cockermouth, and was for a while educated at the Quaker (Friends') school at Pardshaw Hall, a few miles from Cockermouth. However at the age of 10 he had to leave this to earn a living and so he is said to have 'entered the service of Elihu Robinson (1734–1809)' (Greenaway 2004) – an alternative version (Davis 2004) is that Dalton 'regularly visited Robinson for lessons'. Robinson certainly encouraged Dalton, who, aged 12, set up his own school which failed after a couple of years, and for a time he worked as a farm labourer. When he was 15, Dalton moved to Kendal to join his brother Jonathan and became an assistant in the Friends' school there, then run by George Bewley.

John Dalton learned his botany from the naturalist John Gough (1757–1825), a native of Kendal and also a Quaker. Gough's story is extraordinary. At the age of 3 he contracted smallpox and became blind. Yet while a pupil at the Friends' school in Kendal, under Bewley's tutelage, Gough 'formed a botanical club with his schoolmates' who would read to him the descriptions from John Wilson's *Synopsis of British plants* (1744)[1], while Gough would, very minutely with his hands, examine the plant being described (Gross 2004).

Dalton and Gough were closely associated between 1782 and 1790. Dalton assisted Gough by reading and writing for him, while Gough taught Dalton Greek, Latin and French (Gross 2004). They must also have had conversations about plants. Another topic of mutual interest was meteorology; Gough encouraged Dalton to keep meteorological observations in a diary, and Dalton was to do so until 'the last day of his life'(Greenaway 2004). Elihu Robinson had also encouraged Dalton's interest in meteorology.

A fourth person in this circle was Peter Crosthwaite – Dalton supplied him with a home-made barometer and thermometer. Crosthwaite had a private museum in Keswick (Simms 1969), and Dalton is known to have prepared a herbarium for Crosthwaite, as a collection of dried plants was 'a very proper object' for such a museum. This comprised at least one 'book of two quires for half-a-guinea ... with an index both to the Linnean and English names' (quoted in Simms 1969). Dalton commented: 'I am not so confident in my abilities as to maintain that I have given no plant a wrong name, but I believe the skillful botanist will find very few, if any miscalled.' It is highly probable that the 2-volume[2] *hortus siccus* now in the Royal Botanic Garden, Edinburgh, which was sent to Professor John Hutton Balfour in October 1870 and which had come from 'a sale

of a local Museum' in Keswick, is Crosthwaite's one (see Wood 1970). The title-page of the first volume is inscribed '*Hortus Siccus: seu Plantarum diversarum in Agris Kendal vicinis sponte nascentium Specimina. Opere et Studio Joannis Dalton collecta*', and is dated 1791. The second is dated 1793, while the title reads: '*Hortus siccus: seu Plantarum diversarum in locis Kendal vicinis sponte nascentium Specimine. Vol. 2. Opere & Studio Joannis Dalton collecta*'. According to Wood (1970) there are 112 species in the first volume and 53 in the second, but none was localized, except for '*in Agris Kendal*' or '*in locis Kendal*' on the respective title-pages. Other plants were added to the second volume after Dalton had completed it, presumably by Crosthwaite, including '... 6 Plants ... found by P. Crosthwaite[3], on the top of Helvellin, & were all he could meet with on a careful search', and '... 17 Rare Plants ... collected, & Presented by the Rev[d]. M[r]. Harryman[4] (F. L. S.) of Egleston, County of Durham ...' (Wood 1970).

Dalton also kept a herbarium collection for his own use. Eleven volumes containing specimens ('several species to a page, each ... accompanied by a note of locality, ... many of the specimens ... small and incomplete') which were in the possession of the Manchester Literary and Philosophical Society were catalogued by Adamson and Crabtree (1920). Most unfortunately, these were subsequently destroyed by enemy action during the Second World War. They evidently differed from the Edinburgh set which is arranged in order of flowering. The Manchester herbarium, dated 1790, was arranged according to the Linnaean System, '*secundum Classes et Ordines disposita*' (see Wood 1970). There are also specimens collected by Dalton in **LIV** (J. Edmondson, pers. comm.).

1790 is the date given by Dalton himself, in a remarkable paper he read to the Manchester Literary and Philosophical Society on 31 October 1794, as the year in which he commenced 'the occasional study of botany ...' – oddly, it was also the year, according to Gross (2004), that saw the end of his association with the blind John Gough.

Dalton moved to Manchester in 1793 'at the suggestion of several leading Manchester citizens and of Gough' (Greenaway 2004), to become a tutor in mathematics and natural philosophy at New College, Manchester, an institution that had been established by dissenters. He kept in touch with his friends in the Lake District and in a letter to Elihu Robinson, whom he addressed as 'Dear Cousin', dated (in Quaker style) '2d mo. 20th 1794', John gave the first indications of 'a very curious investigation':

> ... I discovered last summer with certainty, that colours appear different to me to what they do to others: The flowers of most of the Cranesbills appear to me in the day, almost exactly *sky blue*, whilst others call them *deep pink*; but happening once to look at one in the night by candle light I found it of a colour as different as possible from day light; it seemed then very near yellow, but with a tincture of red; whilst no body else said it differed from the daylight appearance, my brother excepted, who seems to see as I do. [Dalton 1794]

What might have happened in the summer of 1793 to lead Dalton to such a discovery? Most probably it was the move to Manchester, 'a town which ... surprised him, when he got to know it, as being made mostly of brick' (Greenaway 2004). Manchester was not home territory, a place where he and any eccentricities he possessed were so well known that they were likely to be indulged or just ignored. Undoubtedly he soon met others interested in scientific matters, if not in plants. In the past, during his dialogues about botany with John Gough, shape, form and texture (and perhaps smell and taste) were the only characters that would have any meaning; Gough, being blind, would have had no apprehension of colours. This was a truly bizarre coupling: the blind Gough tutoring the colour-blind. Jonathan, his brother, when they discussed plants, saw what John saw, and so they would have agreed about colours. Other people had thought Dalton was joking when he disputed whether a flower was red or blue: 'I have often seriously asked a person whether a flower was blue or pink, but was generally considered to be in jest' (Dalton 1798). But, John Dalton was now in Manchester where people with like interests were neither totally blind nor afflicted by deficient vision, nor did they think he was joking; where, if he remarked that a garden pink (*Dianthus* cultivar) had a blue flower, he surely provoked his interlocutor to exclaim that it was in fact red (Dalton 1798).

Dalton had been elected a member of Manchester's Literary and Philosophical Society on 3 October 1794, and four weeks later delivered his historic lecture entitled 'Extraordinary facts relating to the vision of colours: with observations'. Having completed his investigations, he happily admitted that he had grown up thinking that there was 'a perplex-

ity in [the] nomenclature' of colours, not that there was 'any peculiarity in my vision' (Dalton 1798).

> I was always of the opinion, though I might not often mention it, that several colours were injudiciously named. The term *pink*, in reference to the flower of that name [i.e. *Dianthus*], seemed proper enough; but when the term *red* was substituted for pink, I thought it highly improper; it should have been *blue*, in my apprehension, as pink and blue appear to me very nearly allied; whilst pink and red have scarcely any relation.

He had had some inkling that his 'vision was not like that of other persons' when still living in Kendal (if the date he gave is correct):

> ... I was never convinced of a peculiarity in my vision, till I accidentally observed the colour of the flower of the *Geranium zonale* [*Pelargonium zonale*: see Hunt *et alii* 1995] by candle-light, in the Autumn of 1792. The flower was pink, but it appeared to me almost an exact sky-blue by day; in candle-light, however, it was astonishingly changed, not having then any blue in it, but being what I called red, a colour which forms a striking contrast to blue.

Dalton gave several other botanical examples: 'Besides the pinks, roses, &c of the gardens, the following British *flora* appear to me blue: namely, *Statice Armeria* [= *Armeria maritima*], *Trifolium pratense*, *Lychnis Flos-cuculi*, *Lychnis dioica* [= *Silene dioica*], and many of the *Gerania* [*sic*]': – thrift, red clover, ragged-robin, red campion and the cranesbills. Discussing green Dalton told the audience at the Manchester Literary and Philosophical Society that 'I take my standard idea from grass. This appears to me very little different from red. The face of a laurel-leaf (*Prunus Lauro-cerasus*) is a good match to a stick of red sealing-wax; and the back of the leaf answers to the lighter red of wafers.'

John Dalton had detected in himself, and then described in a most elegant and straightforward manner, congenital colour vision deficiency (colour-blindness, sometimes also termed Daltonism). This is one of the most common inherited human disorders affecting approximately 8 out of every 100 males and 4 out of every 1,000 females. There are colour-blind individuals in every walk of life: taking those average figures, it may be assumed that there are around 170 BSBI members afflicted by colour vision deficiency – perhaps there are fewer than that, because inability to distinguish colours may deter individuals with the disorder from joining. I recall wryly that I was almost refused entry to Australia in 1971, to undertake my postgraduate research, because at my compulsory medical examination the doctor discovered that I am slightly red-green colour-blind.

Notes

1. John Wilson (1696–1751) was also a native of the Kendal area, and his book, published in Newcastle upon Tyne, prefaced by a dictionary of botanical terms, 'show[ed] considerable original observation and thought' (Henrey 1975). It was 'the first account of British plants written in English' (Boulger & McConnell 2004). He was not mentioned by Halliday (1986).

2. Kent & Allen (1984) noted only one volume.

3. Peter Crosthwaite is not listed by Hedge & Lamond (1970), Kent & Allen (1984), or Desmond & Ellwood (1994).

4. Revd John Harriman FLS (1760–1831) was another native of Cumberland. An 11-volume herbarium of Harriman's is in **LIV** (Kent & Allen 1984). He is not listed by Hedge & Lamond (1970). Harriman is wrongly credited (e. g. Desmond & Ellwood 1994) with the discovery of *Gentiana verna* in County Durham (in 'Teesdale Forest [*sic*]') during 1797; the species was in fact found by John Binks, an unlettered lead miner, and he was so credited in Sowerby & Smith (1798). A specimen of Spring gentian from 'near Egleston', from Harriman, is in Crosthwaite's *hortus siccus* (see Wood 1970), and one labelled 'Teesdale Forest' is in the Smith's herbarium (**LINN**: Savage no. 0476.28.2). (For information on Harriman and Binks I am grateful to the Revd G.G. Graham, Dr J. Edmonson and Prof. M. Seaward.)

Acknowledgements

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Botany in Literature – 42

Wyndham's *The Day of the Triffids* – Carnivorous Plants – Polysyllabic Latin

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John Wyndham (Harris, John Wyndham Parkes Lucas Benyon; 1903-1969) was born in Knowles in the West Midlands of Central England. The son of a barrister, he tried a variety of jobs (farming, law, commercial art, advertising, and, during World War II, the civil service and the army), before resuming writing, having previously written detective stories. His first quasi-science fiction novel, *The Day of the Triffids* (1951) deals with concerns over the Cold War, fear of biological experimentation (apt today with reference to the genetic modification of plants), and man-made apocalypse, and also, as with his other works (*The Kraken Awakes* (1953), *The Chrysalids* (1955), *The Seeds of Time* (1956), *The Midwich Cuckoos* (1957), *The Outward Urge* (with 'Lucas Parkes') (1959), *The Trouble with Lichen* (1960), *Consider Her Ways and Others* (1961), and *Chocky* (1968)), the preservation of English decency in hostile conditions. His writing provides a bridge between traditional British science fiction and the more varied science fiction which has since replaced it. Thus, although one gets a reasonably good idea of what 'them horrid triffid things' look like, Wyndham's concerns in *The Day of the Triffids* are somewhat less than botanical. If anything, they are, as the passage (from page 31) beyond indicates, slightly anti-botanical (for example, he fights shy of giving his 'modified sunflower' a botanical name), but, even so, the description of a triffid, as a composite carnivorous plant, owes its genesis to various sources, one certainly being H.G. Wells (see next *BSBI News*), the others possibly being Professor Emeritus Francis Ernest Lloyd's 1942 (2nd edn 1976) classic study *The Carnivorous Plants* (viz. *Byblis, Roridula* (Byblidaceae), *Cephalotus* (Cephalotaceae), *Drosera, Drosophyllum, Dionaea* (Droseraceae), *Genlisea, Pinguicula, Utricularia* (Lentibulariaceae), *Darlingtonia, Heliamphora, Sarracenia* (Sarraceniaceae), *Nepenthes* (Nepenthaceaea), as referred to in the notes below) and Chase S. Osborn's *Madagascar, Land of the Man-eating Tree* [1924] (ap. Lloyd, 1976).

Consider the following would-be *descriptio botanica* compiled from Wyndham's scattered portrayals, complete with posited Latin name: *Triffidus calamitosus* Wynd. 1951, Day Trif.: tit. et passim, (Triffidaceae). *Subfrutex* [*Subshrub*] Carnivorous perennial, 4 ft [1.219 m] in height to average of just over 7 ft [2.134 m]; seldom over 8 ft [2.438 m] in Europe, but up to 10 ft [3.048 m] in tropics. Woody bole[1] at

base of stem. *Radices* [*Roots*] Rootlet hairs project from this shaggy bole which is almost spherical 'except for three bluntly tapered projections'[2] extending from lower part which, although appearing to be roots on the one hand, also act as legs on the other, lifting the body 'about a foot [30.5mm] clear of the ground.' *Caulis* [*Stem*] Straight and springs from the woody bole. Widens into a funnel[3] at the top, forming a conical cup[4] which contains the sting, a couple of inches below where this emerges being a 'sticky mess'[5] in the base of the cup, where can be seen 'struggling flies and other small insects.'[6] The stem whips 'violently back and forth at each step' being 'faintly reminiscent of young elephants at play.' *Capreolus urens* [*Stinging tendril*][7] A tightly-wrapped whorl comparable to the 'new, close-rolled frond of a fern'[8] 4 to 5 to 10 ft [1.219-1.524-3.048 m] long. Contains sacs which release poison.[9] The tendril does not have enough muscular power to tear firm flesh, but can pull shreds from decomposing bodies via adhesive pads[10] to the cup on its stem. While it eats dead stock at a certain stage of putrescence, the sting is ineffective against the woolly backs of sheep. The tendril is generally aimed at the face, especially the eyes in humans, the poison causing blindness. *Folia* [*Leaves*] Leathery,[11] in short sprays. *Fructa* [*Fruit*] A single dark green pod[12] just below the cup 'glittering and distended' and 'about half as big again as a large apple.' Bursts with a pop which is audible 20 yards [18.29 m] away. *Semina* [*Seeds*][13] White and 'gossamer-slung' so they look 'like steam' on dispersal through the air. Largely infertile. Fertile seeds carefully sorted and stored originally in Russia. *Anomalæ* [*Anomalies*] (i) The three little leafless sticks at the base of the stem are possibly 'something to do with the reproductive system – that system which tends to be a sort of botanical glory-hole for all parts of doubtful purpose until they can be sorted out and more specifically assigned later on.' Thus their 'rattling a rapid tattoo against the main stem' was deemed to be 'some strange form of triffidian amatory experience' but, in actual fact this 'pattering and clattering' is how this 'pretty odd lot of cabbages' talk to one another. (ii) The ability of two of the three blunt 'legs' to slide forward so that the plant lurches as the rear third draws almost level with them, then the two in front slide forward again. It is as if the plant 'picked up its roots and walked' albeit 'like a man on crutches'; even so it covers the ground at an average walking pace. (iii) The plant's learning ability. It can 'hear' and is attracted by noise, such as a human moving or talking, which it then moves towards. (iv) The apparent absence of flowers. [Etymology: *Triffidus*, from Lat. *trĭfĭdus*, three-forked; *cālămĭtôsus*, Lat. foreboding evil]. The description of a triffid being now more or less complete, herewith the abovementioned passage:

> Now that walking plants were established facts the press lost its former tepidity, and bathed them in publicity. So a name had to be found for them. Already there were botanists wallowing after their custom in polysyllabic dog-Latin[14] and Greek to produce variants on *ambulans* and *pseudopodia*, but what the newspapers and public wanted was something easy on the tongue and not too heavy on the headlines for general use. If you could see the papers of that time you would find them referring to:
>
> | | |
> |---|---|
> | Tricots | Trinits |
> | Tricusps | Tripedals |
> | Trigenates | Tripeds |
> | Trigons | Triquets |
> | Trilogs | Tripods |
> | Tridentates | Trippets |
>
> and a number of other mysterious things not even beginning with 'tri'[15] – though almost all centred on the feature of that active, three-pronged root.

NOTES

(1) *woody bole*: *Roridula* spp. are subshrubs. Root hairs are found in *Pinguicula*, butterwort, and *Drosera*.

(2) *three bluntly tapered projections*: The rhizome in *Byblis* is sometimes a *tri*arch (Lang, ap. Lloyd, 1976). *Cephalotus follicularis* has a forking rootstock in older plants, a tap-root in primary ones.

(3) *funnel*: *Nepenthes inermis* and *N. dubia* both have an open funnel. In *Genlisea* the cell entrances are funnel shaped.

(4) *conical cup*: *Sarracenia minor* at its earliest stage of development has a leaf only 0.1 mm in height in the form of a low cone.

(5) *'sticky mess'*: Passive traps are found in the pitcher plants (*Heliamphora, Sarracenia, Darlingtonia, Cephalotus, Nepenthes*). Particularly mucilaginous and viscid are those of *Sarracenia*. In *Nepenthes* the presence of zymogen puts plant digestion in line with that of animals. *Drosophyllum* produces formic acid (as found in ants and nettles).

(6) *flies and other small insects*: Flies are present in *Drosophyllum lusitanicum*, named the 'fly-catcher' by Oporto villagers, who hang the plant up in their homes for this purpose; ants, wasps, bees, butterflies and moths (*Sarracenia*, *Darlingtonia*); protozoa, myxophyceae, desmids, diatoms, *Rotatoria*, oligochaetes, crustaceae, *Diptera* larvae, even tadpoles, are found in *Nepenthes* spp.

(7) *[Stinging tendril]*: *Nepenthes* spp. have both functional and non-functional tendrils, *Drosera* and *Roridula* have tentacles. In *Drosera* the tentacle heads are glands. The violent whipping back and forth of the stem of a triffid when its sting is extended suggests the plant is top-heavy. In *Heliamphora* a drain-slit counteracts this.

(8) *new, close-rolled frond of a fern*: True circination is found in *Drosera*, outward circination in *Byblis linifolia* (c.f. Diels, 1930 (ap. Lloyd) where the leaves are merely spirally *inrolled* at the tip), reverse circination in *Drosophyllum lusitanicum*.

(9) *poison*: *Drosera* has pear[sac]-shaped mucilage. The formic acid (*Drosophyllum*) released by ants and stinging neetles is painful.

(10) *adhesive pads*: An adhesive disc is found in some orchids and in the noose of some carnivorous fungi. Some fungi have sticky discs.

(11) *[Leaves]*, Leathery: *Cephalotus follicularis* has coriaceous leaves. Presumably a triffid's leaves are cauline, rather than in the form of a basal rosette.

