# BSBI News

April 2008 No. 108

Botanical Society of the British Isles

Edited by Trevor James & Gwynn Ellis

*Lavatera trimestris* (Royal Mallow) (see p. 45)

*Echium boissieri* (Boissier's Viper's-b
(see p.45)

*Cerinthe major* (Greater Honeywort) (see p. 45)
All at filled quarry (v.c.13.) Photo M. Shaw © 2007

# CONTENTS



**Cover picture** – *Najas flexilis* flower, Loch Nan Gad (v.c.101). Photo D. Hicks © 2007 (see p. 26)

# IMPORTANT NOTICE

## New BSBI Hon Treasurer

We are delighted to welcome Anthony Nixon from St Albans as our new Hon Treasurer to take over from Michael Braithwaite from 14 April so that Michael is available to stand for President at the AGM in June. Anthony's appointment is by Council and he is available for reappointment by the membership at the AGM with the other honorary office-bearers.

Anthony is a commercial lawyer to the bioscience industry providing a range of services which include accountancy. He is a plant illustrator and is currently seeking to improve his plant identification skills. We look forward to benefiting from his wide experience.

Anthony's contact details are inside the back cover. Please note that Gwynn Ellis as Membership Secretary will continue to be the contact for all matters regarding subscriptions.

# EDITORIAL

GWYNN ELLIS & TREVOR JAMES

**Colour Section**. The editors make no apology for the choice of cover picture for this issue of *BSBI News*. It may not be as colourful as some recent covers but it is just as spectacular and illustrates the beauty to be found at a macroscopic level in this rarely seen part of our flora. It would be nice to see more examples of these in the pages of *News*. We must also thank our other contributors to the Colour Section (and the Black & White illustrations) and especially to Mike Shaw for the superb series of colour photographs of aliens, only a small number of which are printed here. Some of the others may appear in future issues! At the risk of repeating ourselves, may we again remark how surprising it is that so many articles which cry out for illustrations are sent with none!

**English names**. In the last issue, we mentioned the gradual removal of vernacular names from the titles of articles. Several members have taken exception to this and urged a rethink. As they rightly point out, for some, the vernacular name is much more easily recognised and remembered than the scientific one and its removal from the titles of articles puts them at a disadvantage. Let it never be said that we don't listen to our readers and vernacular names will again be given in titles where it seems appropriate. Some titles even omit the Latin name altogether, but this is usually the choice of the authors not necessarily the Editors!

**The *British Alpine Hawkweeds* monograph** was published at the beginning of April and all members who ordered a copy should have received theirs. If yours hasn't arrived by the time you read this, please contact Gwynn Ellis.

On April 14th we said goodbye to one Treasurer and welcomed another.

**Michael Braithwaite** has been our Treasurer for over 10 years and the Society owes him an enormous debt of gratitude for the exemplary way in which he has managed our finances during this time – Thank you Michael.

Fortunately we are not losing his services as we look forward to welcoming him as our new President at the AGM in June.

We also welcome Anthony Nixon as our new Treasurer and hope he will enjoy a long and happy incumbency.

# NOTES

## *Pyrola minor* (Common Wintergreen) on the Sefton Coast, Merseyside

PHILIP H. SMITH, *9 Hayward Court, Watchyard Lane, Formby, Liverpool L37 3QP*

### Introduction

*Pyrola minor* (Common Wintergreen) was recently placed on the Lancashire Wildlife Trust's list of endangered vascular plants in north Merseyside, Greater Manchester and Lancashire. This plant has declined throughout its scattered British range due to changes in land-use and management, often as sites become too dry (Preston *et al.* 2002). Although there are 19th century records for *P. minor* on Chat Moss, Greater Manchester, it has long been extinct there (Savidge *et al.* 1963). In modern times, the only South Lancashire (v.c.59) occurrences have been in the River Darwen valley west of Blackburn (SD6424) in 2000 and 2002 (P. Jepson) and on the Sefton Coast sand dunes, Merseyside (New Flora of South Lancashire Project). The first coastal records are for 1957 (C.K. Jones-Parry), with voucher specimens in LIV being labelled 'Ainsdale sands'. Vera Gordon also collected material for LIV in 1968 from 'Freshfield' and recorded a field observation at Ainsdale Sand Dunes National Nature Reserve (NNR). It is not clear whether these were separate localities. Payne (1982) lists *P. minor* as 'local, woodlands' in his vascular plant inventory for Ainsdale NNR. Twelve sites are shown on a map of rare NNR plants drawn up in 1976. These were in dry-slacks or fire-breaks through pine plantations in the central part of the reserve. No other survey data have been found.

On 3rd July 1983, I took photographs showing plants growing on the edge of a NNR plantation with virtually no other vegetation present and the ground covered in pine-needle litter. My field notebook entry for that date reads '*Pyrola minor* in patches under pines, mainly on landrover tracks. Full flower. Also in some of the slacks in pines with *Salix repens* and *Dactylorhiza fuchsii*.'

As no comprehensive survey of this locally endangered species had taken place for 30 years, it was decided to investigate its status on the Sefton Coast in 2007.

### Sefton Coast survey

A group of Liverpool Botanical Group members and friends was guided to some known localities in Ainsdale NNR by Site Manager, Alice Kimpton, on 21st June 2007. Subsequently, a few more sites were located by NNR staff and another visit was made by PHS and AK on 12th July 2007. Each colony found was located by a 10-figure GPS reading, a rough estimate was made of the number of *P. minor* plants, the approximate area was measured by pacing, the relative frequencies of associated vascular plants were assessed using the DAFOR scale and notes were made on habitat conditions. Sites under dense pine canopy could not be located by GPS. These were given a 6-figure grid reference using an OS map. By remarkable coincidence, Pat Lockwood discovered a completely new site for *Pyrola minor* on National Trust property at Formby Point on 19th June 2007. This locality was surveyed on the latter date using the same methodology as at Ainsdale.

### Survey results

#### Ainsdale NNR

Ten separate colonies were found, supporting more than 2000 plants and extending over a total area of about 811m$^2$ at SD2910 and SD2809. Only one colony had less than 100 plants, all others supporting over 100 and most several hundred. Most sites are at the edges of clearings through the pinewoods that are used as landrover tracks. An exception is a sub-circular basin surrounded by pines, which may have originated from a Second World War bomb explosion.

The habitat of *P. minor* is mostly an acidic type of dry-slack with a high frequency of mosses (especially *Polytrichum* spp.) and lichens (*Cladonia*). There is a degree of shading from nearby mature *Pinus nigra* ssp.

*laricio* (Corsican Pine) and also from regenerating pine and, especially, *Betula pendula* (Silver Birch) at most sites. The acidic nature of the substrate is reflected in the vascular plant community which is species-poor (30 associates) and represented mainly by species that tolerate base-poor conditions, e.g. *Anthoxanthum odoratum* (Sweet Vernal-grass), *Betula pendula*, *Carex arenaria* (Sand Sedge), *Dryopteris dilatata* (Broad Buckler-fern) and *Veronica officinalis* (Heath Speedwell). Reflecting the damp situation, there is also a high frequency of *Salix repens* (Creeping Willow). Other more ubiquitous species that are well represented are *Chamerion angustifolium* (Rosebay Willowherb), *Lotus corniculatus* (Common Bird's-foot Trefoil) and *Rubus fruticosus* agg. (Bramble) (Table 1).

**Formby Point:**

There are two *P. minor* colonies on the National Trust property, situated next to a lightly-used, grassy footpath between two blocks of mature pine at SD2708, the smaller colony being about 10m to the east on the main one. The two populations, which contain hundreds of plants, occupy areas of about 90m$^2$ and 12m$^2$, totalling 102m$^2$. The habitat appears very similar to that at Ainsdale, being an old dry-slack with an extensive moss and lichen cover. There is a light canopy of young birch, (*Betula*) and Sycamore (*Acer pseudoplatanus*). Species-richness is identical to that at Ainsdale (30 taxa) and, again, the most abundant plant is Sweet Vernal-grass. The two communities are closely similar, only 11 taxa found at Ainsdale being absent at Formby (Table 1).