(12) *pod*: Not a feature of carnivorous plants. Wyndham appears to be describing a giant pea pod (i.e. legume) or somesuch.

(13) *[Seeds]*: Numerous in *Utricularia dunstani*, but the testa of *Utricularia* seeds is generally reddish or brown. Wynham's seeds, floating as they do, suggest the pappus of dandelion seeds rather than any seeds produced by carnivorous plants.

(14) *polysyllabic dog-Latin*: Wyndham has got his wires crossed for, according to R.A. Knox, writing in 1923 (quoted in Stearn, 1983: 16-17), 'dog-Latin' is Ecclesiastical Latin (not Botanical Latin) and was used in comparison with the term 'lion-Latin' which referred to the Latin of Cicero. [With reference to Souchier, *BSBI News* **101**: 32, the citing of the existence of Late Latin in the 3rd century B.C. was a printer's error and of course should have read 3rd century A.D.]. However, the comment is meant to be scathing, as is the reference to polysyllabic (as thus would any encounter with a name such as *Polypodium polypodioïdes* be.

(15) '*tri*': '... common usage modified the original long first 'i' [i.e. as in English *like*] and custom quickly wrote in a second 'f', to leave no doubt about it ... [thus] emerged a handy label for an oddity – ... destined one day to be associated with pain, fear, and misery – TRIFFID....'. (Wyndham, p. 31).

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Invasions of living and growing angiosperm tissues by filamentous algae

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All six colour microphotos (Colour Section, Plate 4) were taken of tissues inside *Lemna* (Duckweed) roots. Nos ①, ②, ⑤ (+insert) and ⑥ were from actively elongating 0.5-2cm roots, whereas those of ③ and ④ were 5-6cm long and pre-senescent. The host plants of ① and ② were *L. minuta*, and of ③–⑥ were *L. minor*. All the infiltrating algal filaments are, I think, from the *Entocladia* genus, perhaps 2 species, but some of *E. endophytica*. I also have much inferior microphotos of the same filamentous alga(e) invading the roots of *L. trisulca* and *Elodea nuttallii* (Nuttall's Waterweed), and have seen invasion of the underwater stem of the latter species.

① The green filaments are starting to form plaques inside the attached *Lemna minuta* root cap. This picture is very similar to colour microphoto ② in Oliver (2004), from the River Kennet; but this microphoto is from a different *L. minuta* population from a rain-barrel a mile away, 2 years later. This is one of the rather few examples of consistency, as one usually sees something different through the microscope

when examining green roots. This duckweed population had been fozen into the ice a few weeks earlier. Here and in the ensuing microphotos, the average filament width was 9-11µ.

② Here the *Entocladia* is penetrating the root cortex No coverslip pressure was applied, so one filament only is in focus because of the convexity of the cylindrical root. The protoplasmic 'bristle' indicates *E. endophytica*.

③ No coverslip was used here, nor was the root photographed in water. This was to show the *Entocladia* networks completely encircling the stele (central vascular cylinder).

④ This enlargement shows *Entocladia* infiltrating along the stelar margin.

⑤ The insert is from a different *L. minor* plant, where the *Entocladia* filaments were very similar in appearance to the filaments shown in microphoto ②. Again the *Entocladia* (in the main picture) reached and surrounded the stele. Filament widths were 7-10µ (excluding bulges), but could reach 400µ (0.4mm) in length. Filament cell lengths were 10-15µ. The full lengths of the protoplasmic bristles (indicating *E. endophytica*) were 25µ (main photo) and 45µ (insert).

⑥ These rather short *Entocladia* filaments all stained black with iodine, indicating starch as the storage carbohydrate. The same was found for the filaments in pictures ①, ②, ⑤ and in the *L. trisulca* and *Elodea* preparations. Puzzlingly this was not the case for the preparations in ③ and ④, despite sunlit conditions. Possibly the *Entocladia* cells were not photosynthesising at a different stage in development, or had been damaged by overheating behind glass.

John *et al.* (2003) refer to *E. endophytica* as follows: 'Europe; in the British Isles only known on filamentous algae ...' *E. cladophorae* by contrast: 'Europe, epiphytic or endophytic on filamentous green algae ... (protoplasmic) bristles absent.'

The alga in this paper appears to be *Entocladia endophytica*, with the probability that some preparations without protoplasmic bristles could be *E. cladophorae*. They might, however, just be inhibited colonies of *E. endophytica* again. Either way, the invading alga could be considered as an endophyte, parasite or algal pathogen within the living, and growing, tissues of a flowering plant. (*Entocladia* probably infiltrates surviving tissue frameworks of dead rootlets too, if lighting is adequate). As far as I know, nothing quite comparable has been described elsewhere for higher vascular plants.

Algal endophytes, endosymbionts, associations & pathogens

Algae can multiply within the tissues, and sometimes the cells of a surprising range of animals, e.g. Protozoa, Hydra, Chlorohydra, Corals, Jellyfish, Sea Slugs, Marine Worms, Giant Clams, and Sponges. Endosymbiosis involving blue-green and other algae and bacteria has, of course, been crucial to the evolution of all eukaryotic life on earth, plants, animals and fungi. Algae, including multicellular forms, can be found inside the tissues of larger algae, especially amongst marine species (for all these topics, see Allaby 1998; Canter-Lund 1996; Graham & Wilcox 2000; John *et al.* 2003; Lee 1999; South & Whittick 1987; Van den Hoek *et al* 1995). Approximately 20 algal species can be incorporated into numerous fungal partners as lichens. Some blue-green and/or other algae can occur endophytically and/or closely associated with *Sphagnum* moss and the floating liverworts *Riccia* and *Ricciocarpus* (John *et al.* 2003, p. 12). Moving up the plant evolutionary scale, examples become fewer but more intriguing. Best known is the association between the blue-green alga *Anabaena* (and sometimes *Nostoc*) and the floating water fern *Azolla* (for colour pictures, see Canter-Lund 1996, Oliver 2005b). The aerial roots of cycads also can hold pockets of blue-green algae (Fogg 1975; Nathanielsz and Staff 1975). Even more mysterious is the lichen photobiont *Coccomyxa* within tissues and cells of the tree once also known to dinosaurs, *Ginkgo biloba* (Trémouillaux-Guiller *et al.* 2002). Within angiosperm tissues, the best known example of endocellular symbiosis is that of *Nostoc* within the cells of growing *Gunnera* rhizomes (Canter-Lund 1996; Clement 2003). *Chlorochytrium lemnae* grows within the cells of senescent or decaying fronds of some Duckweeds (*Lemna*) in the River Cherwell in Oxford, and within the tissues of Hornworts (*Ceratophyllum*) and other waterweeds (*Elodea*) in Europe (John *et al.* 2003, pp. 12, 336, 337 & 450. See also BioImages 2004).

Trentepohlia is the cause of the bright orange tree trunks in Savernake Forest and elsewhere (Rose 2005). Examination of the bark seems to show that this filamentous alga can penetrate the surface tissues (unlike the purely superficial dusting by *Pleurococcus viridis*, the commonest algal cause of green tree trunks). More serious is the economically important disease 'Red Rust' caused by the alga *Cephaleuros*. This alga, together with closely related genera, can penetrate leaf and bark tissues of a range of tropical and subtropical shrubs and trees,

including coffee, tea and other Camellias (A.S.C.C. 2003; Canter-Lund 1996; Gorsuch 2004; Lopez-Bautista *et al.* 2002). There is also indirect evidence, from DNA and other analyses, of Chlorophyte algae with the roots of rice (*Oryza*) grown in flooded soil pots (Ikenaga *et al.* 2004).

My initial studies of aquatic angiosperm roots (Oliver 2004, 2005a, b & c) have been clouded to some extent by failure to identify many of the rather featureless extracellular 0.5-10μ green bodies. Some microphoto interpretations may have been wrong. The candidates included extruded or autolysed angiosperm chloroplasts, extruded grana, and endophytes. In particular, the green 'dimpled discs', (diam. 2.5μ) would seem to be extruded or parietal angiosperm root chloroplasts. The extracellular green bodies just visible in microphoto ② in this study were 0.5-2μ in diameter. However some of the great variety of undoubted unicellular algae which are often to be found within the root caps of *Lemna* and *Azolla* can occasionally penetrate the root cortex tissues of these two genera, and also of *Elodea* and *Callitriche* (Oliver 2006). To date, *Entocladia* is the only identified algal root endophyte of aquatic angiosperms that I have found on more than four separate occasions , as in this study.

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ALIENS

Urtica membranacea, an annual nettle, in Warwick: a first British record?

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In April 2006, A.B., visiting Warwick for her Golden wedding anniversary, discovered more than a hundred plants of *Urtica membranacea* Poiret in a yard in the town centre. These were growing between the pavement and rear walls of commercial buildings (flower shop, restaurant, antique shops, herbalist) and were already seeding, having over-wintered (see back cover). Their extensive distribution into neighbouring entrances suggested that they had been estab-

lished for several years. Eric Clement confirmed the identity and thought it likely that this was a first British record.

This annual nettle has a Mediterranean and Western European distribution, extending to Northern France (J.R. Edmondson, *Flora Europaea* (2nd Edn.) **1**, 80). It could be mistaken for the Small Nettle, *Urtica urens*, which also is annual and monoecious, with many female inflorescences and fewer male ones. However, *U. membranacea* has unilateral male racemes which lack flowers on their under-surfaces, which are expanded and membranous. These terminal racemes are purple-tinged when immature, contrasting with the pale green leaves, a character lost in dried material (see back cover).

Unlike both of the common British nettles which have four small linear stipules on the stem near the petiole junctions, this alien nettle has apparently two ovate stipules, formed by the fusion of adjoining pairs of stipules ('connate'). The photographs (see back cover) by John and Val Roberts clearly show these easily overlooked distinctions.

Eric Clement suggested that this nettle's arrival and persistence may be a further instance of the effects of climate change; Britain may be acquiring a more Mediterranean element to its flora. Warwick, a Midland town, has experienced recent winter temperatures of -10°C, but the location of the plants, in a town centre surrounded by buildings, would have protected them. They have also survived at least one attempt at eradication by the town's weed-killer, protected by wheelie-bins and parked motorbikes!

Thanks to Eric Clement for his prompt and encyclopedic help, and also to John and Val Roberts for the photographs.

Primula helodoxa at Studland, Dorset (v.c. 9)

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Steve O'Connell, the National Trust warden who discovered *Scorzonera humilis* (Viper's-grass) on Corfe Common a few years ago, found *Primula helodoxa* Balf. f. making a splendid display by a small stream 100m from the sea at the south end of Knoll Beach car park (SZ034.832) in May 2006 (see Colour Section, Plate 2). Eric Clement (EJC), who kindly determined it, says it is the first escape of this species into the wild known to him in Britain. There were fifty-eight flowering stems, and other non-flowering plants. The species is grown in a garden upstream, in which they propagate freely by seed.

The stems are 60 to 110cm tall, and mealy below the whorls of flowers. They arise from a rosette of broadly lanceolate obtuse leaves up to 40cm long, widest above their middle, irregularly serrate, and which taper gradually into their base. They have sparse very short hairs on the upperside and are shortly pubescent underneath. The cowslip-coloured flowers are in up to 8 whorls on the stem, with from 10 to 22 flowers in a whorl. The lowest whorls comes into flower first and so on upwards, so the flowering season of a colony is over two months. Their corollas tubes are 16mm long, and their lobes are 25 to 27mm in diameter. The calyces are mealy and 6mm long, including acute lobes of 2mm. The pedicels elongate in fruit and are 6 to 19mm. The bracts are linear and 6 to 16mm long.

EJC has kindly told me that *P. helodoxa* is a native of Yunnan (S.W. China) and is part of a complexity of taxa that extend from India to Indonesia. Some recent literature, e.g. *The European Garden Flora*, Vol. 5, p. 527 (1997), takes a very broad view and lumps all the taxa into *P. prolifera* Wallich.

EJC adds that the epithet helodoxa is presumably derived from the Greek – helos, marsh, and doxa, glory – a very appropriate description. No satisfactory English name appears to exist. I have heard Campanula Primula used, but it has been also used for a group of similar species. Candelabra Primula has been used, but is also used for a similar species. Bearing in mind that Stace (1997) uses Japanese Cowslip for a similar whorled species, I suggest Yunnan Cowslip.

References

RICHARDS, A.J. & RICHARDSON, J.E. 1997. *Primula* Linnaeus, in CULLEN, J. *et al.* (eds.). *The European Garden Flora* **5**: 511-535. Cambridge University Press.

STACE, C.A. 1997. *New Flora of the British Isles.* Cambridge University Press.

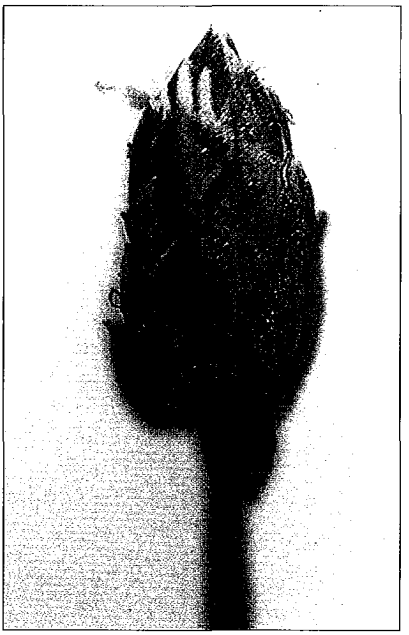


Fig. 1. Spikelet of *Isolepis cernua* showing three stamens projecting from a single glume (Holt Lowes, E. Norfolk, June 2002)

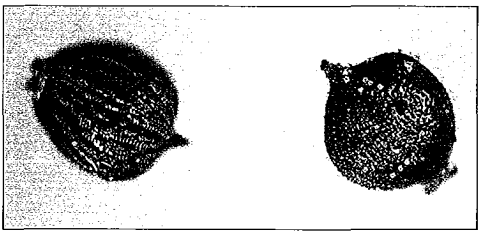


Fig. 2. Ripe nuts of *Isolepis setacea* (left, E. Norfolk, June 2002(and *I. cernua* (right, Holt Lowes, E. Norfolk, June 2002)

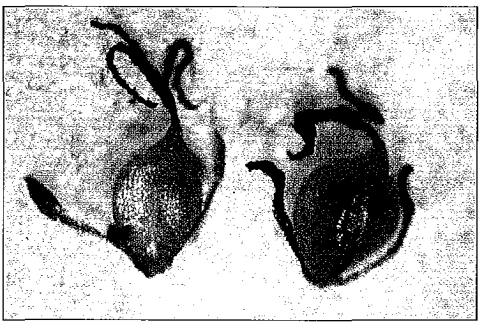


Fig. 3. Semi-ripe fruits of *Isolepis cernua* showing three filaments (i.e. stamens) and three stigmas (Beeston Common, E. Norfolk, August 2006)

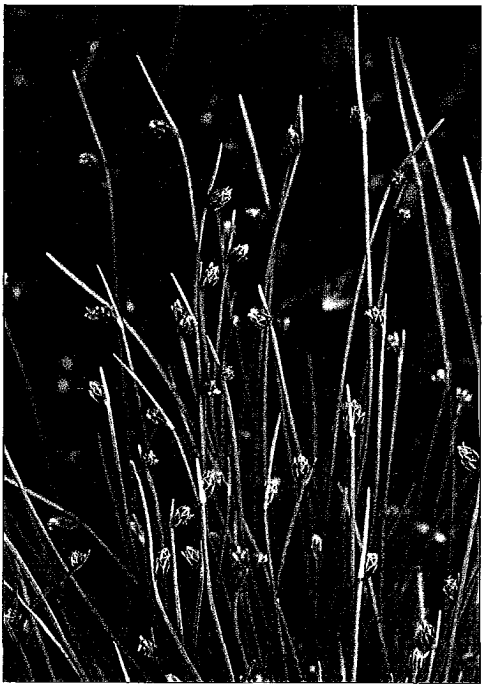
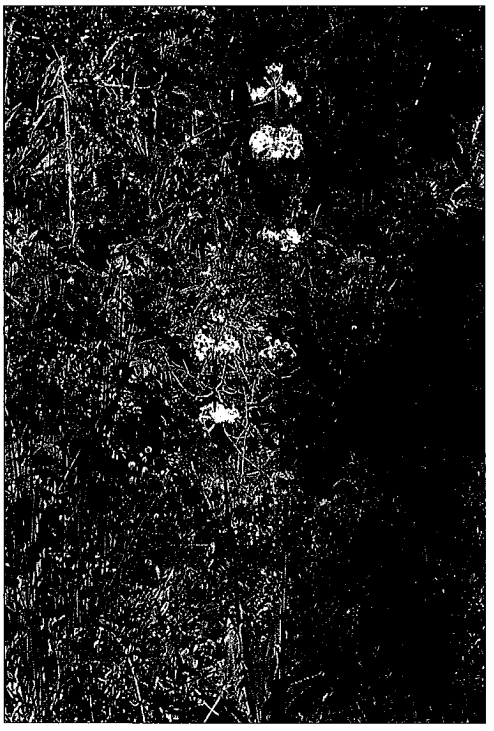
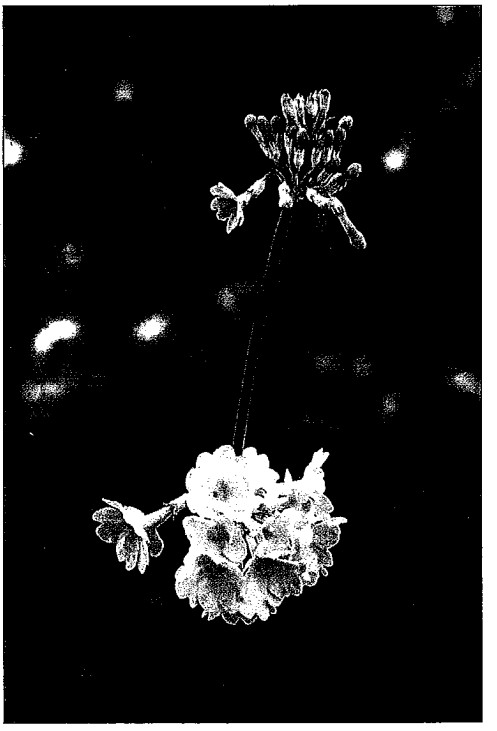


Fig. 4. *Isolepis cernua* showing long bracts (Beeston, E. Norfolk, June 2006).
All *Isolepis* photos (see p. 13) S. Harrap © 2006

Gentiana verna (Spring Gentian) on limestone grassland, Northern Pennines (see p. 8).
Photo L. Robinson © 2005



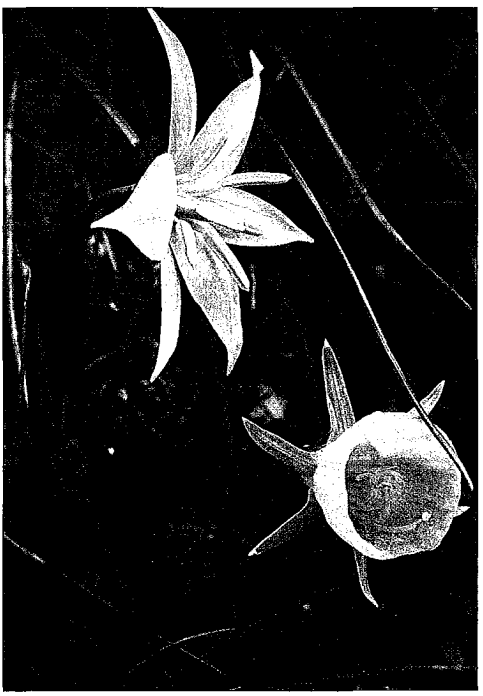


All photos *Primula helodoxa* established along small stream at Studland, Dorset (v.c. 9) E. Pratt © 2006
(see p. 30)

Jonopsidium acaule Península de Tróia, (see p. 43)

Polygonum maritimum Península de Tróia, (see p. 43)

Dianthus broteri Península de Tróia, (see p. 43)

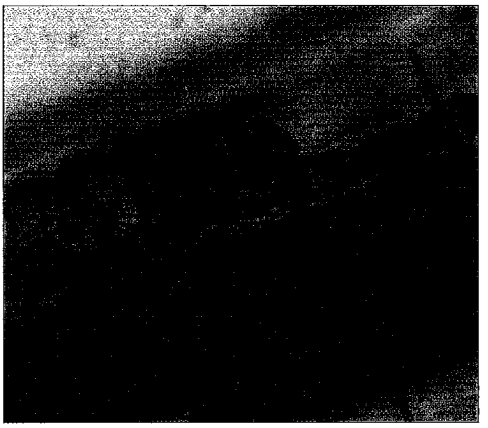


Tulipa sylvestris subsp. *australis* (1) & *Narcissus bulbocodium* subsp. *obesus* (r), Quinta da Serra, (see p. 44)

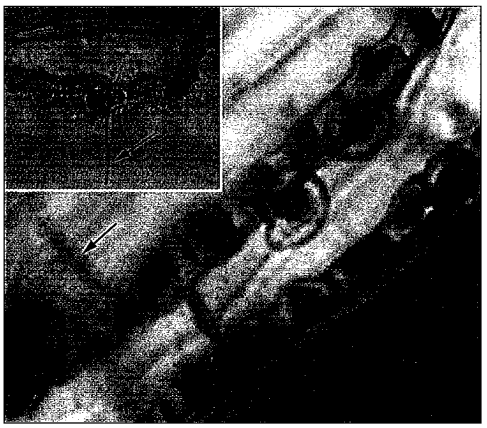
1. *Entocladia* forming filaments & plaques inside *Lemna minuta* root cap

2. *Entocladia endophytica* invading root cortex of *Lemna minuta*

3. Peristelar *Entocladia* networks within *Lemna minor* rootlet



4. Infiltration of *Entocladia* along stelar margin (*Lemna minor*)



5. *Entocladia endophytica;* peristelar infiltration. Arrow & inset show protoplasmic 'bristle'. (*Lemna minor* rootlet)

6. Iodine positive *Entocladia* filaments indicating starch deposits (*Lemna minor* rootlet).

Invasions of *Lemna* roots by *Entocladia.* Photos J.E. Oliver © 2006

Invasive Aliens? Himalayan Balsam (alas, now Indian Balsam)

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Members might recall my by now probably boring and predictable views on the fuss created by the conservation guardians on non-existent threats, including one recent mailing by a well-known plant conservation charity with a lurid representation of this species and Japanese Knotweed coming to bite innocent bystanders! I have written before that whilst Himalayan Balsam was often cited as a threat, I had not seen any evidence, other than its visible dominance.

Two papers have been published this year, one whilst saying it might reduce native richness, many of the species affected are widespread ruderals, and if it was removed, its place was often filled by other aliens or nitrophiles! The other effectively said there is no evidence at all to support the thug status.

The first is Hulme, E H & Bremner, E T 2006. Assessing the impact of *Impatiens glandulifera* on riparian habitats: partitioning diversity components following species removal. *Journal of Applied Ecology* **43**: 43-50.

Their summary:

1. Attempts to quantify the impact of non-native plants on the vegetation of invaded habitats have often been criticized because of the frequent use of observational assessments (invaded/uninvaded comparisons) focused on local- rather than community-level effects. This study highlights how removal experiments combined with partitioning of diversity components across spatial scales can provide key insights into invasive species' impacts.

2. *Impatiens glandulifera* (Balsaminaceae) is a widespread invasive riparian weed, yet few quantitative assessments of its impact on natural vegetation exist. Thus replicated experiments were used to compare the impact of *Impatiens* removal on α, β, γ components of species richness, diversity and evenness in open riparian habitats in north-east England.

3. Plant community response to *Impatiens* removal was rapid, with a significant increase in seedling recruitment resulting in an average increase of four species m^{-2}. The impact of *Impatiens* invasion was most marked for light-demanding species. Eight non-native species (in addition to *Impatiens*) occurred in the community and these responded proportionally more to *Impatiens* removal than native species. As a result the proportion of non-native species in removal plots was higher than in invaded plots.

4. The increase in α richness and diversity following *Impatiens* removal was matched by a similar increase in the γ components. Thus the effect of *Impatiens* was significant at both the local plot scale and at the scale of the riparian community, although the former effect was more marked. Species accumulation curves suggested that extensive *Impatiens* stands may reduce species richness by as much as 25%.

5. *Synthesis and applications.* Removal experiments appear particularly well suited to assess the impacts of herbaceous non-native plants on ruderal communities. By partitioning diversity components, impacts were consistently assessed at local and community scales and, when combined with analysis of species accumulation curves, provided a comprehensive assessment of impact on the plant community. The approach adopted in this study highlights that although *Impatiens* reduces native species diversity in open and frequently disturbed riparian vegetation, many of the species negatively influenced by *Impatiens* are widespread ruderal species. Furthermore, management may lead to a compensatory increase in the abundance of other non-native species and thus fail to achieve desired conservation goals.

The second appears in October. HEJDA, M & PYSEK, P. 2006. What is the impact of *Impatiens glandulifera* on species diversity of invaded riparian vegetation? *Biological Conservation* **132(2)**:143-152.

Their abstract:

The effect of invasion by *Impatiens glandulifera* (Balsaminaceae) on the community characteristics and species composition of invaded riparian communities was studied at six rivers in the Czech Republic. Two approaches were used: space for time substitution approach, i.e., comparing invaded and uninvaded sites under the same habitat conditions, and removal of the invader from experimental plots. Differences in the number of species, Shannon diversity index *H'* and evennes *J* were compared between invaded and uninvaded plots. Uninvaded plots of the comparative study harboured by 0.23 more species per 16 m^2, and had higher value of *H'* and *J*, calculated with species covers as importance values; however only the difference

in *J* was marginally significant ($p = 0.04$). Other effects were not significant, indicating that once *I. glandulifera* is removed, communities recover without any consequences for species diversity. Multivariate analysis did not reveal any effect of invasion on the species composition in terms of species presence but their cover hierarchies changed after the invasion, as *I. glandulifera* became dominant at the expense of tall native nitrophilous dominants. It is concluded that *I. glandulifera* exerts negligible effect on the characteristics of invaded riparian communities, hence it does not represent threat to the plant diversity of invaded areas. This makes it very different from other Central European invasive aliens of a similar performance.

Notes on the Isles of Scilly flora

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

The sad demise of the annual *BSBI Abstracts* (1971–2001) means that no longer can members quickly look up the latest publications for each v.c. Probably everyone will find Rosemary Parslow's two valuable contributions on the Isles of Scilly in *Botanical links in the Atlantic Arc* (BSBI Conference Report No. 24, 2006); but, how many would locate Phil Budd's *Short stay on the Isles of Scilly*, pp. 11–15 in the splendid publication, *Southampton Natural History Society Annual Report 2002*? This account gives the current status of many alien plants, plus interesting notes on other aspects of the natural history of this remarkable area.

In *Wild Flower Magazine* **462**: 23–26 (2005) we find two articles on 'Come & Find' meetings held 19–26 May and 9–15 June 2004. There is a lot of interest herein, e.g. *Senecio glastifolius* (Woad-leaved Ragwort) 'widely naturalised in the Upper Terrace garden on Tresco. Our invaluable *VCCC* (BSBI, 2003) suggests (p.xvi) that there are 'no extant records in the British Isles.' Maybe this is not 'in the wild', but I feel some seedlings must cross the garden wall (or perch on it!).

More surprisingly, *Pelargonium tomentosum* is also listed in *VCCC* as excluded (p.xv). John Palmer records it as 'Naturalised, in woods, Tresco' in May 1971 (**Herb EJC**). The late A. Underhill sent me the lemon-scented foliage (as indet.) – from this ? same area (SV893.144) on 4 Oct. 1996 – there was also a mass of it (in flower) at SV892.143, when he did correctly name it on 26 June 1992. Who will draw it for us? – meanwhile we must consult Herter, *Flora ilustrada del Uruguay* **2**: 467 (1954) for a line drawing of this S. African plant! A.A. Butcher and many others would also challenge the exclusion (on p. xv) of *Leptospermum scoparium* and *L. lanigerum*. AAB talks of five plants of the former at Abbey Hill, SV8930.1440, on 11 Oct. 2000 (**Herb. EJC**).

Three species are grossly misspelt in the Magazine on p. 25 (*loc. cit.*) – clearly Clement & Foster's (invaluable!) *Alien Plants of the British Isles* (1994) was not consulted! – correctly, they intended to record *Urospermum dalechampii* (a composite) and *Geranium canariense* Reuter (this is not a hybrid as they indicate, but it has, most regrettably, been very recently renamed as *G. reuteri*). Dr Chris Pogson solved the third one for me: '*Limonium sativum*' should be *L. sinuatum* – an odd error!

Finally, the continued existence of an unusual composite 'long naturalised' at Newmans Battery at the Garrison (St Mary's) is confirmed. It is listed in French *et al.*, *Flora of Cornwall* (1999) as *Ozothamnus antennaria* (from Tasmania) – a plant apparently not grown on Tresco, etc., – it is clearly not this species – a dense, evergreen shrub with leathery leaves, glossy-green above is how the *Hillier Manual of Trees and Shrubs* (2002) describes it. This taxon has never 'escaped' in Britain – it is very rare in cultivation and is totally unknown to me! (I need reference herbarium material).

The correct ID was published in *BSBI News* **78**: 58 (Apr. 1998) – but (nursery) men don't like the appellation *Plecostachys serpyllifolia* and normally sell it as *Helichrysum microphyllum* Hort. (or *H. microphylla*!) – e.g. Elm House Nursery (Wisbech, Cambs.); their catalogue accurately describes it as 'Small silver leaves. Lovely loose, trailing habit' – it much resembles a small-leaved *H. petiolare*. True *H. microphyllum* is also occasionally grown – it comes from the Mediterranean area, and is a much more erect plant, very close to *H. italicum* (Curry-plant).

Plecostachys (created only in 1981) is a tiny genus, with only two species, both from S. Africa – see *Opera botanica* **104**: 140– (1991) for a monograph. The generic description is conveniently available in Bremer's *Asteraceae* (Timber Press, 1994), p. 362, but to me it seems doubtfully accurate on some flower details. It reads 'central florets purple' (pink, I would judge!) and 'outer florets often yellow, female,

outnumbering the central florets' (these females must be very few and tiny on my voucher specimen, **Herb. EJC**, as my one (bad) eye sees none!). Help!

Help, too, please on references to any other recent publications on this real Mecca for alien plants. What recent articles have I missed? Does the 'www' really help? Bring back *Abstracts*! – a version, maybe much reduced in size, really is necessary to invigorate British Botany.

Juglans nigra established on the River Thames towpath (Surrey)

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

It is surprising how very few species have escaped from the Royal Botanic Gardens, Kew (Surrey, v.c. 17) onto the adjacent River Thames towpath, especially since its botanical origins date back to 1759. Some species have probably come (and gone) unrecorded.

One exceptionally interesting species, apparently new to Britain as a self-seeding colony, is *Juglans nigra* L. (Black Walnut), a native of eastern and central United States. It was first recorded at Kew by Ken Page, a great woody-plant enthusiast, whilst botanising with Mrs E. Norman in Sept. 1994, but was never formally published. He tells me that there were five self-sown saplings at TQ177.763, with the parent tree nearby in the Gardens, but separated by a very deep ha-ha. Presumably the vector, squirrels, have made use of a canopy-bridge high above the site, and they have buried their winter-food reserve (nuts), and then failed to refind them.

The colony has been rediscovered (!) several times since this date, once in 2004 by Dr T.A. Cope, B. Phillips and EJC. On this occasion we also explored (with permission) the private wild grounds around the parent tree – there were more saplings here. It was again seen on the joint BSBI & LHNS field meeting on 14 May 2006, when nine plants of very varied age were counted, one of which was flowering freely. Nearby, a solitary, small *J. regia* (Walnut) was also seen, differing markedly in its leaflet characteristics:

Lflets mostly 7-9, with almost entire margins
J. regia

Lflets mostly 11-23, with serrate margins
J. nigra

A convenient description appears in *Flora Europaea* **1**, ed. 2 :67 (1993), where it is not claimed as naturalised anywhere, but the situation is changing. E.g. see *Preslia* **74(2)**: 184 (2002) for several recent records in Czechoslovakia with a comment 'intensively escaping from cultivation in places, e.g. Ranšpurk nature reserve.'

Self-sowing of *J. nigra* may be overlooked elsewhere in Britain: I have heard of two other records that await confirmation. Alex Lockton reports that there is only one other record on the BSBI database – from Wivenhoe, TM03.22, N. Essex (v.c. 19). Although featured in many books, this large tree is not often encountered in cultivation, and is rarely met with planted in wild places.

Tasmanian Hitchikers

IAN MORGAN, *Y Berllan, 19 Tyrwaun, Pwll, Llanelli, Carmarthenshire SA15 4AY*

In early June 2005, I treated myself to a 6ft tree fern *Dicksonia antarctica*, bought from a well-known DIY store. I watered it daily, making sure that the trunk was well watered, as well as the large pot in which it was supplied. After a few weeks, I noticed what appeared to be young *Acacia* seedlings growing on the trunk; there must have been over a dozen or so. I then remembered that another smaller *Dicksonia* that I had bought two years previously also had an *Acacia* growing in the pot with which it was supplied. This latter *Acacia* was quite well grown (and had survived a couple of winters out-of-doors) and was big enough to supply a specimen to be sent off for determination. I had hitherto assumed, without really thinking about it, that this larger *Acacia* had originated as seed accidentally sown in the pot at the nursery or supplier from which it had come, but the frequent *Acacia* seedlings on the more recent tree fern purchase made me realise that these plants had originated from seed at their country of origin, which according to the import licence tags, was Tasmania, Australia.

Dr George Hutchinson of the National Museum and Gallery at Cardiff kindly promptly determined the *Acacia* as *Acacia* cf. *verniciflua* A. Cunn.

I also checked the trunk to see if any imported bryophytes were present, as a bryoflora of Carmarthenshire was then in the later stages of preparation. I did not see any bryophytes that seemed to be of interest, but I did notice some fern gametophytes near the base of the trunk. These I potted up and grew on in a pot covered by a plastic bag to retain moisture. Subsequently, small sporophytes appeared, and the glaucous-coloured fronds suggested something unusual. These were over-wintered in an unheated shed, which was probably prudent as early 2006 turned out to be colder than normal for this part of coastal South Wales (Llanelli).

Recently (June 2006), as I had three plants with several fronds of *c.*6 inches in length, and noticing that 'hare's-foot'-type rhizomes were developing, I arranged for one plant to be delivered to George Hutchinson again. With his usual efficiency, he showed the plant to Clive Jermy, who was visiting the museum. It was determined as *Histiopteris incisa* (Bat's-wing Fern), a relative of bracken, found in SE Asia, as well as South Africa and South America. George's subsequent checking of 'The Plant Finder' revealed only one current supplier for this fern. Interestingly, one book on pteridophytes said that it was occasionally imported on trunks of *Dicksonia* (though it did not say whether this was the gametophyte or adult fern).

It would be interesting to see whether the *Histiopteris* can overwinter (as the *Acacia verniciflua* was able to do, for two winters at least). Certainly, tree ferns (as well as other rather tender plants) can be left outside in my coastal garden.

I was pleased that I obtained not just the tree fern when I purchased the *Dicksonia*, but two others as well!

Thanks to George Hutchinson and Clive Jermy for the determinations.

Veronica filiformis (Slender Speedwell) decline or rise?

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In the January 2006 edition of *BSBI News* (**101**: 46) a note of mine was published on 'The rise and fall of *Veronica filiformis* (Slender Speedwell)' in Harrogate. This raised some interest and I receive communications from four members noting similar behaviour in Aberystwyth, Cardiff, Ely and the London borough of Havering. However in the recently published '*Change in the British Flora 1987–2004*' it shows that *Veronica filiformis* is still slightly increasing with a 'Change Factor' of +4.

In new areas *Veronica filiformis* grows vigorously and faster than the mown grass among which it grows so the *Veronica filiformis* rapidly over tops the grass and in May a 'blue haze' is seen above the grass. In Harrogate where I noticed the decline, small quantities of *Veronica filiformis* can still be found but growing much less vigorously and remaining hidden in the grass. So the increase is presumably because it continues to spread to new areas but where it was once prolific and has declined small quantities remain and can be found if searching seriously so it is still recorded as being present in the 1km square. Ideally, I suppose, we should all be recording abundance as well as presence for each kilometre square.

Reference:

BRAITHWAITE, M.E., ELLIS, R.W. & PRESTON, C.D. 2006. *Change in the British Flora 1987–2004* BSBI, London.

Bassia scoparia (Summer-cypress) and its viatical status

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Correspondents have drawn attention to the spread of this species on roadsides in S. England, especially Somerset and Hampshire (Leach & McDonnell, *BSBI News* **101**: 35-37; Rand, *BSBI News* **102**: 44-46; Cook, *BSBI News* **102**: 46). It is, however, more widespread than these observations would indicate.

Martin Rand notes its movement northwards along the M3 to Winchester, and raises the possibility that it may have progressed further. I can ratify this, since traffic delays on the M3 between Basingstoke and Camberley in 2005 gave me ample opportunity to become acquainted with its appearance along the centre reservation. With that in mind, and also the knowledge that Rodney Burton had seen plants on the M20 centre reservation near Maidstone in 2004, I carried out some sample surveys of Kentish main roads in October/November 2005.