**Discussion**

This study has clarified the distribution and abundance of *Pyrola minor* on the Sefton Coast sand-dunes, showing that the plant is more widespread and better established than previously thought, occupying a total area of about 913m$^2$. The plant's habitat here accords with that described in the literature; thus Preston *et al.* (2002) state that it occurs in damp woodlands, heaths, plantations, disused railways, on rock ledges and in sand-dunes. The species sometimes colonises plantations where it may be introduced or arrive naturally by wind-blown seed. The Ellenberg values in Hill *et al.* (2004) show that the plant prefers semi-shade, soils of average dampness, fairly acid conditions and low fertility, though some sources (e.g. Garrard & Streeter 1983) suggest that it is often found on calcareous soils. As there is more similar habitat in the extensive pine plantations along the coast, additional colonies may await discovery.

It is evident that, at most sites, regeneration of young trees (pine, oak, birch and/or Sycamore) is taking place, this being particularly heavy at some Ainsdale locations. Therefore, management may be required to ensure that the populations do not suffer from over-shading. Indeed, several of the sites mapped on the NNR in 1976 no longer support colonies of *P. minor*, having become dense birch woodland.

**Acknowledgements**:

The following members of the Liverpool Botanical Group played an invaluable role in the surveys: Maria Knowles, Pat Lockwood, John Somerville and Keith Watson. Alice Kimpton of Natural England kindly provided transport to remote parts of Ainsdale Sand Dunes NNR.

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Table 1. Vascular associates of *Pyrola minor* at Sefton Coast sites

| Taxon | English name | Modal frequency, Ainsdale NNR | Modal frequency, Formby Point |
|---|---|---|---|
| *Acer pseudoplatanus* | Sycamore | | r |
| *Agrostis capillaris* | Common Bent | r | f |
| *Anthoxanthum odoratum* | Sweet Vernal-grass | f | a |
| *Betula pendula* | Silver Birch | f | r |
| *Betula pubescens* | Downy Birch | f | la |
| *Carex arenaria* | Sand Sedge | f | la |
| *Carex flacca* | Glaucous Sedge | | r |
| *Cerastium fontanum* | Common Mouse-ear | | r |
| *Chamerion angustifolium* | Rosebay Willowherb | o | f |
| *Cotoneaster rehderi* | Bullate Cotoneaster | | r |
| *Dryopteris dilatata* | Broad Buckler-fern | o | r |
| *Epilobium montanum* | Broad-leaved Willowherb | r | |
| *Epipactis dunensis* | Dune Helleborine | r | r |
| *Epipactis phyllanthes* | Green-flowered Helleborine | o | |
| *Festuca rubra* | Red Fescue | | o |
| *Fragaria vesca* | Wild Strawberry | o | |
| *Hieracium* sp. | Hawkweed | | o |
| *Holcus lanatus* | Yorkshire-fog | o | r |
| *Holcus mollis* | Wood Soft-grass | r | |
| *Hypochaeris radicata* | Cat's-ear | r | r |
| *Ilex aquifolium* | Holly | r | |
| *Lonicera periclymenum* | Honeysuckle | | lf |
| *Lotus corniculatus* | Common Bird's-foot-trefoil | o | r |
| *Luzula campestris* | Field Wood-rush | r | o |
| *Pilosella officinarum* | Mouse-ear-hawkweed | la | |
| *Pinus nigra* ssp. *laricio* | Corsican Pine | o | |
| *Poa pratensis* | Smooth Meadow-grass | r | |
| *Polygala vulgaris* | Common Milkwort | | r |
| *Polypodium vulgare* | Common Polypody | r | r |
| *Prunella vulgaris* | Selfheal | r | |
| *Quercus* sp. | Oak | r | o |
| *Rosa canina* agg. | Dog-rose | | r |
| *Rubus fruticosus* agg. | Bramble | o | f |

| | | | |
|---|---|---|---|
| *Salix cinerea* | Grey Willow | r | |
| *Salix repens* | Creeping Willow | f | o |
| *Senecio jacobaea* | Common Ragwort | r | o |
| *Sorbus aucuparia* | Rowen | r | r |
| *Taraxacum officinale* agg. | Dandelion | r | r |
| *Veronica officinalis* | Heath Speedwell | r | o |
| *Vicia sativa* | Common Vetch | | r |
| *Viola* sp. | Violet | o | |
| Total 41 | | 30 | 30 |

# *Petroselinum segetum* (Corn Parsley) at the northern edge of its range, occurring with a remarkable associate

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*Petroselinum segetum* (Corn Parsley) reaches its northern-most limit in the British Isles immediately to the north of the Humber estuary in south-east Yorkshire (v.c.61) (Crackles, 1966; Preston, Pearman & Dines, 2002), although scattered sites have been recorded farther north. The species is a U.K. Biodiversity Action Plan Species of Conservation Concern and only three extant populations are now known to occur sporadically in this area.

However, is *P. segetum* really scarce?

*Torilis nodosa* (Knotted Hedge-parsley) is also a scarce plant in v.c.61. Most U.K. records are concentrated south of the Humber Estuary (Preston, Pearman & Dines, 2002). In 1998 I located two of the three extant populations of *P. segetum* for the first time, separated at a distance of 8km. At both places *P. segetum* and *T. nodosa* were growing together. The photograph (see Colour Section plate 4) shows *P. segetum* growing through a mass of dead, knotted inflorescences of *T. nodosa.* I have visited both sites in most years since to monitor populations and have consistently seen the *Torilis* in abundance, but the *Petroselinum* has tended to occur inconsistently.

I have recently discovered reference to this habit of *P. selinum* growing together with *Torilis nodosa* (Crackles, 1965), which has prompted this note. A stand of *P. segetum* was found by Dr Eric Chicken on the Humber bank, at Paull Holme, more than 10km to the west of my 1998 sites. This was growing together with *T. nodosa*, *T. japonica* (Upright Hedge-parsley) and *Apium graveolens* (Wild Celery).

Given the national scarcity of *P. segetum* and its apparent sporadic occurrence at a given place I suggest that it might prove rewarding to frequently visit sites where *T. nodosa* is known to thrive, and look for *P. segetum.* The species might not be as scarce as we have feared.

**Acknowledgement:**
I am indebted to local wildlife photographer Mr David Constantine for his patience in the field and permission to publish his photograph.

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# The flora of walls: dry stone versus mortared

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## Introduction

A number of authors have described the flora and ecology of walls, both in general and in specific areas. General accounts have been provided by Segal (1969) and Darlington (1981), who both give detailed accounts of the ecology. Numerous papers have described local studies. However, hardly any of these sources make any distinction between mortared walls and dry stone walls, and the latter may not be mentioned at all. For both Darlington and Segal, for instance, 'walls' seems to mean mortared walls. Segal appears even to include the presence of mortar as part of his definition of a wall. Both authors describe a number of plant associations, but these seem to belong to mortared walls. Even a publication distributed by the Dry Stone Walling Association (South Court Environmental Ltd., 1994) shows a similar neglect of dry stone walls. Is this because these two broad classes of wall have a common flora, or are there differences which have, as yet, been largely unrecognised?

Apart from a few very limited descriptions, the only studies of dry stone walls I have located are those of Payne (1989), who gives a list of vascular plants found on limestone dry stone walls in the Chew Valley in the Mendips, and Williams (1988), who does the same for walls built of acid rock in Shetland, with some reference also to bryophytes and lichens as groups. No survey has been located which lists the very important individual bryophytes and lichen, and fungi make no appearance at all.

It was to attempt to begin a comprehensive description that I undertook investigations in the parish of Winsley, West Wiltshire, about 6 miles from Bath and, geologically, within the southern end of the Cotswolds. It includes an agricultural plateau representing the highest part of the parish, varying from about 120 to about 150m above sea level. The road and field boundaries in this area were originally mostly dry stone walls made of the limestone which lies beneath, but these have been removed in many places and then consist either of herbage and scrub at various levels, or of hedgerows. However much remains, and the first study reported here investigated its flora.

The findings raised the question of whether the species present represented a distinct type of plant community specific to these walls, or whether they were better regarded as an example of a general wall community. The issue is addressed below by way of further investigations in Winsley and study of literature with a wider geographical base.

## A study of dry stone walls

Dry stone walls are free standing and built upwards without mortar, with stones in successive rows overlapping each other. Two horizontal structures like this are built with a gap between, leaning towards each other, and the centre is filled with stones of varying sizes to give a solid structure. At intervals, in most areas, long stones are laid wholly or partly across the wall to hold the two sides together. A line of coping stones is commonly laid on top, though this is uncommon in Winsley. Presland (2008) provides more detail, illustrations and references, as does his briefer account on the website: www.dry-stone-wall-flora.co.uk.