The results (Kitchener, 2006) indicated that *Bassia scoparia* has already crept up on us unawares, as it were, and has a significant presence on Kentish roads. It may now be found along the A2 from Dartford Heath to beyond Gravesend (15km), in at least 8 1km squares. In most cases these are single plants or small groups, but there is a large population by the sliproad to the Bluewater shopping centre, lining the road continuously. It is also present on the M20 near Maidstone, at the Leybourne, Ayleford, Sandling and Detling junctions. From the Sandling junction it runs northwards along the A229 to Blue Bell Hill. From the Detling junction, where there is a population of several hundred plants, it runs north-east along the A249 to Detling Hill and then appears 9km further on, at the junction of the A249 with the M2. There are now 19 1km squares within which roadside *Bassia scoparia* has been recorded in 2004/05, in v.cc. 15 and 16.

While it is possible to survey by car at speed, with the precaution of disregarding abundant bushy *Atriplex littoralis* (which I recorded as common on the A2 as far back as 1982), this investigation was carried out on foot. Undoubtedly this enabled identification of occasional plants which would not have been conspicuous enough otherwise. On the other hand, survey on foot will have under-recorded as regards those areas that could only be accessed with binoculars – motorways and the A2 centre reservation. The plant's colonization abilities reflect studies by Stepphun & Wall (1993) which show germination as occurring in severely saline conditions, particularly when well watered. The highway habitats provide both that salinity, which otherwise limits competition, and water, through vehicle spray and highway drainage.

As regards the tumbleweed characteristic of *Bassia*, it is sometimes described as being uprooted by wind, but the dead plants will readily snap off at ground level, leaving the base and roots behind, as can by verified by walking through a group of them.

References

KITCHENER, G.D. 2006. *Bassia scoparia* (L.) Voss. *Bulletin of the Kent Field Club* **51**: 81-84.

STEPPHUN, H. & WALL, K. 1993. *Kochia scoparia* emergence from saline soil under various water regimes. *J. Range Manage.* (Nov. 1993) 46533-53.

Senecio inaequidens, the numbers

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I wrote in the previous *BSBI News* (April 2006) about the spread of *Senecio inaequidens* (Narrow-leaved Ragwort) across Europe. I gave little proof for a UK invasion, but now I have gathered some evidence to back up my assertion. Having written to the recorders in the vice-counties where *S. inaequidens* has been recorded, I have made estimates of the numbers of sites and plants in the UK.

Single plants crop up by roadsides and in pavement cracks, these plants often disappear after a year or two. However, in several places large populations have established, particularly on demolition sites. These established populations are often in port towns such as Plymouth, Southampton and Felixstowe. By far the largest numbers of sites are in eastern London, particularly in the vice-counties of West Kent (v.c. 16) and South Essex (v.c. 18). From this distribution of sites, I suspect that multiple introductions have occurred, probably hitchhiking on vehicles crossing the channel.

Since 2000, *S. inaequidens* has been found at 60 sites, mainly in the south of England. This compares to 35 sites between 1987 and 1999 and 15 sites before 1987. Despite the rather rough estimates of population sizes given by recorders, I have made guesses at the numbers of plants in Britain. The current population is, at very least, 300 plants, but more likely about 1500 plants. If there are still unfound sites, then these would add to the numbers.

The turn of the millennium has shown a marked change in fortunes for British *S. inaequidens*. Overall, its numbers are still small, but the rate of population growth is impressive. *S. inaequidens* is not the most odious of alien species, but it can be a weed of agriculture and will invade some natural habitats. If we want to stop its spread, it might still be possible. However, it seems likely that another *Senecio* is coming to a town near you.

Many thanks to all those people who responded to my request for information.

A possible hybrid of *Senecio inaequidens* in S.W. Yorkshire (v.c. 63)

ERIC CHICKEN, *Corner House, Scarborough Road, Driffield, YO25 5EH*

The recent article about the spread of *Senecio inaequidens* by Quentin Groom prompts this note. I first became aware of this Ragwort in July 1991 when it was sent to me for identification from the Bradford area by Mr D.N. Lightowler. There was some confusion at that time about the correct name and I collected a specimen and sent it to Mr C. Jeffrey at the Herbarium, RBG Kew , and he confirmed it and provided other information.

On 7 July 2004, I was on a bus trip party (not botanical) to the West Riding which included a visit to an old mill at Elland (SE11.22), now used for selling reclaimed or salvaged goods. In the yard of the building there was much *S. squalidus* and a single plant of a *Senecio* that I took to be a hybrid between this and *S. inaequidens*. It was at least 90% sterile and had leaves which I show herewith (fig. 1).

Unfortunately I had no means of taking a reasonable specimen, not even a pocket diary. It was only much later that I realised I could not find a reference to any such hybrid. This year I informed the v.c. Recorders, Mr Wilmore for v.c. 63 and Mrs Abbott for v.c. 64, so that others could be on the lookout for the hybrid. There are many reasons for sterility, but it is difficult to account for the leaf shape. Clearly one cannot claim a new taxon without a specimen, so perhaps I have missed a good opportunity.

Reference

GROOM, Q. 2006. The invasion of *Senecio inaequidens* (Narrow-leaved Ragwort). *BSBI News* **102**: 48. (Photo inside front cover).

NOTICES BSBI

BSBI Science and Research Grants Awarded 2006

DR PETE HOLLINGSWORTH, *Royal Botanic Garden Edinburgh, Inverleith Row, Edinburgh, EH3 5LR*

In the 2006 grants round, a total of 16 grant applications were received of which eight were selected for funding by the Science and Research Committee assessment panel, at a total cost of £5011. The grants funded were:

Pamela Biss: Causes and consequences of genetic variation in *Anthoxanthum odoratum* at Park Grass

Richard Ennos: Mating system analysis in hybridising species of *Geum*

Paul Green: Distribution of ×*Festulpia hubbardii* in Ireland

John Hopkins: Keen of Hamar Botanical Expedition 2006 – Rare plant and vegetation monitoring

Deborah Kohn: Is the British bluebell, *Hyacinthoides non-scripta* threatened by Spanish and hybrid bluebells?

John Poland: A vegetative key to the British Flora

Maria Scholten: Taxonomy and occurrence of *Avena strigosa* Schreb. on the Scottish Islands

Christopher Thorogood: Speciation in *Orobanche* via host specificity and inbreeding

The closing date for the next round of applications is 6th February 2007, and BSBI members are encouraged to consider submitting grant proposals. Further details of the scheme and an application form are available from the BSBI web-pages: http://www.bsbi.org.uk/html/grants.html. For members without access to the web, details of the scheme can be found in the *BSBI Year Book* or *BSBI News* (**101**: 73-74), and application forms can be obtained from Pete Hollingsworth, *Royal Botanic Garden Edinburgh, Inverleith Row, Edinburgh, EH3 5LR*

Excursion to the Sierra de Grazalema, Andalucía – April 2007

TERESA FARINO, *Apartado de Correos 59, 39570 Potes, Cantabria, Spain*; tel.: 00 34 942 735154; teresa@iberianwildlife.com

A one-week field trip to southwest Spain is proposed for 2007, from Friday 20 April to Friday 27 April, to explore the highly scenic limestone mountains and Mediterranean forests of the Grazalema Natural Park (also the first Biosphere Reserve to be declared in Spain, in 1977).

The flora of Grazalema is superb, especially in spring. Of the 1400 taxa recorded, about 10% are Afro-Iberian endemics, (for example, *Biscutella frutescens*, *Viola demetria*, *Saxifraga globulifera*, *Anthericum baeticum* and *Ornithogalum reverchonii*), many more are restricted to southern Iberia (such as *Paeonia broteri*, *Echium albicans* and *Centaurea clementei*), and a dozen or so are unique to the immediate area, including *Saxifraga bourgeana*, *S. haenseleri*, *Omphalodes commutata* and *Linaria platycalyx*. Many species of orchid can be found here at this time of year, as well as *Narcissus assoanus* subsp. *praelongus*, *Scilla peruviana* and *Iris xiphium*. A longer trek will enable us to visit the relict *Abies pinsapo* (Spanish Fir) forests, of which only 1200ha remain in Spain. Notable vertebrates include Spanish Ibex, one of the largest concentrations of Griffon Vultures in Spain, Bonelli's Eagle, Black Wheatear, Blue Rock Thrush, Woodchat Shrike, Bee-eater, Spanish Psammodromus and Stripeless Tree Frog, all of which are usually seen during our spring trips to this area. We shall also visit the Lagunas de Espera, for White-headed Duck, Red-crested Pochard, Purple Gallinule and Crested Coot, plus a fine selection of arable weeds.

We will be staying in the family-run Casa de Las Piedras in the whitewashed mountain village of Grazalema itself, with all facilities en suite. The cost will be £700 per person, plus a single-room supplement of £95, 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 and travel insurance (obligatory). Participants must be fit for mountain walking.

An early indication of your interest is necessary in order to secure the appropriate accommodation, preferably before October 2006.

For further details, please contact Teresa at the above address.

NOTICES (OTHER)

The Botanical Research Fund

DR MARK CARINE, *Department of Botany, The Natural History Museum, Cromwell Road, London SW7 5BD.* m.carine@nhm.ac.uk

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.

The next deadline for applications is January 31st, 2007.

Further details may be obtained from Mark Carine at the address above marked 'Botanical Research Fund'.

Plant Biographies

SUE ELAND, *Apple Tree Cottage, Chapel Lane, Penselwood, Wincanton, Somerset, BA9 8LY*

Plant Biographies, an ongoing project, is now available on the internet at www.plantlives. com for a modest annual subscription. It offers descriptions of the history and usage of over 3000 species of plants from all over the world together with other information such as botanical synonyms, common names in many languages, and meanings of plant names.

A reduced subscription to *Plant Biographies* on the web of £10 (normally £15) is offered to Members for the first year (reverting to the standard individual subscription for the website thereafter) provided the subscription is taken out before 1st April 2007.

BSBI Members wishing to take advantage of this should:

1 register **ONLY** on the website, preceding their username with the letters BSBI and;
2 at the same time send a cheque for £10 to Sue Eland at her address above, together with advice of the username chosen (upon receipt of which full access to the website will be arranged immediately);
3 then at the end of the year's subscription renew it by re-Registering (without use of the prefix BSBI) and subscribing in the 'normal' way as explained on the website.

[Editors note: The site is well worth a visit and you can view, for free, a sample database to get a flavour of what it is about. BUT BEWARE, you may, like me (RGE), become hooked, and spend more time than you ought to surfing this most interesting and exciting site.]

Mary Briggs Fund

HENRI BROCKLEBANK, *Sussex Biodiversity Record Centre, Woods Mill, Henfield, West Sussex, BN5 9SD*

Mary Briggs, known to most BSBI members, is the author of several publications about the botany of Sussex. The majority of these have been specifically targeted at Botanists, but her latest publication *Sussex Wild Flowers* was aimed at the non-botanical community.

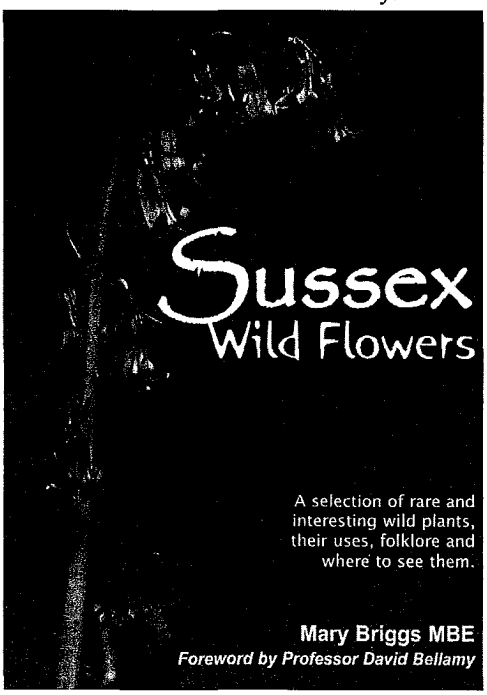

Photo Simon Colme © 2003

With a vibrant collaboration between Mary, local plant photographers, Sussex Wildlife Trust and the Sussex Biodiversity Record Centre, Mary wrote the text for what was to be a sell-out publication. 3,000 copies of what is described by David Bellamy in the foreword as 'a superb little book' were sold locally through a distributor and local contacts. Good fortune really did shine on this book as the printers, Gemini Press, based in Shoreham-by-Sea in West Sussex had kindly printed the whole print-run for the cost of the paper alone. As everyone involved had contributed their time, enthusiasm and expertise for free, all the proceeds of the book would be available.

Mary decided that she would like to see the proceeds of the book (over £10,000) really contribute to Sussex Wild Flowers. Therefore £8,000 has gone towards the printing costs of the forthcoming *New Flora of Sussex*. The remaining funds have gone to a 'slush fund' held by the Sussex Biodiversity Record Centre that will contribute towards the costs of publication of books and papers on Sussex Bioidversity. This was done on the understanding that not all species groups have the level of support and interest as Wild Flowers.

After some convincing Mary relented and has allowed this fund to be called the *Mary Briggs Fund*. It is named after Mary in recognition of the unparalleled contribution that she has made to Sussex Botany over the past 50 years! We hope that the fund will help enthuse many people in Sussex Biodiversity as more papers and publications on a range of subjects become available.

Mary Briggs. Photo © Arthur Hollman

Islands of Hope

YOLANDE HESLOP-HARRISON, *Old Post, Hatfield, Nr Leominster, Herefordshire, HR6 OSF*

Television naturalist and environmental campaigner, Professor David Bellamy, OBE, was the keynote speaker and gave a brilliant opening address at the national conference held in Ludlow organised by Caring for God's Acre (CFGA) to an enthusiastic audience. The title of this note is how he described many of our churchyards, which have become refuges for much of our vanishing native flora and fauna.

This was the start of an action-packed two days for some 100 delegates and interested parties who came to hear how churchyards, apart from being havens for the conservation of wildlife, offer a tremendous potentiality for learning about many other aspects of the earth's history.

The delegates and many well-known leading experts came from all over England and Wales, and a full report of the conference will be published later. Sue Cooper, management Officer of CFGA and her band of willing contributors and helpers are to be congratulated on how well the conference was organised. During an evening dinner, Francesca Greenoak, well known author of the book *God's Acre*, spoke to an appreciative audience. The Revd Nick Read, Chairman of the Trustees of CFGA, was a masterful co-ordinator.

As Sue says: 'The churchyard represents a multi-faceted resource to the community as a whole' embracing archaeology, our own history and culture, genealogy, as well as bio-diversity.

One morning was devoted to a series of tutorials and workshops, at which speakers gave talks based on their own expertise, answered questions and led discussions. These ranged from details of the plant life (including wild flowers, grasses, trees – notably ancient yews – lichens, mosses and fungi), associated animals, and the non-living.

Professor Eric Robinson, President of the Geologists' Association, was keen to show that the whole gamut of native wildlife to be found in churchyards was based on what lay beneath and in or on its turf and soil layers. Other speakers detailed the relationships between the character of the stonework (friability, and effects of weathering, pH) and aspect (degree of shading, north and south facing) and the associated lichens.

Exhibits and conducted tours of some churchyards in the vicinity were included in the agenda – all again highlighting the diversity of what is involved in 'cherishing churchyards', the theme of the conference.

Aspects of the rules and regulations governing churchyards and burial grounds in relation to law formed an important tutorial, and the final afternoon was devoted to a symposium arising from each workshop, and a general discussion on a proposal to initiate a national network on churchyard care.

The challenges that exist for churchyard management to strike a balance between human and wildlife interests are immense. They involve the whole community – local people, specialists of various sorts, those seeking records of their ancestry, passers-by. Perhaps churchyards are visited by a greater diversity of people than any other public space.

The Revd Nigel Cooper (Chaplain to the Cambridge Campus and Advisor on churchyard conservation in Ely), spoke of the mission of churchyards – 'a theology of conservation'. Some aspects of churchyard management lie deep and, indeed, become a mission for many – or even a passion!

Go Native!

Awards across Britain for wildflower meadows, grassland, woods, reedbeds and heathland

WENDY TOBITT, *Flora locale, Denford Manor, Hungerford, Berks. RG17 0UN*

Six exciting, innovative and ecologically-diverse projects from Cornwall to Newcastle are the winners of the national Flora locale Go Native! Planting for Biodiversity Awards.

The national Go Native! Planting for Biodiversity Awards run by Flora locale and the Institute of Ecology and Environmental Management (IEEM) were announced on 16 May. Flora locale is the charity that promotes the wise use and supply of native flora. The awards were made to projects that promoted good practice in habitat creation and restoration, and used source-identified planting stock of appropriate origin for conservation planting and restoration projects in the countryside and urban areas. Details of the winners and all the finalist projects are on www.floralocale.org

REQUESTS

Europe's trees: natives, exotics and climate change

REBECCA LEDGER, *Department of Biology, Area 18, The University of York, Heslington, York, YO10 5YW*

As climate changes, conditions at any given site might become either more or less suitable for the species found there. Mobile organisms may respond to such changes through migration. The responses of tree species might be observed as changes in growth rate, or regeneration patterns. Many important questions arise. For example, is there evidence that tree species in Europe are responding to the effects of climate change? How do such responses differ between exotic and native species, or species from different vegetation zones?

I hope to address such questions by investigating patterns of tree regeneration. As part of my PhD research, I am conducting a survey on the regeneration success of both native and exotic tree species across Europe. Focal species have been chosen to represent the broad vegetation zones currently found in Europe. The aim is to collect simple information about regeneration of these species from a large number of locations.

I would like to invite BSBI members to participate by providing data from British locations. These locations can be any convenient site, e.g. park, garden, local woodland. I will provide survey forms; the recorder fills in the forms to describe the regeneration success of those species that are relevant to their particular site. Eventually I hope to produce a database that will be of use to other researchers in the field, and that will complement existing distribution maps and atlases.

How to get the survey forms:

- Email me: rjl501@york.ac.uk
- Download the forms. Go to: http://www-users.york.ac.uk/~rjl501 (4 documents are needed; these are titled 'Cover letter' 'Instructions' 'Site details' and 'Tree Regeneration Survey Sheets').
- Contact me by post: Department of Biology, Area 18, The University of York, Heslington, York, YO10 5YW.

Deadline for returns: ideally by January 2007; July 2007 at the latest.

Senecio viscosus

MICHAEL WILCOX, *32 Shawbridge St, Clitheroe, BB7 1LZ, Lancs, UK*

In order to carry out a study in relation to *Senecio viscosus* (Sticky Groundsel), the seeds (achenes) are required. However, achenes are sought from three areas/localities.

Initially, collection will be of general *S. viscosus* from any population: 1-2 seed heads per plant, each separately labelled, though it can be 1-5 plants from a population and these would be from UK, (England, Wales, Scotland, Ireland).

Secondly, in a paper by Akeroyd *et al.*, (1978) dwarf variants from shingle were studied. The grid references are repeated here and it is hoped that anyone living close to or visiting the area (or from shingle anywhere else) could collect from any of these populations. The areas are; Suffolk, between Thorpeness and Aldeburgh, TM468.580; Suffolk, TM366.424; Sussex, Pagham Harbour, SZ875.954; and Surrey, Esher Station TQ147.658.

The third area is the most difficult. Achenes are sought from Europe. If anyone is going to Europe, lives there, or has any contacts there, I would be grateful for any material throughout the range. Collecting is simple, I use a ¼ piece of A4 for each collection folded into the style of a little envelope and then the mature head with achenes is twirled into the envelope thus separating the seeds with their pappus from the receptacle, the packet is labelled appropriately.

The project depends on getting material from Europe so any suggestions are welcome. Postage refunded if required. Contact the author if you need any further information.

Reference

AKEROYD, J.R., WARWICK, S.I. & BRIGGS, D. 1978. Variations in four populations of Senecio viscosus L. as revealed by a cultivation experiment. New Phytologist 81: 391-400.

Documenting Herbarium Specimens from Home – Can You Help?

LEANDER WOLSTENHOLME & TOM HUMPHREY, *The Manchester Museum, Oxford Road, Manchester M13 9PL*

The UK has the world's largest and oldest collections of herbarium specimens held in trust by museums and universities. As a record of plant biodiversity this resource is unparalleled and could be vital for future studies of taxonomy, ecology, conservation and genetic biodiversity.

Documenting large herbarium collections is an extremely labour-intensive task and most museum collections are woefully under-funded. Consequently, most of the specimens are undocumented and unavailable because adequate resources and time to properly record the collections have never been available. This is a terrible waste.

The Botanical Collection Managers Group (who represent herbaria for UK and Ireland) are experimenting with an idea to try and get herbarium collections documented by inviting people at home to use their own computers to enter the data from labels on digital images of specimens posted onto a website.

With the support and expertise of 'virtual volunteers' we think can realistically document the entire herbarium collections of even major institutions. For example, if 100 people agree to document 10 specimens per week. That works out at 1000 per week, 52,000 per year!

To see if the scheme will actually work, we have launched a pilot project. We have approximately 1800 images of British and Irish hybrids from the herbarium at The Manchester Museum on a website and we would be very grateful if as many people as possible would have a go at documenting specimens on-line.

This project is open to everyone. You do not need any particular botanical knowledge or experience to take part.

The website address is www.herbariaunited.org/atHome/. Have a go and good luck!

REPORT OF OVERSEAS FIELD MEETING – 2006

Western Portugal, 19th to 26th March

TERESA FARINO and various members of the group

Fourteen members escaped the British winter and flew to Lisbon for a week to explore western Portugal. Although the weather let us down on occasion, we explored a series of interesting habitats, from limestone rock-gardens to Atlantic sand-dunes, and from salt-marsh to Cork Oak *montados*, encountering a wide range of southern European spring flowers in the process.

19 March – Samouco and Sapal das Hortas

The group was met by Teresa Farino and John Muddeman at Lisbon airport and was quickly transported over the impressive Vasco da Gama suspension bridge (built for Expo '98) across the River Tejo, to arrive (albeit via a rather tortuous route) at the Samouco beach on the south side of the estuary. Whilst enjoying a late lunch, we were able to observe Greater Flamingo, Cattle Egret, Dunlin, Ringed Plover and Sandwich Tern, after which we wandered slowly along the shoreline in search of colonising psammophiles.

We were able to recognise British species such as *Cakile maritima* (Sea Rocket), *Lupinus angustifolius* (Narrow-leaved Lupin), *Echium plantagineum* (Purple Viper's-bugloss, extremely rare in the UK) and *Anisantha diandra* (Great Brome), growing together with quite a few not found in Britain: *Malcolmia littorea* (Sand Stock), *Emex spinosa* (Emex), the beautiful, deep-blue Iberian endemic *Anchusa calcarea*, a large-flowered yellow toadflax *Linaria spartea*, *Arctotheca calendula* (Plain Treasureflower, a yellow composite native to South Africa), and the distinctive grass *Cutandia maritima.*

We then drove a few kilometres to the east, through the town of Alcochete, to the saltmarsh and wet pastures behind the shore at Sapal das Hortas. The distinctive crowns of *Pinus pinea* (Stone or Umbrella Pine) topped a nearby ridge, while the marshy areas were home to *Atriplex halimus* (Shrubby Orache), a fine-leaved sea-lavender *Limonium ferulaceum*, the wormwood *Artemisia caerulescens* and *Triglochin bulbosa* (Bulbous Arrow-grass). Sandy areas nearby supported *Crassula tillaea* (Mossy Stonecrop), *Lathyrus ochrus* (Winged Vetchling), *Cotula coronopifolia* (Buttonweed: another South African invader), *Gynandriris sisyrinchium*

(Barbary Nut) and the first of many drifts of *Leucojum trichophyllum* (Three-leaved Snowflake), as well as a couple of species which are rather scarce in the UK: *Hypochaeris glabra* (Smooth Cat's-ear) and *Poa infirma* (Early Meadow-grass). Trying to photograph the plants meant instantly wet knees: a fairly common event during the week!

The final stop before driving to our hotel on Cabo Espichel was by the main road overlooking some abandoned *salinas*. Here we scanned for the Glossy Ibis which are often to be seen here, but found only vociferous Black-winged Stilts, with a solitary Black-winged Kite hovering over the adjacent fields.

20 March – Altiplano de Azóia

Having arrived under the cloak of darkness the previous evening, we awoke to find that the hotel was situated on the crest of a bleak, windswept promontory. The good news was that the bedrock was limestone and setting off on foot, walking south towards the coast, we soon came upon what would prove to be the first of a whole plethora of orchid species. *Barlia robertiana* (Giant Orchid) lived up to its English name with respect to stature, but even at this early stage of the season was beginning to go over. As we traversed the limestone pavement more orchids were observed. *Aceras anthropophorum* (Man Orchid), a few *Ophrys speculum* (Mirror Ophrys) and the muted hues of the diminutive *Ophrys bombyliflora* (Bumble-bee Ophrys) were scattered here and there amidst sheets of bright pink *Orchis italica* (Naked Man Orchid), but most notable were the several plants of *Ophrys fusca* subsp. *dyris*, which is not mentioned as occurring in the area in the local flora.

It is always a great privilege to discover species that are rare in Britain growing in profusion in another country. *Ophioglossum lusitanicum* (Least Adder's-tongue) was, however, not one such species, since only one small colony was found, but *Poa bulbosa* (Bulbous Meadow-grass) did occur in quantity. More orchids also made an appearance here, including *Ophrys scolopax* (Woodcock Ophrys) and *Orchis papilionacea* (Pink Butterfly Orchid), along with a few *Narcissus bulbocodium* subsp. *obesus* (Hoop-petticoat Daffodils), a one-leaved squill *Scilla monophyllos* and the Star-of-Bethlehem *Ornithogalum orthophyllum*. And all this to a background of bird-song supplied courtesy of Dartford and Sardinian Warblers and Corn Buntings.

As we descended towards the sea, we were soon chest-high in dense *maquis*, fortunately well served by narrow pathways, where the vivid yellow colour of the Portuguese endemic gorse *Ulex densus* gave us the impression that it was the height of summer. A pause for lunch was punctuated by several trips by various members of the party to a small limestone outcrop just above us, where we located abundant *Cheilanthes acrostica* and Priscilla found *Cosentinia vellea* (Scaly Cheilanthes).

At last we reached the edge of the coastal cliffs, where our target species – duly located – was *Euphorbia pedroi*, endemic to the Espichel promontory, and unusual for the European mainland in that it is a tree-spurge. In the limestone outcrops in the same area we found *Cerinthe gymnandra*, the Afro-Iberian endemic shrub *Withania frutescens*, *Ornithogalum concinnum*, *Dipcadi serotinum* (Dipcadi), *Muscari neglectum* (Grape-hyacinth) and drifts of the delightful *Tulipa sylvestris* subsp. *australis* (Wild Tulip).

Heading back towards the hotel there were yet still more orchid species to be found. *Orchis conica* (Conical Orchid) was in short supply, but *Ophrys tenthredinifera* (Sawfly Ophrys), *O. lutea* (Yellow Ophrys) and *O. fusca* subsp. *bilunulata* (Dull Ophrys) were all fairly commonplace. We also came across a few *Arisarum vulgare* subsp. *simorrhinum* (Friar's-cowl) still in flower.

Late afternoon found the party driving westwards towards Cabo Espichel. The first stop was Lagosteiros Bay, where 150 million years ago a herd of dinosaurs left their foot prints on the beach, now preserved in the uplifted and tilted Jurassic limestone. We then visited the sanctuary of Nossa Senhora do Cabo (Our Lady of the Cape), on the very tip of the promontory where, despite the approaching sunset, a few of us attempted to photograph the almost-black flowers of *Nonea vesicaria*, growing here with *Muscari comosum* (Tassel Hyacinth).

21 March – Península de Tróia

The Sado Estuary is cut off from the open sea by the long sand spit of the Tróia Peninsula, developed only at the northern tip. A transect across the sandspit takes one from the open sea, through primary dunes, stabilised and fossil dunes through to the brackish areas adjacent to the enclosed estuary. Its fame is such that it was being visited by two parties of British botanists on the same day, as we coincided with a group of Cambridge undergraduates led by Oliver Rackham!

We took the car ferry from the old town of Setúbal across to Tróia and no sooner had we

parked in the botanical reserve in the centre of the spit than we were examining considerable numbers of an as yet unidentified (by us) bush cricket on the *Santolina impressa* (a Portuguese endemic). Another botanical treasure observed by the roadside was the small but delightful *Jonopsidium acaule* – dense pincushions of a pale pink crucifer with spoon-shaped yellow green leaves – which is unique to the coast of southern Portugal as a wild plant, although widely cultivated in Europe (Colour Section Plate 3).

Our overall impression of the flora of the dunes was of abundant pink, yellow and blue, set against a background of grey green shrubs and an occasional stunted *Pinus pinea*. The pink was predominantly *Silene littorea* and tall spikes of *Antirrhinum majus* subsp *linkianum*, and the yellow pertained to *Senecio gallicus* and two shrubby species of *Halimium* – *H. calycinum* and *H. halimifolium* – while the scene was further enlivened by the deep blues of the attractive *Anagallis monelli* (Shrubby Pimpernel), *Anchusa undulata* (Undulate Anchusa) and *Lithodora diffusa* subsp. *lusitanica* (Scrambling Gromwell). Several Thekla larks were singing over the low scrub, butterflies seen included Swallowtail, Cleopatra and Small Copper, and we also encountered many individuals of the beautifully marked, day-flying noctuid moth known as *Cerocala scapulosa*.

The many species of shrubs included *Juniperus oxycedrus* (Phoenician Juniper), *Cistus salviifolius* (Sage-leaved Cistus), *Ulex australis* subsp. *welwitschianus*, *Lavandula stoechas* subsp. *luisieri* and *Armeria pungens* (Spiny Thrift), as well as the unusual *Corema album* (Empetraceae), which is confined to the coasts of western Iberia and North Africa. Growing in the protection of these shrubs were some early flowers of *Fritillaria lusitanica*, and we also found *Cytinus hypocistis* here: a member of the Rafflesiaceae, parasitic on the roots of *Cistus* species.

Nearer the sea, the results of convergent evolution made us look closely at the prostrate, grey-leaved and yellow flowered legumes so that we could distinguish between *Medicago marina* (Sea Medick) and *Lotus creticus* (Southern Birdsfoot-trefoil). Also adapted to this unstable habitat were *Honckenya peploides* (Sea Sandwort), *Polygonum maritimum* (Sea Knotgrass – extremely rare in the UK) (Colour Section Plate 3), *Eryngium maritimum* (Sea-holly), the fleshy leaved *Thymus carnosus* (an Iberian endemic thyme), *Crucianella maritima* (Coastal Crucianella), the British rarity *Otanthus maritimus* (Cottonweed), *Pancratium maritimum* (Sea Daffodil), the distinctive *Cyperus capitatus* and carpets of *Corynephorus canescens* (Grey Hair-grass). Our lunch stop overlooking the estuary to the east enabled us to observe the extra large flowers of *Dianthus broteri* (Colour Section Plate 3) and to find *Sesamoides spathulifolia*: a handsome, brown flowered relative of *Reseda*.

The Tróia sand spit has long been settled by man but the extensive Roman ruins of Cetóbriga were 'closed for restoration', as they have been for the last four years! Nearby, and close to the tidal inlet of Caldeira de Tróia, the fossil dunes were clothed with *Pinus pinea*, with an understorey of shrubs that included *Stauracanthus genistoides*, *Retama monosperma* (White Broom) and *Osyris lanceolata*. Down among the low brackish vegetation, some of us were delighted to find the emerging spikes of *Cistanche phelypaea* subsp *phelypaea* (Cistanche), while others were rewarded with a superb Striped Hawk-moth: both fitting endings to a very enjoyable day.

22 March – Moinho de Baixo and Quinta da Serra

While Malcolm went to Lisbon in search of a replacement camera body, the rest of us explored the Atlantic dune system north of Moinho de Baixo. The vegetation was superficially similar to that of previously visited coastal sands, with abundant *Malcolmia littorea*, *Silene littorea*, *Lotus creticus* and *Medicago marina*, but the greater westerly exposure also suited familiar species such as *Calystegia soldanella* (Sea Bindweed) and *Ammophila arenaria* (Marram). Also prominent were *Armeria pungens*, *Anchusa undulata* (its sinuate leaves clearly distinguishing it from *A. calcarea*), *Thymus carnosus*, *Helichrysum italicum* subsp. *serotinum*, and *Artemisia campestris* subsp. *maritima* (Sea Wormwood). We also found good quantities of *Polycarpon alsinifolium*, while the striking yellow *Linaria* with glaucous leaves and brownish-purple stripes on the spur was subsequently identified as *L. lamarckii*.

Reedbeds in a low-lying area signalled an abrupt change in the flora, with *Hypericum undulatum* (Wavy St John's-wort), *Hydrocotyle vulgaris* (Marsh Pennywort), *Carex riparia* (Greater Pond-sedge) and *Cladium mariscus* (Great Fen-sedge) complementing the *Phragmites australis*, with young fiddleheads of *Thelypteris palustris* (Marsh Fern) confirming the presence of a permanent sub-surface drainage system. A further visit next morning

confirmed that an *Equisetum*, much battered by the winter, was indeed *E. ramosissimum* (Branched Horsetail).

The dunes here, long since stabilised by shelter-belts of *Pinus pinea* and *P. pinaster* (Maritime Pine), are now succumbing to invasions of *Carpobrotus edulis* and *Acacia longifolia*, which elsewhere in Portugal have become a serious threat to coastal vegetation. Here these pinewoods were populated by *Muscari comosum*, *Ornithopus sativus* (Serradella), *O. compressus* (Yellow Serradella) and glowing sheets of the Afro-Iberian endemics *Scilla monophyllos* and *Leucojum trichophyllum*, plus a polypody that – like all the other plants seen – was later confirmed as *Polypodium cambricum* (Southern Polypody).

Lunch was taken by the Lagoa de Albufeira: a brackish lagoon separated from the sea by a narrow sand-bar. We then celebrated Malcolm's return (mission accomplished and camera operational again) with a conducted tour of Portugal's oldest winery – José Maria da Fonseca – whose attractive courtyard gardens in Sesimbra hosted native *Adiantum capillus-veneris* (Maidenhair Fern), as well as the planted alien *Nephrolepis exaltata* (Boston Fern).

The final site of the day was Quinta da Serra, a more acidic area on the landward side of the Serra da Arrábida. Under a canopy of *Quercus faginea* subsp. *broteri* (the endemic subspecies of Lusitanian oak) and *Erica arborea* (Tree Heath), the poorly-draining soil favoured *Selaginella dentata* (Mediterranean Selaginella), *Asplenium onopteris* (Irish Spleenwort) (but not, it seems, *A. adiantum-nigrum* (Black Spleenwort), as we first thought), a plant of *Anogramma leptophylla* (Jersey Fern) fully 18cm tall, *Juncus capitatus* (Dwarf Rush), *Schoenus nigricans* (Black Bog-rush), *Carex panicea* (Carnation Sedge) and other plants of wet places, including the sprawling *Hypericum tomentosum*.

On drier banks we found *Briza minor* (Lesser Quaking-grass) and a small but delightful colony of *Simethis planifolia* (Kerry Lily). Good quantities of *Aristolochia paucinervis* put Teresa on the *qui vive* for the Spanish Festoon butterfly, whose larval food plant is birthwort, and sure enough a pristine, just-emerged specimen was found and duly photographed before it took its first flight. A small stand of *Orchis papilionacea* was just coming into flower, while on sandstone outcrops *Narcissus bulbocodium* subsp. *obesus*, *Tulipa sylvestris* subsp. *australis* and a few plants of *Scilla verna* (Spring Squill) were at their best (Colour Section, Plate 3). We also found a couple of rather tired *Romulea bulbocodium*, Lynne collected leaves of *Hyacinthoides hispanica* (Spanish Bluebell) for DNA analysis at Kew and we walked back to the vehicles in the shade of *Fraxinus angustifolia* (Narrow-leaved Ash) and *Viburnum tinus* (Laurustinus).

23 March – Pinheiro

Our visit to the area near Pinheiro was the furthest east we were to explore during our stay in Portugal, taking us into the *Quercus suber* (Cork Oak) *montados* (wood–pasture) bordering the 5,000-hectare privately owned estate of Herdade do Pinheiro. Once they are at least 25 years old, *Quercus suber* trees are stripped of the outer bark in early summer every 9 years, the cork still being used not only in the wine industry but in countless other ways ranging from footwear to tiles. As the oaks in a *montado* are not all of the same age, the thickness of the cork varies and therefore not all are harvested in the same year. Hence we noticed that each tree had a number painted on the trunk to indicate the year of the last 'strip'.

Here, the large, old evergreen trees formed a canopy over a light understorey consisting of *Cistus salviifolius* and *C. psilosepalus* with *Halimium lasianthum* and *Phillyrea latifolia*; after a little diligent searching, we also found the vividly purple spikes of *Limodorum abortivum* (Violet Limodore). In the glades between the trees were scattered the bright blue *Scilla monophyllos* and the golden *Anemone palmata* (Palmate Anemone). Close by was a good stand of tall *Pinus pinea*, with large, heavy cones containing the edible pine kernels, and next to them an area of lower scrub where we had our first sighting of Iberian Azure-winged Magpies (*Cyanopica cooki*) swooping between the bushes.

Adjacent to the oaks and pines was a seasonally wet area with many small pools in the depressions where we recorded some familiar plants such as *Isolepis setacea* (Bristle Club-rush), *Ranunculus sceleratus* (Celery-leaved Buttercup) and *Lycopus europaeus* (Gypsywort), as well as Lythrum hyssopifolia (Grass-poly; extremely rare in the UK), with *Juncus effusus* (Soft-rush) and *Typha domingensis* at the edges of the pools. Huge tussocks of *Carex paniculata* (Greater Tussock-sedge) with even larger stands of *Arundo donax* (Giant Reed) formed a backdrop to the area, which was also rich in bird life. A Marsh Harrier hunted above us as we listened to the calls of the Iberian Chiffchaff, Siskin, Bullfinch and Chaffinch. A

glistening Iberian Water Frog was spotted at the edge of a pool bordered by a bright green sward of *Vulpia bromoides* (Squirreltail Fescue).