Detailed methods and results from a study of the roadside dry stone walls of Winsley are described in an article elsewhere (Presland, 2008). Briefly, a part of Winsley parish covering approximately 6 sq. km was selected for investigation because of the substantial presence of dry stone walls along roadsides. Records were made in 2006 and 2007. The area was divided into stretches of road varying from 150 - 750m in length, each referred to as a site. Recording was carried out on all stretches of dry stone wall not covered with ivy or clematis, not shaded by hedge shrubs and with nothing covering the wall top. The lowest one third or so of walls was excluded, since plants there appeared to be just exten-

sions of ground vegetation or else duplicated the superabundant *Homalothecium sericeum* higher up. Each species included in the survey was recorded simply as present or absent at each site, except for crustose lichens, which could not be identified with sufficient precision. Some other species were not recorded at all because they were not particularly associated with walls, and some because they were too immature to identify, or were garden species deliberately planted. Some mosses may have been overlooked because not identified. Lichens and fungi were included in recording, because, though not normally regarded as plants today, they behaved as though they were part of the flora.

**Results of the dry stone wall study**

There were records from 25 sites. A total of 40 species of plants lichens and fungi was recorded. The number of species recorded per site ranged from 0 -16. Nineteen sites had 10 or more species recorded, while a further 4 had 5–9 species. This unpromising looking habitat therefore hosted a significant number of species, though not all were typically wall plants. The most common individual species recorded, and the percentages of the 25 sites in which they occurred, are noted in the account of the flora below.

Limestone walls, such as those in the Winsley area, usually have a relatively rich flora compared with walls of acid rocks. The first pioneers are usually crustose lichens and, in Winsley, occur wherever the wall is bare. Species identified previously by lichenologists from specimens include *Caloplaca aurantia, Caloplaca citrina, Lecanora campestris*, and *Aspicilia calcarea*, and there are a number of unidentified species. The other pioneers here are the mosses *Tortula muralis* (Wall Screw-moss - 96%) and *Grimmia pulvinata* (Grey Cushion-moss - 92%), forming small hummocks on the bare stone.

The remaining common species arrive, typically, when pioneer lichens and mosses have combined with tiny fragments of rock to create a rudimentary soil, which enables them to establish anchoring roots and absorb sufficient nutrients. They are:

*Homalothecium sericeum* (Silky Wall Feather-moss - 96%)
*Bryum capillare* (Greater Matted Thread-moss - 88%)
*Geranium lucidum* (Shining Crane's-bill - 84%)
*Schistidium apocarpum* (Common Beard-moss - 80%)
*Sedum acre* (Biting Stonecrop - 72%)
*Orthotrichum anomalum* (Anomalous Bristle-moss - 56%)
*Saxifraga tridactylites* (Rue-leaved Saxifrage - 56%)
*Porella platyphylla* (Wall Scale-moss - 52%) (but actually a liverwort)
*Geranium pyrenaicum* (Hedgerow Crane's-bill - 40%)

All the above were seen mainly on wall tops, except *Porella platyphylla*, which was mainly on the sides.

Other species seen mainly on the wall tops were:

*Rhynchostegium confertum* (Clustered Feather-moss - 20%)
*Xanthoria parietina* (a greenish orange lichen - 2%)
*Erophila verna* (Common Whitlow-grass - 8%)
*Sedum rupestre* (Reflexed Stonecrop - a garden escape, thoroughly naturalised some distance from any garden at one site, but possibly introduced deliberately at the other - 8%)
*Encalypta vulgaris* (Common Extinguisher-moss - 4%, i.e. 1 site, but found at another some years previously)
*Galerina pumila* (a fungus which grows on mosses - 4%, also 1 site, but noted at another site previously)

Other plants found mainly on the sides of walls rather than the tops (a more protected location) were;

*Polypodium interjectum* (Intermediate Polypody - 20%)
*Cladonia pyxidata* (Cup-moss - 20%) (actually a lichen)
*Umbilicus rupestris* (Wall Pennywort - 16%)
*Asplenium ruta-muraria* (Wall-rue - 12%)
*Ceterach officinarum* (Rustyback - 4%)
*Phyllitis scolopendrium* (Hart's-tongue - 4%)
*Centranthus ruber* (Red Valerian - 4%)

A number of other species occurred either once or twice, but are not of much interest because they are not typical wall plants.

**A brief comparative study of mortared walls**

Mortared walls typically are built with more shaped and regularly rectangular stones held together by mortar. There are differences between mortared and dry stone walls which might result in differing floras. The mortar is a source of nutrients and water and provides anchorage for roots and rhizomes. The more regularly shaped stones of mortared walls fit closer together, with effects on anchorage and availability of nutrients and water. In a brief study of the flora of such walls in Winsley and the neighbouring village of Turleigh, recording was limited to listing the plants which occurred on clearly mortared wall and making occasional non-systematic notes. This was considered sufficient for the use to which the information was to be put. The bottom part of the wall was ignored, as for the dry stone walls, except where there was a downward extension of plants from higher up.

A total of approximately 50 species was recorded. Here, only those relevant to a comparison with dry stone walls are listed. The following plants were judged to be locally frequent on the mortared walls but were not noted at all in the dry stone wall survey:

*Asplenium trichomanes* (Maidenhair Spleenwort)
*Campanula portenschlagiana* (Adria Bellflower)
*Cymbalaria muralis* (Ivy-leaved Toadflax)
*Lepraria lobificans* (a lichen) – though it did occur on one non-retaining non-mortared wall in the mortared wall study area.
*Parietaria judaica* (Pellitory-of-the-wall)
*Pseudofumaria lutea* (Yellow Corydalis)

In addition other dry stone wall absentees were noted in only one spot. The following can reasonably be regarded as wall plants:

*Campanula poscharskyana* (Trailing Bellflower)
*Dryopteris filix-mas* (Male-fern)
*Erysimum cheiri* (Wallflower)
*Mycelis muralis* (Wall Lettuce)
*Rhynchostegiella tenella* (Tender Feather-moss)

Plus a larger number of other species which are not typical wall plants.

In addition, there were plants that were encountered only rarely as single specimens on the dry stone walls, which were locally frequent on the mortared walls:

*Asplenium ruta-muraria* (Wall-rue)
*Centranthus ruber* (Red Valerian)
*Ceterach officinarum* (Rustyback)
*Phyllitis scolopendrium* (Hart's-tongue Fern)

Plants common on the dry stone walls but absent from the mortared ones were:

*Geranium pyrenaicum* (Hedgerow Crane's-bill)
*Orthotrichum anomalum* (Anomalous Bristle-moss)
*Sedum acre* (Biting Stonecrop)

Plants which occurred less commonly on the dry stone walls and absent from the mortared ones were:

*Cladonia pyxidata* (Cup-moss) (actually a lichen)
*Encalypta vulgaris* (Common Extinguisher-moss)
*Erophila verna* (Common Whitlow-grass)
*Galerina pumila* (a fungus growing on moss)
*Polypodium interjectum* (Intermediate Polypody)
*Rhynchostegium confertum* (Clustered Feather-moss)
*Xanthoria parietina* (a greenish orange foliose lichen)

Plus a number of other species which are not typical wall plants.

Finally, there were species common on dry stone walls, which occurred in only 3 or fewer spots on the mortared walls:

*Bryum capillare* (Greater Matted Thread-moss)
*Geranium lucidum* (Shining Crane's-bill)
*Grimmia pulvinata* (Grey Cushion-moss)
*Homalothecium sericeum* (Silky Wall Feather-moss)
*Saxifraga tridactylites* (Rue-leaved Saxifrage)
*Schistidium apocarpum* (Common Beard-moss)
*Tortula muralis* (Wall Screw-moss)

*Umbilicus rupestris* (Wall Pennywort) occurred at 4 sites on the dry stone walls but only once on the mortared. Crustose lichens were abundant, but it was not felt necessary to identify them specifically, particularly in view of the difficulties in the process. In appearance, they were similar to those on the dry stone walls, with the addition, at least, of a grey-green species. Particularly striking was the observation that mosses were surprisingly rare, even *Homalothecium sericeum*, *Tortula muralis*, *Grimmia apocarpa*, *Schistidium apocarpum*, and *Bryum capillare*, all common on the tops of the dry stone walls. None of them occurred on more than 3 short stretches of these mortared walls.