As we ate our lunch under the tree canopy the first raindrops began to fall, which curtailed our exploration of this fascinating area, so we made our way back westwards, driving past rice-fields and spotting the White Storks' nests perched high on chimneys and pylons. We were consoled by a visit to the Information Centre for the Arrábida Natural Park (run by the Instituto da Conservação da Natureza) in Setúbal, where we found excellent books, information and post-cards.

The cloud cover was now very dense so that a brief stop in thick fog on the ridge-top of the Serra da Arrábida – an area severely burnt in 2005, and this year teeming with vigorous clumps of *Arabis sadina*, endemic to this part of Portugal – could only whet our appetite for another, drier visit. We then repaired to the workshop of a small tile producer near Sesimbra to have tea and to learn a little more about the *azulejos*. These tiles decorate the façade of many of the older buildings in Portugal and are often used in the interiors as wall panelling. In this workshop the traditional designs were still being used and we were given a demonstration by one of the family to show us their glazing and painting techniques.

24 March – Bottle-nosed Dolphins and Portinho

Friday morning saw the group back in Setúbal, where we were given an illustrated talk about the population of Bottle-nosed Dolphins (*Tursiops truncatus*) that inhabits the Sado Estuary. This population comprises about 25 individuals who enjoy such a good diet from the plentiful fish stocks of the estuary that they grow to an unusually large size: over 4m in length. All of the individuals in the estuary are known to the staff of Vertigem Azul from the unique configuration of their dorsal fins.

At the completion of the talk, we were led by our captain Pedro and his little dog, not to a sedate cruiser, but to a high-powered rigid inflatable boat (RIB), equipped with two enormous outboard engines. After being issued with lifejackets, we were arranged precariously along the sides of the RIB, where we hung on tenaciously as the engines roared into life, to be powered through the waves back from the mouth of the estuary to the sheltered waters towards its rear. Despite our trepidation at this form of transport, we were amused by the antics of the dog, which ran fearlessly from one end of the RIB to the other, often behind our backs, apparently defying gravity in its ability to remain on board!

Once the engines had been throttled back and we began to drift, it was not long before the first dolphin was spotted as a distant fin arched across the waves. Gradually they worked their way closer to us. We could see they were hunting and corralling their prey into tighter concentrations before feeding from the dense mass of fish. Indeed as they came ever closer it was possible to see in advance where a dolphin would surface by the fish which leaped into the air in their attempts to avoid their pursuers. In this way we were lucky to get close views of dolphins leaping, often in pairs, just by the boat. Our captain repositioned the boat several times in order to avoid stressing individual groups of dolphins, and each time we moved to a slightly different location the dolphins came towards us and so, as far as we could tell, our activities were not inconveniencing them.

After an exhilarating return journey, which was punctuated by some slower passages in which we explored the landward side of the Tróia spit, we re-boarded the minibuses and set off for the Serra da Arrábida, where we stopped for lunch at a lay-by with magnificent views back across the mouth of the Sado estuary. This area, just above a massive, sprawling, quarry complex, was botanically rewarding and contained enormous numbers of *Tulipa sylvestris* subsp. *australis*, plus *Asplenium trichomanes* subsp. *quadrivalens* (Maidenhair Spleenwort), *Astragalus boeticus*, the Iberian endemic *Genista tournefortii*, *Ferula communis* (Giant Fennel), *Gennaria diphylla* (Two-leaved Gennaria) and *Cephalanthera longifolia* (Sword-leaved Helleborine).

On our way to the Portinho road, down which we were to walk, we made a brief stop at one of the high points of the Serra and here we found our first *Neotinea maculata* (Dense-flowered Orchid) and *Orchis mascula* (Early Purple Orchid) of the trip. Our walk down the lane to the picturesque seaside fishing port of Portinho became a masterclass in the identification of the evergreen trees and shrubs of the *maquis* which were so conveniently juxtaposed along this short stretch of road. Among the herbs seen here were *Lathyrus clymenum*, *L. sphaericus*, *Scorpiurus sulcatus*, *Vicia lutea* (Yellow-vetch), *Echium creticum*, *Stachys ocymastrum*, *Orobanche amethystea*, *Phagnalon saxatile* and *Gladiolus illyricus* (Wild Gladiolus).

25 March – Serra de Louro

Our last day began as usual with low cloud and attempting to mizzle, but by midday it was

sunny and sultry. Just right for lunch, except that the botanical interest of our route meant that we took 5½ hours for a 6km walk so we did not actually eat it until 4 pm! The walk was along the limestone ridge of the Serra de Louro, topped by a series of windmills with canvas sails used in late summer to grind grain.

The flora was rich and similar to that of the Serra da Arrábida, but notable species not seen before (or not in any quantity) included *Alyssum simplex*, *Trifolium stellatum* (Starry Clover), dark-blue and yellow *Convolvulus tricolor* (Dwarf Convolvulus), *Cynoglossum clandestinum* and *C. creticum* (Blue Hound's-tongue), the former bearing flowers which never open, *Bellardia trixago* (Bellardia) in bud, *Galium murale*, a distinctive little composite later identified by Sarah as *Hyoseris scabra*, *Arum italicum* (Italian Lords-and-ladies), a fine patch of *Asphodelus fistulosus* (Hollow-stemmed Asphodel) and *Allium neapolitanum* and *A. triquetrum* (Neapolitan and Three-cornered Garlics, respectively).

In the *Quercus faginea* woods below the ridge-top, Mark located several *Paeonia broteri* (Western Peony), but unfortunately in bud rather than flower, and on the limestone slabs of the ridge was a mass of *Saxifraga granulata* (Meadow Saxifrage), here growing in rock crevices rather than in grassy meadows where one usually finds it in Britain. A wealth of orchids included *Aceras anthropophorum*, *Orchis italica* and *O. conica*, scattered amidst *Ophrys bombyliflora*, *O. fusca* ssp. *bilunulata* and *O. lutea*. Half way along the walk there was a grassy slope with 50 or so spikes of *Ophrys sphegodes* (Early Spider Orchid), which some authorities consider to belong to the subspecies (or even full species) *incubacea*.

One of the most interesting finds of the day was not actually discovered until several weeks later: close to the populations of *Ophrys speculum* which we discovered early on in the walk, several of us photographed some reddish wasps, which were later identified by one of Malcolm's colleagues as *Dasyscolia ciliata* – the pollinator of the said *Ophrys*! The sun brought out at least ten species of butterfly including Swallowtail, Spanish Festoon, Green-striped White, Clouded Yellow, Cleopatra and Painted Lady. We had excellent views of Short-toed Eagle and a party of Hawfinches, as well as spotting a more distant Bonelli's Eagle, but a Western Three-toed Skink curled up by the path did not wait quite long enough to have its picture taken.

In the late afternoon we visited Sesimbra castle, dating from the 13th and 14th centuries, of which the most impressive feature is the encircling wall. Sadly almost all the ground within had been treated with herbicide, but the adjacent hill still had a good covering of scrub. Round the castle flew three Alpine Swifts, while at the foot of the mound there was an elusive Firecrest singing. Almost the last plant of the trip was an impressive stand of woundwort, later *identified by Sarah at Reading as* Stachys germanica subsp. lusitanica.

On returning to our hotel most of the group went out again almost immediately to search for bats by the Lagoa de Albufeira, using Ross and Lynn's bat detectors. As well as tracking down Common and Kuhl's Pipistrelles and Serotine, we saw Purple and Night Herons flying across the reedbed, and heard Purple Gallinule.

After a week's botanising, the broomrape growing in the lawn in front of our hotel had still not come into flower, so remained unidentified, but the *Ophrys lutea* beside it were at their best...

BOOK NOTES

DAVID PEARMAN, *Algiers, Feock, Truro, Cornwall, TR3 6RA*; Tel: 01872 863388; dpearman4@aol.com

County Antrim, Scarce, Rare and Extinct Vascular Plant Register. Beesley, S.
Pp. 248. Ulster Museum, 2006. A4, spiral-bound pbk.
Available free of charge from CEDaR, Ulster Museum, Botanic Gardens, Belfast BT9 5AB. Phone: 028 9038 3153. A pdf version will be going onto their Flora website (www.ulstermuseum.org.uk) in the near future for download, together with the previous Co Down Register.

The Flowering plants and Ferns of Denbighshire. Green, Jean A.
Pp. 88. The author, 2006. Pbk, £7.50.
The first checklist (let alone a Flora) for the vice-county – the only previous account being a list of some notable plants by A.A. Dallman in 1911 & 1913.

Check List of Guernsey Plants. Ozanne, B.J.
Pp. 52. Guernsey Biological Records Centre, 2005. Pbk, £5.00.
Available from La Société Guernsiaise, Candie Gardens, St Peter Port, Guernsey,

GY1 1UG, for £5 incl. p&p. Although a supplement to the 1975 Flora was published in 1987, this is the first complete listing since 1970, and it covers, as the Flora, Alderney, Sark and Herm as well as Guernsey.

Change in the British flora 1987-2004. Braithwaite, M.E., Ellis, R.W. & Preston, C.D.
Pp. 382. BSBI, 2006. Pbk, £12.00.

The Wild Flower Key. How to identify wild flowers, trees and shrubs in Britain and Ireland. Rose, F., revised by O'Reilly, C. 2nd and expanded edition.
Pp. 576. Warne, 2006. pbk, in plastic cover, £17.50.

Flora of Great Britain and Ireland – Vol 4 Campanulaceae – Asteraceae. Sell, P & Murrell, G.
Pp. 624. CUP, 2006. Hbk, £120.

Botanical Links in the Atlantic Arc. Proceedings of an Anglo-Hiberno-French meeting arranged by the BSBI 8th-12th May 2003, Camborne, Cornwall. Leach, S.J., Page, C.N., Peytoureau, Y. & Sanford, M.N. (eds).
Pp. 336, colour photo section, b&w photos, maps, figs. BSBI, 2006. Conference Report No 24, dedicated to the memory of Dr F.H. Perring. Hbk, £23.00.

Flora of North America Volume 19, 20 & 21. Asteraceae. Flora of North America Editorial Committee.
Pps 608, 688 & 672. OUP, 2006. Hbk, £60 each volume.

British Field Crops: A Pocket Guide to the Identification, History and Uses of Traditional and Novel Arable Crops in Great Britain. Francis, Dr S.
Pp. 80, A5 format, square-backed. Sally Francis, 2006. £6.95. ISBN 0-9550466-1-0. Line drawings by the author, and covers 50 species representing 90 crops.

A Passion for Trees; The Legacy of John Evelyn. Campell-Culver, M.
Pp. 282, many photos. Eden Project Books, 2006. Hbk, £25.
The heart of the book is coverage of the 30 odd trees covered by Evelyn in his 1664 work *Sylva*, interspersed with interesting historical and environmental background. Introductory chapters on the man and his times, together with notes on his legacy – both in terms of planting and in conservation – make up a fascinating production.

The following details and comments have been supplied by Sue Atkins, from Summerfield Books.

Gower. New Naturalist Series No 99. Mullard, J.
Pp. 445, map, colour photos. HarperCollins, 2006. Pbk, £25, Hbk, £45.

The Golden Age of Quaker Botanists. Nichols, A.
Pp71, colour illustrations including some full-page plates by Audrey Jennett and Anne Dent. Quaker Tapestry, Kendal 2006. A4 Pbk, £13.
Quaker's-eye view of Early Botanists and Illustrators, Quaker Plantsmen and Collectors, In the New World, Gardeners and Nurserymen, and After the Golden Age, with paintings of some associated plants.

National Vegetation Classification – Users' Handbook. Rodwell, J S.
Pp. 68, colour photo section, maps, figs. JNCC, 2006. A4 pbk, £13.50.
Provides a general introduction to the NVC; details the methodology for sampling and describing vegetation in the field, explains how such information can be used to identify plant communities and outlines the character of the classification itself and the accounts of vegetation types it contains.

The Mosses and Liverworts of Brecknock. Woods, R.G.
Pp134, b&w and colour photos, drawings, maps, distribution maps. Privately published, 2006. A4 pbk, £8.50.
The first study to cover the bryophytes of the area of Watsonian vice-county 42, Brecknock (now mostly Powys). The study describes what is known of the distribution of Brecknock's 388 mosses, 151 liverworts and 1 hornwort. Introduction, followed by the species accounts with distribution maps; interspersed with drawings, and inspiring photos of habitats.

Shetland Lichens. Dalby, Kery & Claire.
Pp. 120, colour and b&w illustrations, map. Shetland Amenity Trust, 2005. Hpk, £15.

Water Meadows. Everard, M. (ed).
Pp. 289, b&w and a few colour photos, maps. Forrest Text, 2005. Pbk, £25.
Charts the rise, function and decline of this distinct habitat, exploring aspects of natural and cultural conservation, with case studies and thoughts about the future prospects for water meadows.

River Plants. Haslam, S M.
Pp. 438, b&w photos, drawings, figs, maps. Forrest Text, 2nd rev edn, 2006. Pbk. £25.

The most comprehensive account of aquatic plants in relation to their environment, and to the components of that ecosystem, now brought up to date, especially with regard to the effect on river plants of flood control, dredging and pollution.

Plant Identification – Creating User-Friendly Field Guides for Biodiversity Management. Lawrence, A & Hawthorne, W.
Pp. 268, colour photo section, b&w photos, tables, boxes showing key facts and case studies. Earthscan, 2006. Pbk, £35.
Written 'in the belief that tools which enable more people to understand biodiversity can not only aid protection efforts but also contribute to rural livelihoods, Plant Identification provides potential authors of field guides with practical advice about all the practical aspects of producing field guides to wild plants anywhere in the world'.

The John Tradescants, Gardeners to the Rose and Lily Queen. Leith-Ross, P.
Pp. 341, b&w illustrations. Peter Owen, revised ed., 2006. Pbk, £14.50.
First published 1984. The story of the John Tradescants, father (1570-1638) and son (1608-1662), the gardens they created and the plants they introduced.

Flowers of Iona. Millar, J.M.
Pp47, map, original watercolours by the author. New Iona Press, 3rd ed., 2006. Pbk, £4.95. The list of flowering plants is brought up to 335; also includes rushes, sedges, grasses and ferns. Typical habitats are described. Includes common, botanical and Gaelic names.

The Biology of Peatlands. Rydin, H, & Jeglum. J.
Pp. 343, b&w photos, figs. OUP, 2006. Pbk, £27.50.
Biology of Habitats Series. An overview of peatland ecosystems, giving international coverage, but with the focus on boreal and north temperate peatlands. Includes a chapter on the moss genus Sphagnum, and concludes with a consideration of peatland management, conservation and restoration.

The Liverworts, Mosses and Ferns of Europe. Frey, W, et al: English edition revised & edited by Blockeel, T L.
Pp. 512, detailed drawings, keys. Harley Books, 2006. Hbk, £45.
Revised and updated English version of *Die Moos- und Farnpflanzen Europas* (6th edition 1995), taking the form of an extended key to just under 2,000 European species to be found within a large and varied geographical area extending from Iceland in the west to the Ural Mountains in the east and including the northern Macronesian Islands. The fern section has been further extended to include Georgia and the Caucasus, Turkey, Cyprus and the Cape Verde Islands.

A Guide to Some Difficult Plants. Illustrated Articles from the Wild Flower Society Magazine 1973-1988.
Pp. 131, b&w illustrations. Wild Flower Society. Re-issued for the WFS by Summerfield Books, 2006. Pbk, £6.99.
A reprint of this useful guide, first published in 1990. Topics covered are: Bird Seed Aliens, Willows, Dandelions and their Allies, Rushes & Woodrushes, St John's-worts, Wild Heathers, and Identifying Yellow Crucifers.

Members may have seen, in the April News (p. 72, under Obituary notes), the offer of a memoir from the brother of Richard Palmer, of Oxford. This was available free of charge, and I found it very interesting, full of humility and well worth reading.

Also in that issue, (p72) was the offer for No 8 of Wiltshire Botany. This was, as trailered, a major issue, being in effect a supplement to the 1993 Flora, and well worth getting if you have not already done so.

One of the exciting events of an action-packed 2006 has been the issue of the First edition Ordnance Survey maps in a new format by Cassini Maps (formerly Timeline Maps). A version of these has long been available in a reproduction by David & Charles, but this latest re-issue is altogether superior! The maps have been expanded to the scale of 1:50000, and exactly match the current OS Landranger series, and have also had National Grid lines superimposed. This makes them miles easier to use.

All OS agents have them at £6.49, the same as the current maps, and to date those for the southern half of England have been issued, with the rest promised. In fact their website (www.cassinimaps.com) (2/8/06) says those for SW & SE England are out, with the Midlands and East Anglia due by the end of July, and the rest of England and Wales by October, though I am not sure why it is not updated. I cannot explain why but my hunch would be to buy them straight away.

Nature in Cambridgeshire No. 48 (2006) (with obituary of Max Walters)

This issue, carries an eight-page obituary of Max by Peter Grubb, a colour photo of him in June 2000 on the cover, and another inside, in

black and white, of the 39-year-old Max at Wicken Fen. Cheques should be made out to Nature in Cambridgeshire.

The address for people to send payments (cheque or £5 note) and/or donations: Mrs Jane Bulleid, 3 Mandeville, Burwell, Cambs CB5 0AG.

Also in April *News* was the flyer for the Eleanor Vachell diaries. My copy has arrived and it is even better than I was expecting – an absorbing social history of British and Irish botanists and botany in the 1920s and 1930s, with a wealth of detail from someone who was at the heart of the BEC and the WFS at that time.

It reminded me of a note I wrote last year but never finished, and which I now give below.

Habitats of Rare Flowers

I have in my possession an alphabetical list of sites compiled by Mrs Gertrude Foggitt, for the benefit of a Barbara Kitson (and then to a Mrs M.E. Sayers, of Blandford Dorset, and finally to Helen Brotherton of Poole (a WFS member for many years, founder of the Dorset Wildlife Trust and much else). I imagine it was compiled in the 1930s.

Gertrude Foggitt was the discover of *Carex microglochin* (with Lady Davy) in 1923, a great pillar of the WFS and the BSBI (or B.E.C. as it then was) and was made an honorary member just before she died in 1949. There is a very warm obituary in the *BSBI Year Book* for 1951.

The sites described are a curious mixture of the very rarest and others that one would not be particularly fussed about, with often brilliant descriptions of how to find them.

Thus *Fumaria martinii* – Gilly Tresamble (W. Cornwall). When you reach the 5 cross roads, (coming in from the road marked Stithians) take the road to the right of one which leads downhill & is marked Perran Station & Truro. You will very shortly come to a garden and potato patch on the left.

Braemore Common (S. Hants). Going from Fordingbridge towards Salisbury there is a little turning on the left (close to the turning on the right to Braemore Station). It goes to the edge of the common. There turn first left and 50 yards up that road you will see a partially dried up pond on the right with willows. The *Cyperus fuscus* is just in the pond and the *Limosella* on the far side of the pond in the dried mud, also *Mentha pulegium.*

I suppose nowadays one would give a grid reference, but I find a word picture far better!

I have a hunch these were widely circulated, but our Wild flower Society members will probably know much better, and I would like to hear from them. Dave Green, the former v.c. Recorder for North Wilts for many years, had acquired many of the papers from the illustrious Barbara Welch, one of his Wilts predecessors. There is a much expanded version there (together with scores of letters too and from the BHUs (Botanical high-ups, as my daughter used to call them!) of the day.

A Supplement to a *Flora of Tiree, Gunna and Coll*

D.A. Pearman & C.D. Preston

The cover notes 'The publication of *A Flora of Tiree, Gunna and Coll* in March 2000 encouraged, as so often, further work. We are very pleased to be able to publish details of over 20 species new to the islands. The new records include both early- and late-flowering species that we suspected were under-recorded in the 2000 work, and also our work in Coll on the woody species, in search of which we have spent the last five years exploring the ravines and finding an unexpectedly rich relict flora.'

This 24 page booklet has just been published and is available from Mrs A.V. Pearman, Algiers, Feock, Truro, Cornwall, TR3 6RA for £ 2.50 incl. p&p.

Don't blame me. I never said it

TONY PRIMAVESI, *St Marie's, Oak Street, Rugby, Warwickshire, CV22 SEL*

I wish to disclaim responsibility for the key to the Genus *Rosa* as it appears in the new revised edition of *The Wild Flower Key* by Francis Rose, recently published.

I would have thought that the author should have been consulted to approve any alteration to his copy. This, however, was not done in my case. Extensive alterations were made from my wording, of some of which I would certainly not have approved, as they were either completely incorrect or misleading. The crowning indignity for me is that my name appears at the head of the key implying that it represents my full authority and approval.

The worst blunder is the statement that some rose stems are 'winding'. This is plainly misleading and incorrect as applied to rose stems. The word I used was 'flexuous'. The resinous scent of the downy roses is described as 'unpleasant', which it is not. The hips are sometimes inconsistently referred to as 'fruits'. They are, of course, the concave fleshy receptacle containing the achenes which are the fruits, each of which presumably has its own short fruit stalk. There are other minor changes which I would prefer had not been made.

Following the key, there are descriptions and illustrations of five rose species. These are inadequate and in part inaccurate. I had no part in their authorship and as they appear under my name I shall be ashamed to think that they will be attributed to me.

I have not read the rest of the book, so I can make no criticism of the rest of its contents. It seems to me that Stace's *Flora*, *The Plant Crib* and the BSBI Handbooks admirably fulfil all needs.

OBITUARY NOTES

MARY BRIGGS, *Hon. Obituaries Editor, 9 Arun Prospect, Pulborough, West Sussex, RG20 1AL*

Very many members will have been saddened to hear of the death of **Francis Rose**. Francis has been an outstanding field botanist, ecologist and conservationist through a long BSBI membership – since 1944. His remarkable eye for all vegetation especially included the lower plants. There will be an Obituary in *Watsonia*.

Professor Emeritus A.J. Willis of Sheffield University was known to many members as the General Editor of the Biological Flora species accounts published by the Ecological Society in the *Journal of Ecology* and as individual separates. A BSBI member since 1960, Arthur was until 1967 at the University of Bristol, but until 1993 he still shared the v.c. 34 W. Gloucs. recordership with Sonia Holland. As the Recorder for the Bristol area of the vice-county for almost 40 years he reported on the flora of the Avon Gorge for *Nature in Avon*. Richard Bland wrote in the *Proceedings of the Bristol Naturalists* (2003) **63**: 10-11 that 'it would be impossible to guess from this annual report that [Prof. Willis] was no longer resident in the region, because of his deep knowledge of the Bristol area and knowledge of the work of the BSBI.'

His publications on his own special interests included the phenology of plant development, and the long history of particular rare plants at specific locations. I am grateful to Mark & Clare Kitchen for sending notes on the v.c. 34 W. Gloucs. recordership.

We are also sorry to report the deaths of some BSBI members well known as local botanists:

Bernard John Whiteway of Redruth, Cornwall. Rose Murphy writes 'he played an active part in plant recording in Cornwall, both for the *New Atlas* and for the Arable Plant recording for many years.'

From Norfolk, Ron Payne sends note of **Mrs Heather Williamson**, and Gillian Beckett writes in *Transactions of Norfolk and Norwich Natural History Society*: 'a keen and knowledgeable botanist ... with an amazing eye for detail and totally reliable. Heather was part of the Norfolk Recording team since 1988' and was also 'a first rate shot and expert flower arranger.'

Mr I. Penberthy sends a note about Dr Katherine Benson-Evans (whose death was reported in *BSBI News* **101**) who achieved success in research on plant growth hormones, and on indicator algae in river pollution. Although not active in BSBI we valued her support in membership for over 50 years.

From Westcliff-on-Sea, Essex, **Betty Goddard** had a keen interest in plants and wildlife, through her County Wildlife Trust and local Natural History Society as well as BSBI. Professionally Betty was deputy head teacher of Westcliff High School for Girls, and a musician. After retirement she was an enthusiastic botanical traveller around the world. Betty also painted wildlife greetings cards of which she sold more than one hundred and forty thousand cards for charities.

Edith Hesselgreaves died in June 2006 aged 96. I am grateful to her daughter Janet Welsh (also a BSBI member) who has sent the following note: 'Edith was a member of BSBI from 1973 until 2004. She was brought up on a farm in Lancashire and always loved the outdoor life; she had an interest in botany from childhood.

When recording started for the *Flora of Leicestershire* during the 1970s this gave her the perfect outlet for her energy and enthusiasm. Her tetrad surveys were very thorough and she persisted with every casual or alien, corresponding with many of the vascular plant specialists. She knew her patch well and Groby tetrads were some of the richest in the county. She developed a special interest in willows, willowherbs and brambles which can be seen in the entries! She is remembered as a major contributor. Her husband Jack helped by driving her to sites but many of her

excursions were by bicycle or, later, moped. This was only given up when she turned 80 and she led a number of local field meetings. During the winter months she mounted specimens for the Leicester Museum collection and donated many of her own. Latterly, failing eyesight was a severe blow but she still enjoyed walking and was always willing to share her expertise and local knowledge with others.'

We also report with regret the deaths of the following members reported since April 2006 (year of joining in parentheses): Miss P. Allan of Bordon, Hants. (1990); Mr L. Eccleston of Clitheroe, Lancs. (1994); Dr R.N. Lester of Edgbaston, Birmingham (1960); Dr F.J. Taylor MSc, of Warkworth, New Zealand (1954) and Mr M.J. Trotman of Wotton-under-Edge, Glos. (1983).

All the above will be sadly missed.

Memorial to Derek Ratcliffe

English Nature Magazine, July 2006, reports a memorial stone to Derek and a carved bench, unveiled by his widow Jeanette at E.N.'s Finglandrigg National Nature Reserve at Kirkbampton near Carlisle. Derek was described as 'one of the 20th Century's most outstanding and influential nature conservationists' and Findlandrigg as 'one of Dr Ratcliffe's favourite spots.'

An obituary was published in *Watsonia* **26**: 101-102 (2006), by Lynne Farrell.

RECORDERS AND RECORDING

Panel of Referees and Specialists

MARY CLARE SHEAHAN, *61 Westmoreland Road, Barnes, London SW13 9RZ*

There are two changes of email addresses: Paul Green's is now paulnewross@eircom.net (was paul@combegate.wanadoo.co), and Mike Porter's (*Calamagrostis* and *Carex*) is now mike@carex.wanadoo.co.uk (was catchall@mikesporter.co.uk).

Many members have said how useful it would be to have a beginner's referee who would be prepared to have a look at any plant which puzzled them, especially if they had no idea where to start looking. I am glad to say that we have now had an offer from three experts to provide this service – please see the following message from Quentin Groom, Clare O'Reilly & John O'Reilly:

Beginner's Referees

Beginner botanists often want help with common species. They don't want to bother national experts with something ordinary, but hard to identify. They may not even know which family a specimen belongs to and so can't use the current BSBI referee system. From January 2007, the Education Committee is trying out a Beginner's Referee system. It is hoped that this service will help improve the identification skills and confidence of our novice membership.

The intention is that the beginner's referees will provide a rapid identification resource for relatively widespread species. Anything submitted that requires specialist identification will be passed on to the relevant expert referee. People can, of course, still submit specimens directly to the expert referees. We don't know yet how much demand there will be for such a service, but the work initially will be spread out between three referees: John & Clare O'Reilly will handle postal submissions and Quentin Groom will respond to emails and photographic enquiries.

Submissions should be of plants found growing in the wild in the British Isles and comprise fresh or pressed specimens and/or photographs. Full instructions will be provided in the 2007 BSBI Year Book.

QUENTIN GROOM, Louis Pelserssquare 1, Tervuren, Belgium. qgroom@reticule.co.uk

CLARE & JOHN O'REILLY, 78 Woodside, Barnard Castle, County Durham DL12 8AP

Panel of Vice-county recorders

DAVID PEARMAN, *Algiers, Feock, Truro, Cornwall, TR3 6RA*; Tel: 01872 863388; dpearman4@aol.com

Recent changes since *Year Book 2006*

Changes of Address

V.c. 66. Co Durham. Dr G.F.Hardy to 29 Archibald St., Gosforth, NE3 1EB.

V.c. 71. Man. Ms L. Moore to 2, Lake Lane, Peel, Isle of Man, IM5 1AU.

V.c. 100. Clyde Isles. Mr A.C. Hannah to Glenmore, Rothsay, Isle of Bute, PA20 0QU.

Botanical Illustrator

ROSALIND BUCKNALL, *160 West Dean, Chichester, West Sussex, PO18 0QY*

As a botanical illustrator, I would be delighted to assist any member in need of help with botanical illustrations, both line drawings and colour paintings.

I have gained the Post-Experience Certificate in Biological Recording and Species Identification with the Field Studies Council and The University of Birmingham, and have joined local recorders in the field to further my botanical knowledge. I also enjoy working and drawing with a microscope.

[As Rosalind sent some examples of her work, I am happy to vouch for their general excellence and hope members will contact her direct. RGE]

PROFILES OF NEW HONORARY MEMBERS 2005

Peter Fry

GWYNN ELLIS, May 2005

Having learnt some chemistry and a little biology, Peter Fry was appointed as Assistant Master at an Essex Grammar School for Boys. When the head of science retired he inherited the school garden club which had evolved from the World War II 'dig for victory' campaign. The club was popular with pupils as after the Friday share-out the boys took home produce which they sold to their mother at mutually advantageous prices.

Gardening, and successfully showing vegetables at Royal Horticultural Society Autumn Shows at Westminster, triggered an interest in plant communities in general. Inevitably this lead to teaching ecology following the Tansley methods. Assorted young men and ladies (from an associated girls school) joined in exploring Essex saltmarsh, grassland, woodland, and ponds as well as travelling into Cambridgeshire to experience Wicken Fen where a recently retired army colonel, of blunt expression, was warden. Eight years later Peter was seconded to the Nuffield Foundation to be the materials co-ordinator of the A-Level Biology Project. This period passed in writing teaching material, organising national conferences and attending august gatherings, but provided little opportunity for fieldwork. Though, as a 'spin off', he came into contact with the garden pea line used by Mendel and brought into England by Bateson at the start of the 20th Century. These Peter still grows, over 30 years on, and he remains fascinated by the F_2 crosses which produce interesting ratios. Classical genetics can still be interesting even though biochemistry is the flavour of the month.

In the late 1960s he started to work with students at a training college, was persuaded to be chairman of the biological board of studies at the Cambridge Institute for a happy period, and as a result of the James Report was brought into contact with undergraduate and progressively post-graduate students academically as well as developing teachers.

Having acquired the status of Recognised Teacher of the University of London, Peter was elected Fellow of the Institute of Biology. Retiring in 1990 he discovered that BSBI was seeking an Honorary Assistant Secretary at the official address at the Natural History Museum, South Kensington and he volunteered. The Society receives a continuous stream of correspondence from people seeking information about plants, places where plants are studied and places where people work with plants. Amongst the membership there is a wide range of interests and knowledge, so, even if there is not an instantaneous obvious response to a letter, some source of contact can be established for writers. Any response to a non-member always includes a prospectus. The general co-ordination task is frequently interesting, even demanding and Peter keeps a basic system running and running superbly well.

I got to know Peter during my brief stint as Hon. General Secretary and was amazed at the amount of work he undertook at South Kensington and I was also extremely grateful, as the more he did, the less I had to. BSBI is exceedingly fortunate to have someone with Peter's enthusiasm and knowledge able and willing to [and here I quote] 'continue the effort as long as the Society wishes, and arthritis permits me to climb the stairs to the British Herbarium at South Kensington. I am grateful to the Society for granting me the privilege of nominating Peter Fry as Honorary Member.

Vera Gordon

GORONWY WYNNE, May 2005

Greetings to Vera Gordon on being elected an Honorary Member of the BSBI. At BSBI AGM, Ferryside, Wales, 14 May 2005

I joined the BSBI in 1963. A few years later I had the temerity to lead a field meeting at Ddol Uchaf in Flintshire – an area rich in Dactylorchids. I was out of my depth, but a slightly built lady with a Liverpool accent soon came to my rescue! That was my first meeting with Vera Gordon.

Later, in 1972, I began work on the *Flora of Flintshire*. A number of helpers agreed to take on various tetrads – and Vera 'adopted' a bucketful. Her work was thorough and meticulous and I soon realised that she had opted for the 'best' tetrads! She also provided constant help in identifying and naming difficult plants, and as many of you will know, being out with her in the field is an education. Later, when I would visit her at her home in Liverpool with armfuls of 'unknown' specimens from my wanderings on the Continent, she would not only name nearly all of them but actually thank me for letting her see them! One of the best tributes to her was paid by a colleague of mine while we were checking some hundreds of past records for the *Rare Plant Register for Flintshire* – 'If it's Vera's record, then that's what it is!'

Vera joined the BSBI in 1950 (there are very few earlier members) and over the years she has been an able and enthusiastic member. She has been a leading light in the Liverpool Botanical Society, for which she served as Secretary for many years, and she was also Secretary of the South Lancashire Flora Committee. In 1963 these interests led to the publication of *Travis's Flora of South Lancashire* with Vera Gordon as co-author. Her contributions to *Watsonia* include a perceptive review of *The Hamlyn photographic guide to the wild flowers of Britain and northern Europe* and an appreciative obituary to the late Horace Green, a previous secretary of the Liverpool Botanical Society, and discoverer of *Senecio cambrensis* in Flintshire – a plant new to science at the time.

Vera Gordon does not confine her interests to botany. After a long day's work at the office she would enjoy nothing more than a vigorous session of Scottish country dancing. I never saw her in action but I can't imagine Vera putting anything less than 100% into her dancing as well.

We are honouring a lady, small of stature but with a big personality, an outstanding field botanist, a valued member of our Society and a kind colleague and friend. I haven't seen Vera for some time, but I was delighted to hear recently that she is still active and enthusiastic. I know that you will join me in sending her our congratulations and good wishes.

2006

Michael Braithwaite

ROD CORNER, April 2006

Michael Braithwaite was born and brought up at Corbridge, Northumberland. He qualified as an accountant and in 1969 moved to Hawick, Roxburghshire to join a firm of accountants there. His boyhood interest in botany was rekindled and after meeting George Swan in 1973, joined the BSBI. His interest was further stimulated by his contact with John Raven whose enthusiasm he found inspirational. At about the same time he met Arthur Smith of Selkirk, a fine all round naturalist, and through him became involved in the local branch of the Scottish Wildlife Trust (SWT) becoming secretary and then chairman for over 25 years. When Albert Long stood down as vice-county recorder for Berwickshire (v.c. 81) in 1979, he took over the recorder-ship.

I first communicated with Michael in 1974 when he sent me some interesting records from various habitats around Hawick. He and other members of the local branch of the SWT carried out a botanical survey of the Eildon Hills, the results of which was later published in booklet form. However his botanical and organisational skills really became apparent when he published 'A Railway Flora of Teviotdale'. This was basically a solo survey based on tetrads of a twenty mile stretch of the old Waverley line to the north and south of Hawick during 1975. The

following year he surveyed part of the Ale Water in Roxburghshire.

After becoming recorder for Berwickshire he concentrated on the botany of that vice-county. He joined the Berwickshire Naturalists Club, the oldest field Club in Britain, founded in 1831and in 1990 with the support of the Club published 'The Botanist in Berwickshire.' This was an annotated checklist with the vascular plant section being compiled by Michael and the bryophyte section by David Long, a professional and much respected bryologist and the son of the late Albert Long. It gives a succinct account of the past and present flora of Berwickshire. Both he and David Long were elected honorary members of the Club and in 2005 Michael became its president and now acts as treasurer. He regularly contributes plant records to the club journal and recently wrote a comparative account of the flora of Berwick-upon-Tweed based on work done by John V. Thompson 200 years previously. In 2004 Michael published his Berwickshire Rare Plant Register, marking the occasion with an informal evening with his botanical friends, as well as celebrating 25 years as a vice-county recorder.

In 1995 he was elected onto the council of the BSBI and served on the records committee and in 1997 was elected treasurer, the post he presently holds. Michael has served the society in many other ways. He was the Scottish Border area co-ordinator for the Monitoring Scheme of 1985-87, the co-ordinator for field work in S.E. Scotland and Northumberland and Durham for Atlas 2000 and has taken a major role in the recent Local Change Survey being one of the team responsible for formulating the survey and the analysis of its results and a co-author of 'Change in the British Flora 1987-2004.' Since retiring he is able to devote even more time to botany and the society and is ably supported by his wife Paddy, a botanist in her own right.

Michael is a real enthusiast with a passion for plants and a fine eye for detail who records data meticulously. He has the accountant's gift with figures so that graphs and tables usually always accompany the results of his surveys. His exhibits at the annual Scottish meetings are painstakingly prepared, cover a wide variety of subjects and are often thought provoking. He has taken a special interest in difficult plants such as fumitories, is referee for *Trichophorum* (Deergrass) and has taken particular interest in the early colonisation and distribution of halophytes along Border roads. In 1978, he was instrumental in the discovery with George Swan of the first definitive record of *Alchemilla micans* (*A. gracilis*) a Lady's-mantle, in Britain. His recent discovery of *Hierochloe odorata* (Holy Grass) new to England on the family estate on the North Tyne gave him great pleasure. Making plant records from horseback is another of his accomplishments.

I was delighted to be asked to contribute a profile of a fellow Border botanist whose honorary membership of the society is so well deserved.