The older mortared walls, which almost alone hosted plants, were almost certainly constructed of the same kind of stone as the dry stone walls studied, and could therefore be expected to have a similar flora. It is therefore of interest to have found that some species occurred only on the dry stone walls, while others were on only the mortared walls. It appeared also that some species occurred at very different frequencies in the two environments. Perhaps a clinching comparison emerges from listing all the species that were judged to be at least locally frequent on mortared walls, which amounts to 11, and then identifying the 11 species that were recorded at the greatest number of sites on the dry stone walls. These are shown in the table on the next page. There was no overlap at all, which is a strong argument for regarding the two communities as different.

The key question to ask here is whether these differences are typical of those that occur between the two types of wall or whether they are due to factors operating only locally. The latter might apply, for instance, to *Tortula muralis* and *Grimmia pulvinata*, which Porley and Hodgetts (2005) say are particularly partial to mortar. Their rarity on mortared walls in Winsley could be due to such factors as vehicular pollution or the topmost stones being vertical rather than horizontal so that soil creating debris is washed off. Where *T. muralis* did occur on mortared walls it was, indeed, on horizontal surfaces - in fact, almost entirely on concrete laid on top. One could speculate also about other differences observed. However, there is no doubt that, in Winsley, the dry stone walls and the mortared walls host different plant communities.

Comparison with the survey by Payne of dry stone walls in the Mendips encourages the notion of distinct communities. The four species which he could most confidently identify as having a statistical preference for dry stone rather than other walls were *Polypodium interjectum*, *Saxifraga tridactylites*, *Geranium lucidum*, and *Sedum acre*. In the Winsley study, *P. interjectum* and *Sedum acre* were found only on dry stone walls, while *Saxifraga tridactylites* and *Geranium lucidum* were common on dry stone walls and rare on the mortared, a high level of agreement. He found *Asplenium ceterach* (now *Ceterach officinalis*), and *Asplenium ruta-muraria* to have a 'marked relative aversion' to dry stone walls, which is also reflected in the Winsley findings. There is a puzzling discrepancy for *Asplenium trichomanes,* found by Payne to prefer dry stone walls but occurring only on mortared walls in Winsley. Both surveys found it preferring wall sides rather than tops and it is difficult to see how it could have acquired a foothold in the large crevices in the sides of Winsley dry stone walls. Williams (1988) also found differences between dry stone and mortared walls made from acid rocks, but the flora was quite different anyway, so meaningful comparisons could not be made. It looks as though acid walls need to be looked at separately.

**Implications**

A case has been made for regarding dry stone and mortared limestone walls as distinct communities in at least two localities. How widely the distinction applies and which plants consistently feature in each list must await data on a range of walls in further places. The same applies to walls built with acid rocks.

A further question raised is how the plant communities of dry stone walls fit into the National Vegetation Classification. For

instance, are walls of either or both types best regarded as part of a more general community not confined to walls, or are walls distinct? This is to be the subject of a further article.

Also important is the issue of what kinds of wall community are most important for conservation, and how this should be tackled. On the grounds that dry stone limestone walls are a distinctive community in at least some localities, I have prepared a guide to conserving their flora (Presland, 2007), based largely on my studies in Winsley. It describes dry stone walls; gives an account of the flora of those built with limestone; shows, with accompanying colour photographs, how to recognise typical plants on limestone dry stone walls; and gives a systematic account of conservation measures. It may help others interested in carrying out the necessary further surveys. The author is in contact with a number of BSBI members interested in this area, and would welcome hearing from anyone else who would consider carrying out surveys.

To help interested people keep track of what is happening in the field, a website has been set up - www.dry-stone-wall-flora.co.uk. Contributions are welcome.

Table: Comparison of species on mortared and dry stone walls in Winsley

| At least locally frequent on mortared | Top 11 species of sites on dry stone |
|---|---|
| *Parietaria judaica* | *Homalothecium sericeum* |
| *Cymbalaria muralis* | *Tortula muralis* |
| *Pseudofumaria lutea* | *Grimmia pulvinata* |
| *Centranthus ruber* | *Bryum capillare* |
| *Erysimum cheiri* | *Geranium lucidum* |
| *Asplenium trichomanes* | *Schistidium apocarpum* |
| *Asplenium ruta-muraria* | *Sedum acre* |
| *Ceterach officinarum* | *Orthotrichum anomalum* |
| *Phyllitis scolopendrium* | *Saxifraga tridactylites* |
| *Lepraria lobificans* | *Porella platyphylla* |
| *Campanula portenschlagiana* | *Geranium pyrenaicum* |

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Availability of the booklet *Conserving the flora of limestone dry stone walls* is described on pp. 66-67 of *BSBI News* **107**.

# Notes on the morphology of *Carex divulsa s.l.* (Grey Sedge)

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As co-referees of the *Carex muricata* group (Prickly Sedge), we frequently receive specimens of *Carex divulsa* Stokes *s. l.* (Grey Sedge) for identification. As might be expected, these are not always immediately referable to either of the two accepted British subspecies, *i.e.* the nominate ssp. *divulsa* and ssp. *leersii* (Kneuck.) W. Koch. We offer the following notes to demonstrate how, in some cases, inter-population variation can lead to difficulties of determination.

When approaching their morphological extremes, the two subspecies are readily separated by the following characters:

*Carex divulsa* ssp. *divulsa* possesses a long inflorescence (up to 15cm), which can bear many (*i.e.* up to 10) separate, small spikelets, the lower of which are clearly separated by more than 2cm, with those towards the top of the inflorescence becoming +/- contiguous. Within the spikelets the utricles are typically 3.5-4.0mm long, and are +/- appressed to the spikelet's axis. They also are of a whitish-green colour, which darkens on maturity. Early in the season the leaves, which rarely exceed 3mm in width, become bronze- or grey-green.

*Carex divulsa* ssp. *leersii* is often a more robust plant than ssp. *divulsa.* It possesses a much shorter, more compact inflorescence, usually no more than 5cm long, and can often be less. The two lowest spikelets are separated from each other by less than 2cm (and, due to their size, may sometimes appear to overlap), whilst those immediately above are +/- contiguous. Also, the spikelets are larger than in ssp. *divulsa*, and the utricles slightly longer (4.0-4.5cm). These are markedly divaricate in relation to the spikelet's axis and are yellowish, becoming red-brown later. The leaves, which measure between 3 and 5mm in width, remain bright yellow-green until late in the season.

However, a ready separation based on these characters only holds good in the more favourable cases and rapidly breaks down when so-called 'intermediate' populations are encountered. In the latter, the taxonomic characters may comprise a varying mixture of those supposedly definitive for one or other of the two subspecies, so that sometimes it may be difficult to determine plants with absolute certainty. In some populations, however, the morphology of the component plants, whilst appearing somewhat atypical, will still approach one or other of the two subspecies and so be broadly identifiable. At the moment, the cause of this variation is unknown but may result from introgressive gene flow between the two subspecies or, possibly, from actively-evolving speciation within the taxon as a whole. Nevertheless, despite these taxonomic dissimilarities, plants within these populations usually remain recognisable as belonging to the overall *C. divulsa* 'aggregate'.

To demonstrate some of this variation and to attempt to identify populations solely on their morphological characters, we examined 23 populations of *C. divulsa s.l.* collected from various parts of England, together with one population from France (Table 1). Unfortunately, there are very few taxonomic characters on which the two subspecies are separable, and all largely relate to those of the inflorescence.

From each population we randomly collected (or were provided with) an inflorescence and culm from each of ten plants which, as far as possible, were well-scattered throughout the population. For each inflorescence, the five most important taxonomic characters were measured (or, in the case of no. 5, estimated) as follows:

- Overall length from the base of the lowest spikelet to the apex of the inflorescence.
- Distance from the base of the lowest spikelet to the base of the second lowest.

- Distance from the base of the lowest spikelet to the base of the third lowest.
- Length of a single randomly selected utricle taken from the lowest spikelet.

Also, for the lowest spikelet, an estimation was made of the degree to which the utricles deviate (are divaricate) from the spikelet's axis. This subjective character was assessed on the scale: 1 = appressed, 2 = intermediate, 3 = divaricate. Half-units were sometimes estimated, if considered to be appropriate.

The data obtained were subjected to Principal Components Analysis (PCA) and the results obtained are shown in Figure 1 (see Colour Section, Plate 3). Using this technique, each of the specimens is located in a multi-dimensional array where the most similar specimens are located closest together. The axes of greatest variation can then be extracted, simplifying the diagram to two dimensions and allowing the location of each specimen to be visualised. In Figure 1, the horizontal (x-) axis represents the main (*i.e.* the 'principal') component and the vertical (y-) axis the less important, secondary component.

The results we obtained fully agreed with our concept of the morphology of each subspecies, the more extreme (and therefore the more typical) populations being positioned well towards the positive or the negative extremes of the x-axis (Figure 1). In this example, what we consider to be 'good' ssp. *divulsa* lay well to the right (+ side) of the diagram and 'good' ssp. *leersii* lay distinctly to the left (- side). Intermediate populations were variously positioned in between, whilst the more taxonomically obscure straddled the y-axis. Although it can be seen that there were appreciable inter-populations differences between the 24 examined, often the plants within them were fairly constant in their morphology.

When Figure 1 is examined it can be seen that the following populations were clearly referable to ssp. *divulsa* (and the first four very clearly so):

Bevington (v.c.34); East Keswick (v.c.64); Perks Lane (v.c.24); Stocking Lane (v.c.24); Bromley (v.c.16); Horam (v.c.14).

Similarly twelve populations were easily assignable to subsp. *leersii*:

Arthington Hall (v.c.64); Bassetsbury Lane (v.c.24); Dalton (v.c.69); Dordogne (France); Hatchers Lane (v.c.24); Mythe Tute (v.c.33); Park Wood (v.c.24); Matlock (v.c.57); Preston-under-Scar (v.c.65); Sinnington (v.c.62); Stonegrave (v.c.62); West Burton (v.c.65).

.This leaves a further six populations far less clearly defined and it is interesting that the data support the overall impression gained by a relatively cursory observation in the field (*i.e.* by their 'jizz'). These were:

Axbridge (v.c.6); Daglingworth A and Daglingworth B (both v.c.33); Hughenden Manor (v.c.24); Studley (v.c.64); Whorlton (v.c.66).

Of these, we conclude that the Studley and Hughenden Manor populations were assignable to ssp. *divulsa* (just) and that at Whorlton was most probably ssp. *leersii*. Concerning the three remaining populations: Daglingworth (two populations) and Axbridge we provisionally defer judgement. The Daglingworth plants had relatively large utricles and spikelets (*cf.* ssp. *leersii*), but the latter were separated more than normal in a relatively long inflorescence (*cf.* ssp. *divulsa*). The population at Axbridge was similarly variable and even more confusing. It was tempting to speculate that both of the subspecies could be present in all three populations but whether or not this is the case is open to conjecture.

In the PCA diagram, where the individual plants within the populations were shown to be closely clustered, it follows that there was little intra-population variation present. Good examples of such were ssp. *leersii* at Mythe Tute and West Burton and ssp. *divulsa* at Bromley. By contrast, some populations showed a much more scattered pattern, with appreciable variation plant-to-plant. Examples of this were ssp. *divulsa* at Bevington and at Perks Lane.

It is fully appreciated that this assessment has been carried out using only a limited number of characters on only a relatively small number of populations and, within them, also on a small number of plants (*i.e.* 10). However, it hoped that, in its limited way, it demonstrates how the morphology of various populations within the overall taxon can vary and merge. Until a detailed genetic/molecular investigation is carried out, a more precise explanation of such morphological variation will remain unresolved. The current view that, in England, ssp. *divulsa* is of a more southerly distribution than subsp. *leersii* was largely upheld by our results.

**Acknowledgements**
We are grateful to Alan Showler for showing one of us (MP) various Buckinghamshire (v.c.24) sites, to Mark Kitchen for giving us details of the Bevington (v.c.34) site, and to Trevor Taylor for supplying us with specimens from Matlock (v.c.57).

Table 1: Populations of *Carex divulsa s.l.* examined

Arthington Hall (v.c.64: Mid-west Yorks)
Axbridge (v.c.6: North Somerset)
Bassetsbury Lane, High Wycombe (v.c.24: Bucks)
Bevington (v.c.34: West Gloucester)
Bromley (v.c.16: West Kent)
Daglingworth A (v.c.33: East Gloucester)
Daglingworth B (v.c.33: East Gloucester)
Dalton (v.c.69: Westmorland)
East Keswick (v.c.64: Mid-west Yorks)
Hatchers Lane (lower), Great Kingshill (v.c.24: Bucks)
Horam (v.c.14: East Sussex)
Hughenden Manor, High Wycombe (v.c.24: Bucks)
Matlock (v.c.57: Derbyshire)
Mythe Tute, Tewkesbury (v.c.33: East Gloucester)
Park Wood, Bradenham (v.c.24: Bucks)
Perks Lane, Prestwood (v.c.24: Bucks)
Preston-under-Scar (v.c.65: North-west Yorks)
Sinnington (v.c.62: North-east Yorks)
Stocking Lane, Naphill (v.c.24: Bucks)
Stonegrave (v.c.62: North-east Yorks)
Studley (v.c.64: Mid-west Yorks)
West Burton (v.c.65: North-west Yorks)
Whorlton, (v.c.66: Durham)
Dordogne valley (Bergerac, France)

## *Vulpia myuros* (Rat's-tail Fescue) in fallow fields in England

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While visiting Countryside Survey 2007 surveyors to see how they were getting on, and on an excursion nearer home, I noticed an abundance of *Vulpia myuros* (Rat's-tail Fescue) in fallow fields in West Kent/East Sussex and a fen-edge field in Cambridgeshire. Having spent four years studying *Vulpia* 20 years ago for my PhD I was somewhat surprised to find this species so widely spread across fields. It was a noted weed alongside tracks and railways and somewhat restricted in abundance and distribution in the past, although Stace in his 2nd edition of the *New Flora of the British Isles* does state that it 'has increased in recent years'.

I wonder if other members have noted the spread of this species in southern and eastern England into fields? Is this a new phenomenon resulting from a combination of warm springs and an increase in available habitat as land has been left fallow, either because of low grain prices or through agri-environment schemes? Alternatively has this happened before in times of agricultural depression?

# History, evolution and future of arctic and alpine flora: notes from a meeting, 25th – 27th June 2007, University of St Andrews

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Climate change is having a major impact in the Arctic where permafrost is melting, glaciers are receding, and sea ice is disappearing. Equally, in mountainous regions treelines are ascending and large areas of existing alpine habitat are under threat. Predicting how climate change will alter the future distributions of cold-loving animals and plants, and therefore the composition of arctic and alpine biota, is currently a major goal in ecology and conservation biology. Rapid climate warming, however, is but the latest of many major climatic fluctuations to have affected arctic and alpine biota during their history. Go back 3 - 4 million years and there was no arctic flora of the type recognised today. The present-day arctic flora replaced Arcto-Tertiary forest when global temperatures dropped markedly towards the end of the Pliocene (approximately 3 million years ago). Since then, recurrent cycles of ice ages interspersed with shorter, warmer periods have caused arctic and alpine plants to experience frequent range fragmentations and expansions. Now, thanks to a surge in the use of various forms of molecular phylogenetic and phylogeographic analysis, along with an accumulating body of pollen and macrofossil evidence, a greater understanding is emerging of the nature and effects of these events. To discover what is new in this regard and also for predicting what changes might lie ahead as a result of rapid climate warming, a Botanical Society of Scotland symposium was held in June 2007 at the University of St Andrews on the *History, evolution and future of arctic and alpine flora.* This meeting, which was jointly sponsored by the Botanical Society of the British Isles, the Botanical Society of Scotland, Scottish Natural Heritage, the British Ecological Society, and the Genetics Society, ran over three days and brought together ecologists, palaeoecologists, evolutionary biologists and biogeographers. The scientific programme, which comprised 29 talks and 30 poster presentations, attracted more than 100 delegates, almost half coming from mainland Europe and North America.