David J. McCosh

MICHAEL BRAITHWAITE, May 2006

David McCosh is one of a now-select group of botanists who contributed to the first Atlas and remain active. He joined the society in 1958 and it cannot have been too long before he was appointed vice-county recorder for Peeblesshire, an office he still holds. When I moved north of the border and became active with the Scottish Wildlife Trust I soon found occasion to contact David and was intrigued to find a member of a family who my grandmother used to speak of as having a retreat in the Border hills not far from where she had been brought up.

When I in my turn was appointed a VCR it was David, as secretary to Records Committee, who wrote to me and advised me that the post was mainly curatorial. This understatement is typical not only of David but of the BSBI tradition. It has taken me a long time to begin to appreciate how David has quietly and unhurriedly contributed so much to our society and related projects. As well as his thirty years as Records Committee secretary, David was recently a vice-president of the society and earlier was one of the four people responsible for the day to day running of the Monitoring Scheme. He was an editor of the very long-running Vice-county census catalogue project and perhaps above all a confidant of Peter Sell on the *Hieracia* for his now recently-completed volume 4 of *Sell and Murrell.*

Peeblesshire has a modest flora by some standards and for many years David concentrated on the hills, leaving the lower ground to the late Charles Morrison. Although these hills do have their delights, the relative paucity of species may have led David to a study of the hawkweeds and it is these that he has persisted with, and travelled far in search of, to the advantage of his fellow recorders. Many county lists and floras acknowledge his help as does Stace's

Flora and I have received an invaluable printout on the occasions when I have compiled a Berwickshire check-list. It is commonly thought that David has yet to publish a flora or check-list of his own vice-county. Nevertheless my shelves contain a neatly-bound 100-page volume which the late Arthur Smith of Selkirk gave me shortly before he died, 'List of Flora in VC 78. DJMcC 10/80'. Now that David has retired from his committees a more polished version is confidently awaited.

David epitomises the quiet dedication to botany that is the hallmark of BSBI and it is my great pleasure to propose him as an honorary member of our Society.

Tim Rich

DAVID PEARMAN, May 2006

There is so much to say about this man whose energy and output is known, I'm sure, to all of you.

Tim was born in Sussex, and went to Midhurst Grammar School where his interest in botany began. He read Ecology at Lancaster and did a PhD in Leicester, and then was appointed to run the BSBI Monitoring Scheme in 1987-1988, by which time we already knew him as an expert and enthusiast in the weedy and often scorned group of Crucifers. His organisation of the Monitoring Scheme was almost the stuff of legend – endless enthusiasm, really interesting notes in *News* (I still cannot look at a *Zostera* without thinking of his New Year's escapade) and a Herculean effort to put it all together. As an extra, despite all this work, he managed to put together the first Plant Crib in 1988, which although it built on earlier work, has been our best-selling publication for almost 20 years, and now, thanks again to his ideas, is on the Web too. I know the delays and fuss over publication of the Monitoring scheme caused him deep distress, and though I cannot erase this, I do hope that what has happened subsequently has dulled this.

For the Monitoring Scheme was followed by the Crucifer Handbook in 1991, a mass of stimulating Plantlife 'Back from the Brink' reports in the 1990s (fascinating reading – I have about 20 and wish I had more), a really pioneering local Flora, Ashdown Forest, in 1996, where all his recording ideas from the Monitoring Scheme and subsequently were put into practice, and a mass of papers in *Watsonia* and other journals.

In 1997 he moved to Cardiff, to run the Welsh National Herbarium (Vascular Plants), at the National Museum of Wales, but this has not diminished the quality and quantity of papers and research – all of which one really wants to read! Well, perhaps the account of the latest Welsh endemic *Hieracium* is only for enthusiasts, but there is still the fun of the chase, and we all look forward to the promised work on *Sorbus*. He has kept up too with botanists on the Continent – something many of us are not very good at – and has used those contacts to shed better light on our British distribution enigmas. I'm not saying I always agree with his interpretations, but his view is challenging! I think one of the main plusses has been his ability to involve others in his projects, and then share the publication with them, when in reality the drive, and writing has mainly been his.

NOTES FROM THE OFFICERS

From the Hon. General Secretary – *David Pearman*

Algiers, Feock, Truro, Cornwall, TR3 6RA; Tel: 01872 863388; DPearman4@aol.com

Director of development.

Despite my promise of speedy action in the April *News*, it has taken longer than anticipated, without the help of an employee, to assemble the information and thoughts we need to progress. Nonetheless Executive's views are as set out in April, and details will be on our web site – let's say by October!

Society for the exploration of the German flora

In October 2005, botanists from all over Germany gathered at the Lower Saxonian town of Vechta to lay the foundation for the 'Gesellschaft zur Erforschung der Flora Deutschlands' (Society for the exploration of the German flora).

The main goals of the new society are to intensify the scientific investigation of the German flora and to bring together the activities of professional and non-professional botanists. The activities will be focussed on autecology, chorology, caryology, nomenclature, and taxonomy of vascular plants. The society aims to encourage botanists to contribute to and to use the collections of scientific herbaria.

Annual meetings will be held during one weekend in autumn. A lecture program and an exhibition of herbarium specimens will accompany this event.

The next annual general meeting will be hosted by the Universität Stuttgart-Hohenheim and is scheduled for the 4th to the 5th of November 2006.

The society offers its members field-trips. These will cover botanically interesting parts of Germany as well as adjacent countries and will be guided by local experts. The first field-trip explored the Chiemgauer and Berchtesgadener Alpen in Bavaria (24th to 25th of June 2006).

The society's periodical is named *Kochia* honouring the important 19th century German botanist Wilhelm Daniel Joseph Koch. Main language of publication is German. In autumn 2006, the first volume will be published. At 'www.flora-deutschlands.de' information is available on the society's activities in the German language. Here, addresses of specialists for certain taxa, a covering of current literature, information on working groups can be found as well as links to herbaria, online floras and other information relevant for someone interested in the flora of Central Europe.

Membership is open to everybody interested in the flora of Germany (annual membership-fee: 25 €).

For further information you may contact the addresses available at the web-site.

Postal and oral inquiries should be addressed to Thomas Gregor (Siebertshof 22, 36110 Schlitz, Germany; phone: ++49-6642-5349; email: thomas.gregor@uni-vechta.de).

Bluebell bulbs for sale

My apologies to Janette Fryer for omitting this last time. She pointed out an advert in the NFU Countryside magazine from a company called Eurobulbs, who, asking whether readers had bulbs growing wild in their woodlands, offered to thin them out (in order for the bulbs to look their best) and promising them between £500 and £30,000 for doing nothing! Probably within the law and possibly harmless in itself, but .....

From the Scottish Officer – *Jim McIntosh*

BSBI Scottish Officer, c/o Royal Botanic Garden, Inverleith Row, Edinburgh, EH3 5LR;
Tel: 0131 2482894; j.mcintosh@rbge.ac.uk

Computerisation

Computerising Vice-county Recorders' records vastly increases their usefulness. It is often an important first step in major projects such as checklists, Rare Plant Registers and floras, and it allows VCRs to map and analyze their records and respond to queries more easily. The data contributes to the Atlas Updating Project and you can already see the newly computerised from the first Computerisation project on the BSBI Maps Scheme webpages. It should benefit conservation too – as the records will be available to SNH, and other conservationists, and used to help in their day to day work.

It has therefore been immensely satisfying to successfully complete the first BSBI Scottish project to computerise just over 100,000 records held by VCRs for West Lothian, Mid- and North Ebudes and Roxburghshire. The BSBI is very grateful to SNH for the £15,000 funding for the project, and for the painstaking diligence of the contractors and Vice-county Recorders alike.

Enthused by the success of the first project, I have devised two further projects – one to computerise 135,000 Scottish VCR paper records over the next 8 months with a funding bid to the Esmée Fairbairn Foundation. I am currently waiting to hear whether it has been successful. I am also currently preparing a further bid for funding for an even more ambitious project to help computerise half a million Scottish BSBI records over a 3 year period, following on from that.

Site Condition Monitoring

Over the past two years, BSBI volunteers completed a total of 27 Site Condition Monitoring (SCM) reports for SNH, and this year we have worked on a further five sites. The project aims to monitor the condition of SSSIs designated to protect vascular plants, by trying to refind populations of nationally rare or scarce 'target' species and reporting on their precise location and size, and whether there is evidence of regeneration or damage. The overall aim is

to improve those sites which are found to be in poor condition.

The project has been challenging and interesting to the 60, or so, BSBI volunteers involved. However, given our significant contribution to this project, it is good to be able to report an additional benefit to the BSBI. Earlier this summer copies of all 27 reports and records collected from all of SNH's SCM work, on 150 sites in total, were handed back to Scottish VCRs and the BSBI. The data is detailed and high quality and will make an important contribution to VCRs' records. I understand that full copies of *all* SCM reports will be available on the SNH website shortly.

Scottish Vice-county Recorder Workshop

Scottish Vice-county Recorders participated in a very enjoyable residential Workshop held at the Field Studies Centre, Kindrogan in April. There were talks on the *Hybrids Project*, by Alan Forest, *Contributing Watsonia Records* by Mike Porter, *Pressing Specimens* by Heather McHaffie as well as various talks by me. There were workshop sessions on *VC Recording Areas*, on *Support for VCRs* and on MapMate. We also included a debriefing sessions for those involved in Site Condition Monitoring and the Computerisation Project. But as always the best part of the weekend was socialising over dinner and in the bar afterwards. I would like to thank all those who came and contributed to make the event so successful.

Brief reports from the various speakers were compiled and illustrated to produce a Workshop Report which was sent to all Scottish VCRs. There are a few spare copies, and if you would like one, please let me know.

Coordinator's Corner

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

The BSBI Library

In recent years we have been building up a BSBI library, which is housed for us in the University of Birmingham's premises in Shrewsbury. We are delighted and grateful to have received donations of many books and journals from the estates of the late John Lavender and Alice Lambert, and from many individuals such as Richard Pankhurst, Jean Green and Karl Crowther.

We are always pleased to receive more donations, if anyone has books they don't need or want to pass on to a good home. We keep a few duplicates for teaching purposes, but excess numbers are passed on to the Field Studies Council. Rare and valuable books are kept securely, and we can promise to keep them as a permanent asset to the society. The library is accessible to BSBI members by arrangement, and is available for committees to meet in for free. For further information, contact Sarah Whild at the University of Birmingham, The Gateway Arts & Education Centre, Chester Street, Shrewsbury, SY1 1NB, s.j.whild@bham.ac.uk.

More about Axiophytes

I have received lots of interesting correspondence about axiophytes [important plants – an indicator of good habitats, see *BSBI News* **99**: 5]. David Pearman tells me that Dorset Wildlife Trust has been using lists of "notables" for designating Wildlife Sites for about fifteen years, and they find it very useful in defending their selection in public enquiries. Many other Wildlife Trusts also include some sort of element of indicator, or 'typical,' species in their selection process; but apparently the country agencies have never gone so far as to draw up truly scientific criteria for SSSIs. Perhaps they haven't felt the need, as they have the law on their side, but one has to wonder if there wouldn't actually be a benefit in being able to state, scientifically, why a site is 'good'?

Axiophytes seem to represent a potential solution to the 'importantness' problem that has plagued conservation for decades. There has been so much confusion about what we should base conservation decisions on: rare species, threatened species or indicator species. Lots of complicated formulae have been drawn up in the past. With axiophytes, we can move beyond that situation into one of much greater clarity. The following three terms need to be defined as separate concepts, and if you do that it is apparent that much of the time we mix them up and saddle ourselves with a confused and inconsistent idea of what makes a site valuable.

1 Rare species are ones that are uncommon, either in absolute terms or relative terms (i.e. within a particular geographic area). They are of conservation importance mainly from the point of view of protecting genetic resources because, being rare, they have little effect on vegetation.
2 Threatened species are ones that are in decline, which is interesting but of little

conservation significance in itself. Mathematically, it can be shown that about 50% of all species will probably be in decline at any one time within any particular geographical area, so decline itself is simply a phenomenon to be observed rather than necessarily a problem to be acted upon. However, it is well worth monitoring the increases and declines of species because this reflects how the countryside is changing and how sites are being managed.

3 Axiophytes. These are species that are desirable, from a conservation point of view. They are plants that we generally want more of, usually because they represent habitats and environmental conditions that are considered to be beneficial for nature conservation. They are usually widespread enough to be a major constituent of vegetation, and are probably important food plants, so they are often neither rare nor necessarily threatened, but they are the ones that matter the most.

Some exciting work is being done on axiophytes in Lincolnshire and Shropshire. Margaret Haggerty, who manages the Lincs. Records Centre, has drawn up a list of indicators of various conservation-worthy habitats in the county and shown that all sites can be ranked according to the number of axiophytes they contain. Over a certain number and you have a SSSI. A lower number would be indicative of a Wildlife Site, and below that you may still have a site of interest, but one with a lower conservation status. She found that the system pretty much corroborates the experience-based decisions by which these sites have been designated in the past (unlike the Red Data lists) but has the advantage of putting it on an empirical basis. This could be enormously valuable in allowing SSSI designations to be defended, and also in monitoring the efficacy of conservation management. Astonishingly, it seems that the simpler the list the more effectively it works: abundance weightings, dividing them up by habitat, and other complexities do not seem to offer much benefit.

In Shropshire Dan Wrench and the Biodiversity Partnership have eschewed the traditional half a dozen BAP species in favour of an axiophytic approach involving some 400 species of vascular plants and bryophytes. In collaboration with the County Council and the Forestry Commission, they have produced coincidence maps of axiophytes in order to identify areas that should be protected from afforestation or development, and they use the maps to alert surveyors to the features of interest in an area. They have over 40,000 recent records at 1km resolution or finer, and can assign a value to any grid square on the map, thereby giving early warning of areas that need to be protected. Because the difficult ecology 'science part' is hidden in the early stages of the process, all they have to do is give a straightforward number to the people who make the decisions: 'that square is a 40-pointer, leave it alone', or 'this square only scores 2, so you can do what you like there.' It is a fantastically clear system. The best thing is that it can be argued with: if you don't agree with what the BAP people say, then do your own survey and see what you find. By giving us a number, they have turned was was previously guesswork into good, hard, science, and that surely gives conservation a much more credible foundation.

There is a lot of work to be done yet on axiophytes, but these results are encouraging. It seems that about 20% of the species in each county could be classified as axiophytes, amounting to about 200-400 taxa. In Shropshire about 60% of the 1km squares contain at least one axiophyte, and the 5% best sites are classified as SSSIs. These scores, of course, are chosen by us, but they match what the government seems to want to designate as protected habitat. In future we may want to protect a larger proportion of the countryside, in which case we can simply adjust threshold levels.

What we need now is for each county to draw up a list of proposed axiophytes and, in collaboration between us all, to standardise the rules so that they are roughly the same everywhere. It would be really interesting then to check out all the SSSIs in Britain against these lists and see if they really are well chosen. I can think of some sites that hardly contain any axiophytes at all, and one has to wonder whether they really warrant such a level of protection. Whereas the majority probably have at least 15 such species, and some surely have many more than this. What we don't yet know is whether size and diversity has much of an impact. It stands to reason that a large site with many different habitats would score much higher than a smaller site with only one vegetation type; but is that necessarily a bad thing? If anyone is looking for a thesis to write, here is a great opportunity to do some really worthwhile research. I shall post more information on the web site (www.bsbi.org.uk) and expand on the role of county recorders in the next issue of BSBI Recorder. Please get in touch if you want to help.

Good homes needed for various BSBI journals

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Irish Wild Plants: Myths, Legends and Folklore by NIALL MACCOITIR with original watercolours by GRANIA LANGRISHE

Most of us are never far away from green and growing things and indeed our lives would feel much poorer without them. The wild plants of Ireland have been bound up in our culture from the earliest times appearing in the ancient Irish brehon laws and nature poetry as well as myths and legends and much folklore. According to that folklore a person who carries a four-leaved shamrock will be lucky in gambling, while a girl who puts nine ivy-leaves under her pillow will dream of her future husband. Herbal medicine was also important in ancient Ireland. There were 365 parts to the body, and a different plant existed to cure the ailments of each part.

Plants are described in seasonal order, a fresh perspective which brings us back to the viewpoint of our ancestors. After the history of herbs in Ireland and traditional herbal medicine, different aspects of plant folklore are examined. Included are their roles in magical protection, their use in charms and spells (especially for love!), plants as emblems in children's games, in Irish place names and folklore cures.

This beautifully illustrated hardback book is published by The Collins Press in and will cost €25.00 / £18.99.

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Conservation on the Grand Scale

13th October to 17th November 2006, Birkbeck, London University

Six free public lectures of the Ecology and Conservation Studies Society / Birkbeck on consecutive Friday evenings, about opportunities and problems of managing major tracts of the countryside.

Full details from http://www.bbk.ac.uk/ce/environment/ecssociety/index.shtml

Get involved in National Conifer Week, 1-8 October 2006

Conifers have something truly special to bring to every garden whether it's a small balcony with room for a tub, or acres of grounds with enough space for an arboretum. During National Conifer Week, from 1 to 8 October 2006, the beauty and versatility of these 'plants for all seasons' will be celebrated, and gardeners will be encouraged to discover what conifers have to offer. Organised by the Association of British Conifer Growers (ABCG), and funded by the Horticultural Trades Association (HTA) and Horticultural Development Council (HDC), the campaign is designed to capture the public's imagination, drive increased awareness of conifers and boost sales of the plants.

A website (www.conifers.org.uk) has been created, with tips and inspiration for how people can use conifers in their own gardens, photographs and planting plans.

CONTRIBUTIONS INTENDED FOR

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Rumex maritimus in late flower & fruit on west bank

Young plant of *Rumex maritimus* in flower on *Zizania* dredgings

Rumex maritimus close up of fruiting head

Rumex maritimus in late flower & fruit on west bank, showing 'candelabra' habit

All photos Patching Pond, v.c. 13 (see pp. 11-12), M. Hollings © 2005

Photo 1: *Urtica membranacea* growing in pavement edge. All 5 photos see pp. 29-30, J. & V. Roberts © 2006

Photo 2: View of immature purple-tinged male racemes of *U. membranacea*

Photo 3: Unilateral 'membranous' males racemes at anthesis of *U. membranacea*

Photo 4: Two ovate connate paired stipules at node of *U. membranacea,* and female racemes

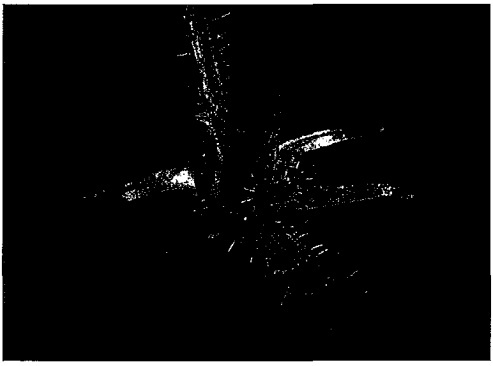

Photo 5: Four linear stipules at node of Common Nettle, *U. dioica*