The conference began with a keynote address by Hilary Birks (Bergen), providing a thorough background to the history of arctic and alpine flora based on fossil evidence. There followed presentations of the latest fossil evidence on the type of tundra that occurred in Beringia during the last ice age (Mary Edwards, Southampton); the fact that bog rather than forest has replaced tundra in north-east Siberia since the Last Glacial Maximum (LGM) (Frank Kienast, Potsdam); and that trees grew considerably further north in Europe during the LGM than previously thought (John Birks, Bergen). Subsequent presentations on the history of arctic and alpine plants involved molecular reconstructions of where they survived Pleistocene ice ages and how they achieved their current distributions via vicariance and/or long- versus short-distance dispersal events. As a cautionary note from a conservation standpoint, Pierre Taberlet (Grenoble) revealed in a keynote lecture that intraspecific genetic diversity does not co-vary with species diversity across the Alps and Carpathians. The history section ended with a rousing presentation by Rolf Holderegger (WSL, Switzerland) on the application of genomics to the reconstruction of the adaptive history of arctic-alpine plants.

Talks on evolutionary aspects opened with a keynote address by Christian Brochmann (Oslo) who questioned whether the Arctic was an 'evolutionary freezer'. Results from his research group clearly show that this is not the case, in that rapid speciation during the Pleistocene has occurred at both diploid and polyploid levels in some plant groups (e.g. *Draba*). As is well known, the arctic flora is characterised by a high frequency of species that are polyploid and exhibit uniparental reproduction (i.e. selfing or apomixis). Thus several papers examined the evolution of polyploidy and breeding system in particular arctic and

alpine groups, and, in the process, highlighted some interesting contrasts. For example, in *Primula* the evolution of high ploidy and selfing conforms to Stebbins' secondary contact model where glacial advancement during the Pleistocene caused fragmentation of diploid, outcrossing populations that later came into contact as glaciers retreated, hybridized and gave rise to polyploid, selfing taxa (Elena Conti, Zurich). In contrast, in *Artemisia*, there are proportionally no more polyploids in arctic lineages than in their respective non-arctic sister groups, and small arctic plants with large flower heads have evolved repeatedly, probably for better pollinator attraction to ensure outcrossing and high heterozygosity at the diploid level (Bernhard von Hagen, Halle). Other talks in this section included presentations on when and where different arctic and alpine plants originated and how they spread from their points of origin. Here again, molecular evidence indicates that the late Tertiary and the Quaternary were periods of active speciation in arctic and alpine plants (Kadereit, Mainz; Koch, Heidelberg).

The third section of the meeting attempted to make some predictions about how rapid climate warming will affect the arctic and alpine flora. It began with a keynote lecture by Robert Crawford (St Andrews) who argued that many arctic species have the capacity to adapt to warmer conditions through physiological and phenological plasticity, and also genetically according to their known ability for ecotypic differentiation in response to present-day habitat variation in the Arctic. Phil Wookey (Stirling) described the use and limitations of 'environmental manipulation' experiments in the field as a means of predicting what changes could occur, and Pete Hollingsworth (RBG, Edinburgh) and Chris Sydes (Scottish Natural Heritage) focused on different aspects of conserving the Scottish arctic-alpine flora. The speed at which the arctic flora might change in composition due to climate warming will to an extent be determined by the frequency with which more competitive, warmth-loving species arrive from the south via long-distance dispersal. This is particularly true for floras of arctic islands that are isolated from the nearest mainland. Here, we might use the past as a possible key to the future, and recent work involving DNA fingerprinting (AFLP) of Svalbard plants has shown that long-distance plant colonization of this remote arctic archipelago occurred repeatedly from a wide range of mainland sources during the Holocene (Inger Alsos, Longyearbyen, Svalbard). Thus even the most isolated areas of the Arctic are likely to be within the range of long-distance dispersal by warmth-loving plants, and therefore could be colonized rapidly by such plants as the world heats up.

In addition to the main scientific programme, Jim Ritchie (Professor Emeritus, Toronto) gave a delightful and memorable conference-dinner speech on his life's work on the history of arctic vegetation. Jim moved to Canada in 1955 after completing his PhD in Sheffield on the taxonomy of hybridizing blueberries. Shortly before departing, Arthur Clapham (then Professor of Botany at Sheffield) gave him a copy of Eric Hultén's classic text *Outline of the history of arctic and boreal biota during the Quaternary period* (published in 1937). This book influenced Jim to such an extent that he changed his research path and embarked on a career as a palaeoecologist, leading to the publication of his landmark text on *Postglacial vegetation of Canada* in 1987. For that book and his other work, Jim Ritchie has achieved the distinction of becoming a 'legend in his own lifetime' to his fellow arctic biologists.

Overall, the St Andrews meeting achieved its objective in providing a timely synthesis of the latest research on the history, evolution and possible future of arctic and alpine flora. This was a one-off event run as a Botanical Society of Scotland symposium during International Polar Year. However, based on the stimulating discussions held throughout the course of the conference, it should not be too long before another such meeting is organised on this important topic.

# *Rumex aquaticus* (Scottish Dock) at Loch Lomond

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On the way to the Isle of Skye a group of four called in at the golf course at Loch Lomond to see if we could find several plants of interest. The first we looked for was *Glyceria canadensis* (Rattlesnake Grass), a non-native from America. This grass was found growing in a shady area. Several rather young looking *Rumex* plants were noted near the Loch and given their large size appeared to be *R. aquaticus* (Scottish Dock). However, it was rather too early to tell whether they were this species or if they had been affected by hybridization.

In the initial group, members of the Bradford Botany Group, were Jesse Tregale, Brian Byrne and David Mason. I planned a later visit to Loch Lomond to see the Scottish Dock and check out whether there was any hybridization involved. In all, 18 plants of the dock were seen near the bridge where we had first seen the young plants. After checking all 18 for teeth and tubercles it became apparent that all seemed to be influenced by hybridization (introgression). 'Introgression is the acquiring of characteristics by one species from another by hybridization followed by backcrossing,' (Stace 1997). That is, a hybrid which looks intermediate will cross again with one of the parents to dilute the influence of one parent making it look closer to one or other of the parents. This process can be continual.

From the evidence that I saw, this dock was influenced by hybridization. Note in figure 1 that the tepals are very broad with teeth around the edges. Table 1 shows how they were measured for hybridization. It can be seen that many have a tubercle present and that the ratio of length to breadth is mostly less than 1.2 times as long as wide. In Stace (1997) the text states that, '...tepals 5-8mm, ovate-triangular, entire, without tubercles...' and the key for this species is 'Key A' (plants without tubercles). It is likely that some entire-tepaled species will be dentate but this is likely to be very minor and not tooth-like. The key in Stace (1997) states:

1. Tepals entire or nearly so – (2),
2. Tepals distinctly longer than wide – *Rumex aquaticus*.

Keying out the above dock would hardly fit this description. It is clear from the evidence that these docks at Loch Lomond have been influenced by hybridization – introgression, some more than others, and therefore it is *R. aquaticus* × *R. obtusifolius* – *R.* ×*platyphyllos*. It is mentioned in the New Atlas (Preston *et. al.* 2002) that there is conservation concern for *Rumex aquaticus* at many of its sites in Britain, which is restricted to a handful in Scotland. This appears to be the case but in a Genus where hybridization is common, it is not surprising and may be part of the evolution of plants and what makes it more interesting and challenging for botanists.

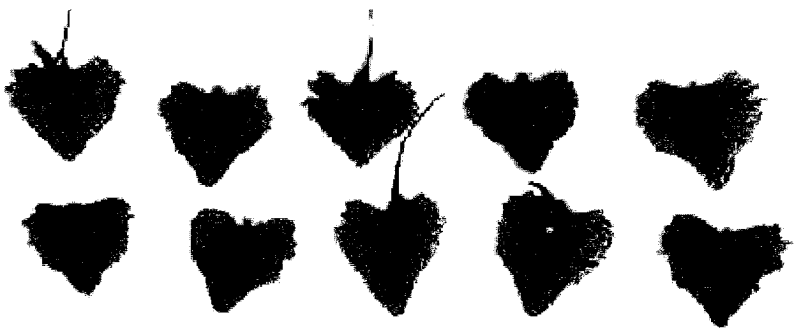

Fig 1. Tepals of Loch Lomond Plants. Note teeth and tubercles

Table 1. Analysis showing variation in tepals of *Rumex aquaticus* × *R. obtusifolius*

| Tepal No. | No. of Teeth | Dentition P/N | Tubercle No. | Length/Breath (mm) +Ratio |
|---|---|---|---|---|
| 1 | 9 | P | Y | 6/5 = 1.2 |
| 2 | 10 | P | N | 5/5 = 1 |
| 3 | 12 | P | Y | 6/6 = 1 |
| 4 | 12 | P | Y | 5/6 = 0.8 |
| 5 | 12 | P | Y | 5/5.5 = 0.9 |
| 6 | 9 | P | Y | 6/6 = 1 |
| 7 | 10 | P | N | 7/6 = 1.16 |
| 8 | 6 | P | N | 6/5 = 1.2 |
| 9 | 14 | P | Y | 7/6 = 1.16 |
| 10 | 18 | P | N | 6/6 = 1 |
| 11 | 11 | P | Y | 6/4.5 = 1.3 |
| 12 | 13 | N | Y | 7/6 = 1.16 |
| 13 | 8 | P | Y | 5/5 = 1 |
| 14 | 12 | P | Y | 6.5/6 = 1.1 |
| 15 | 8 | P | Y | 7/6 = 1.16 |
| 16 | 9 | N | N | 6/5 = 1.2 |
| 17 | 8 | P | Y | 6/5 = 1.2 |
| 18 | 11 | P | Y | 6/5 = 1.2 |
| 19 | 9 | P | N | 5/5 = 1 |
| 20 | 8 | P | Y | 6/6 = 1 |
| 21 | 10 | P | N | 6/5 = 1.2 |
| 22 | 9 | P | N | 6.5/6 = 1.1 |
| 23 | 9 | P | Y | 5.5/5.5 = 1 |
| 24 | 8 | P | N | 5.5/5 = 1.1 |
| 25 | 6 | P | Y | 6/6 = 1 |
| 26 | 2 | P | N | 5/5 = 1 |
| 27 | 8 | P | Y | 6/5.5 = 1.1 |
| 28 | 7 | P | Y | 6/5.5 = 1.1 |
| 29 | 6 | P | Y | 6/5 = 1.2 |
| 30 | 8 | P | N | 5/4 = 1.25 |

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# Key to the British & Irish *Dryopteris affinis* group (Scaly Male-fern)

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## Introduction

In a recent paper by C.R. Fraser-Jenkins (2007), the main taxa within the *Dryopteris affinis* (Lowe) Fras.-Jenk. aggregate in Europe, formerly treated as subspecies of *D. affinis*, are treated as six species, while what were formerly treated as geographical varieties are currently treated as nine subspecies belonging to three of the species. Of the six species, three of them are present in Britain and/or Ireland. They are as follows, with their subspecies.

*Dryopteris affinis* ssp. *affinis* – common and widespread, especially towards the north and west of Britain, abundant in Ireland.

*D. affinis* ssp. *paleaceolobata* – uncommon, but widely distributed, mainly in the west.

*D. affinis* ssp. *kerryensis* – found only in south-west Ireland.

*Dryopteris cambrensis* ssp. *cambrensis* – uncommon in England (except the north), less so in Wales, but is the commonest species in Scotland; common in the N. and W. of Ireland.

*D. cambrensis* ssp. *pseudocomplexa* – Skye, Arran, Islay and two sites in south-west Ireland.

*Dryopteris borreri* – common and widespread.

The four species of the aggregate not known to be present in Britain or Ireland are *Dryopteris pseudodisjuncta* (Tavel *ex* Fras.-Jenk.) Fras.-Jenk., *D. schorapanensis* Askerov, *D. pontica* (Fras.-Jenk.) Fras.-Jenk. and *D. iranica* Fras.-Jenk. (not known to grow in Europe).

The following key has been adapted from the above publication and simplified to apply to the British and Irish taxa. The new key follows the logic of and uses similar wording to the original key and has been adapted by BKB and PDP with assistance from CRFJ. The descriptions of the subspecies that follow the key are adapted slightly, but are otherwise the same as those in CRFJ's paper and are required as a further means to check after running a specimen through the key, in case some balancing out may be required. Dimensional definitions of words used have not been provided as some basic experience of the plants is assumed in order to understand terms such as 'long *v.* short', 'large *v.* small' *etc.*

The key is based on the normal range of variation seen in mature specimens and both immature ones and occasional extremes may have to be identified by comparison and study of the population, rather than by use of a key.

## Key:

1a. Lamina considerably glossy above. Sori tall, indusium ± thick, only slightly lifting and usually splitting on ripening and not, or only slightly shrivelling. The lowest basiscopic (*i.e.* downwards pointing) pinnule of the lowest pinna usually ¼ - ½ adnate to the pinna-costa (*i.e.* pinna-midrib): **2**

1b. Lamina not, or only slightly glossy. Sori not tall, indusium ± thin, lifting on or after ripening and shrivelling, not splitting. The lowest basiscopic pinnule of the lowest pinna usually fully stalked, or sometimes ¼ adnate: **6**

2a. Pinnules markedly crowded, some with sloping apices: ***D. affinis* ssp. *kerryensis***

2b. Pinnules not markedly crowded, with symmetrical apices: **3**

3a. Lamina with a wide base, the lowest basiscopic pinnules of the lowest pinna developed and longer than the rest, the lowest pinnules on each pinna markedly lobed with small, neat lobes; stipe and rachis scales all narrow (indusium shrivels more than in other *D. affinis* subspecies and lowest pinnule less adnate): ***D. affinis* ssp. *paleaceolobata***

3b. Lamina ± tapering to the narrowed base, the lowest basiscopic pinnules of the lowest pinna not usually the longest, lowest pinnules on each pinna unlobed, or ± shallowly lobed with somewhat coarse lobes; stipe and rachis scales narrow or wide: **4**

4a. Lamina flat, thickly coriaceous, with veinlets markedly impressed above. Pinnae long; pinnules markedly regular in size, with parallel sides, seldom lobed at the sides apart from a rounded basal auricle on the lowest pair of pinnules of each pinna. Sori large, spores small mostly regular (*i.e.* nearly all good): ***D. affinis* ssp. *affinis***

4b. Lamina not flat as at least some pinnules are normally curved up at their tips, coriaceous, but not thickly so, veinlets not markedly impressed above. Pinnae short; pinnules often irregular in size as the first opposite-pair of pinnules on each pinna is frequently somewhat longer than the rest, not completely parallel at the sides as they are often slightly spathulate and wider at their apices (sometimes due to the down-rolling of the lower-mid sides), usually lobed at the sides, at least on the lowest pair of pinnules on each pinna. Sori relatively small, spores large with a considerable proportion of abortive spores (sometimes nearly equal to the number of good spores): **5**

5a. Scales all pale, lamina pale-green, pinnae long with well separated pinnules and teeth often absent, or, when present, narrowly acute: ***D. cambrensis* ssp. *pseudocomplexa***

5b. Scales not all pale (apart from in some exceptional plants), but brown or slightly yellowish-russet brown, lamina mid- to dark-green, pinnae short, teeth often absent, or, when present, somewhat obtuse, though often with a pointed apex: ***D. cambrensis* ssp. *cambrensis***

6a. Pinnule-teeth obviously present: **7**

6b. Pinnule-teeth ± absent: **12b**

7a. Pinnule-apices squarely truncate: ***D. borreri***

7b. Pinnule-apices ± rounded, or pointed: **8**

8a. Pinnule-teeth ± narrowly acute at the tips of the pinnules: **9**

8b. Pinnule-teeth ± obtuse at the tips of the pinnules: **11**

9a. Lower pinnules with markedly rectangular side-lobes with pointed corners: ***D. borreri***

9b. Lower pinnules ± without rectangular side-lobes (though often with rounded, or pointed ones: **10**

10a. The lower pinnules on each pinna lobed with numerous small, neat lobes; stipe and rachis scales mostly narrow: ***D. affinis* ssp. *paleaceolobata***

10b. The lower pinnules on each pinna unlobed or lobed with few, often somewhat coarse lobes; stipe and rachis scales include many wide ones: ***D. cambrensis* ssp. *pseudocomplexa***

11a. The lower pinnules on each pinna lobed with numerous small, neat lobes; stipe and rachis scales mostly narrow: ***D. affinis* ssp. *paleaceolobata***

11b. The lower pinnules on each pinna unlobed, or lobed with few, somewhat coarse lobes; stipe and rachis scales include many wide ones: ***D. cambrensis* ssp. *cambrensis***

[12a. Indusia large, markedly tall, thick, persistent, splitting, scales mostly to almost all narrow, lamina very glossy: ***D. affinis*** (included here for comparison)]

12b. Indusia small, not markedly tall, relatively thin, not splitting, shrivelling later, scales include many wide ones, lamina matt or somewhat glossy: **13**

13a. Pinnule-apices squarely truncate, though often with rounded corners, so becoming truncately rounded: ***D. borreri***

13b. Pinnule apices rounded to rounded-pointed: **14**

14a. Pinnules well separated, pinnae long, scales very pale or whitish: ***D. cambrensis* ssp. *pseudocomplexa***

14b. Pinnules crowded, pinnae short, scales yellowish-brown to brown: ***D. cambrensis* ssp. *cambrensis***

**Comparative diagnostic descriptions**

***D. affinis* ssp. *affinis***

Frond flat. Plasticky (like a moulded plastic) on the upper surface, smooth laminar texture and regular, rounded-truncate pinnules. Frond usually ± wide (except when exposed on screes *etc.*), with a relatively short stipe, except in large, luxuriant plants in woods; lamina generally tapering somewhat towards the base. Stipe and rachis densely clothed with somewhat narrow scales which stick out from the rachis; scales variable in colour, most commonly mid- to deep golden-brown, with darker centres and bases, but in some localised clones deep-brown to blackish, in others pale. Lamina thicker, more highly coriaceous and markedly more glossy above than in the other taxa, of a noticeably plastic-like texture above, with the veinlets impressed in the upper surface, somewhat glaucous below with the veinlets darkened. Variable in colour above, but usually dark green except when exposed, when becoming yellower. Pinnae not, or hardly tapering throughout most of their length, but extending to a long caudate apex, flat; pinnules more regular in size and shape than in the other taxa, sometimes becoming ± crowded when growing in open places, though not overlapping, but usually ± separated, or well separated by a U-shaped gap (or disjunction), especially when growing in woods. When not markedly 'disjunct' the pinnules may be slightly more widely attached to each other at their bases than in the other taxa; usually ± unlobed except for a ± rounded basal auricle on the lowest-opposite pair of pinnules on each pinna (though occasional plants may have prominently lobed and/or even sharply toothed pinnules). The lowest opposite-pair of pinnules of each pinna usually ± the same length as the rest, basiscopic (downwards pointing) pinnules at the bases of the lowest pinnae not usually becoming developed or longer, with the lowest basiscopic pinnule of the lowest pinna either the same size as, or often somewhat smaller than the rest and usually between ¼ and ½ attached (or adnate) to the pinna costa (mid-rib), usually nearly all along the acroscopic (upper) side of its stalk with most of the base on the other side free. Pinnule-apices rounded to rounded-truncate (rarely more pointed further up the frond in large plants), bearing rather few, obtuse pinnule-teeth. Fronds eglandular. Sori the largest in the group, indusia thick, large, ± tall, somewhat pale until older, eglandular, markedly curved down and inwardly inflected at the margins until the spores ripen, when the indusia lift slightly at the edges and usually split open radially in one or more places as the sporangia turn black (the splits being difficult to see once the sporangia have dehisced), but hardly shrink and do not normally shrivel up or lift completely (except in a few exceptional specimens), persisting until the fronds begin to die. Spores relatively small and regular, ripening later than in the other taxa. Fronds ± persistent throughout most of the winter.

***D. affinis* ssp. *paleaceolobata* (T.Moore) Fras.-Jenk.**

Can be confused with *D. cambrensis* ssp. *cambrensis* because of its lobed pinnules but the pinnae are longer and more parallel-sided than in *D. cambrensis* and the lamina is more widely lanceolate with a somewhat wide base or widest just above it, tapering from there to the apex, more glossy and with more twisted pinnules including their side-lobes, and the stipe-scales are consistently darker and narrower. The pinnule-lobes are also smaller, narrower and neater and the spores are smaller. Also similar to ssp. *affinis* but differs

somewhat markedly in its pinnules all being lobed at the sides and usually slightly irregularly twisted or tilted up from side-to-side (seldom curved up at the apices as in *D. cambrensis*). The lowest basiscopic pinnule is developed and becomes the longest and most lobed in the frond, and is fully stipitate. However it retains the dense, dark and narrow stipe- and rachis-scales and markedly glossy lamina of *D. affinis*, as well as the eglandular frond and tall though not as thick, eglandular indusium, which splits, but then unlike in ssp. *affinis*, shrivels somewhat on ripening. It also has similarly small spores and usually more obtuse teeth, though these often become somewhat acutely deltate (acuminate) and flabellately spread out around the pinnule-apex. The pinnule side-lobes are rounded and not as rectangular as in *D. borreri*.

***D. affinis* ssp. *kerryensis* (Fras.-Jenk.) Fras.-Jenk.**

Similar to *D. cambrensis* ssp. *cambrensis*, but with a smaller, somewhat diminutive frond, and markedly flatter and dark-green, glossy lamina. Stipe- and rachis-scales narrow, dark-brown to blackish; pinnae flat, or slightly convex from above with the pinnules often slightly curved down at their edges and apical halves. Pinnules markedly crowded, ± rectangular, the lowest opposite-pair on each pinna often bearing a few distinctive ± wedge-shaped, pointed side-lobes and a similar basal auricle. Pinnule-apices varying from rounded to more usually rounded- to square-truncate, often slightly sloping obliquely from one side to the other, bearing somewhat long, acute teeth, but which are slightly wider up to their apices than in *D. borreri*.

***Dryopteris cambrensis* (Fras.-Jenk.) Beitel & W.R.Buck ssp. *cambrensis***

Intermediate between *D. affinis* and *D. oreades* Fomin, and the nearest triploid to *D. affinis* in morphology. The British plants are usually the least toothed, with the brownest (or occasionally pale) scales, though in places in north Wales and the Cairngorm Highlands of Scotland they may become slightly more toothed, and with more russet-brown scales, thus slightly approaching ssp. *distans* (Viv.) Fras.-Jenk. [a continental subspecies]. The scales range from pale, to more usually, mid- to dark-brown, usually with darker bases, and are glossy and usually slightly twisted; the larger ones are wider than in *D. affinis* and sometimes more glossy. Stipe usually relatively short, except when growing in woods, or between boulders. Lamina slightly thinner than in *D. affinis*, smooth with the veinlets hardly impressed above, glossy above when compared with *D. borreri*, though not as glossy as in *D. affinis*, usually darker-green, though paler or yellowish when in the open, characteristically narrow, ± tapering towards the base. Pinnae short compared to *D. affinis*, tapering throughout from their wider bases, seldom flat as at least some of the ± rounded or narrowly-rounded pinnule-apices, especially the lowest basiscopic ones and lowest opposite-pair on each pinna, are usually curved upwards out of the plane of the frond, and the pinnules sometimes twist irregularly laterally, resulting in a slightly crisped appearance to the frond (but not as markedly as in *D. affinis* ssp. *paleaceolobata*). Lowest opposite pair of pinnules of each pinna (*i.e.* the lowest acroscopic (upper) and basiscopic (lower) pinnule of a pinna) the longest, and usually overlapping the rachis, the lowest one often deflexed basiscopically (*i.e.* bent slightly towards the base of the pinna) so as to lie slightly over the rachis, the lowest basiscopic pinnule of the lowest pinna is usually fully stalked, or stipitate. The pinnules vary from well lobed with rounded lobes to almost unlobed, the pinnule-apices are rounded and vary from fairly prominently toothed to more frequently small-toothed or ± untoothed, and in either case have shorter and more obtuse teeth than in ssp. *insubrica* (Oberh. & Tavel *ex* Fras.-Jenk.) Fras.-Jenk. [a continental subspecies]. In some specimens there are a few (up to *c.* 30) glands on the edge of the indusium, or the frond-axes are sparsely glandular, but most plants are ± eglandular. Sori are smaller, or nearly the same size as in *D. affinis*; the indusia are somewhat thick, thicker than in *D. borreri*, though with a thinner margin than in *D. affinis*, ± tall,

somewhat pale, or greyish, until old, markedly curved down and inflected as in *D. affinis*, but when the spores ripen the indusia frequently split, then lift up, to lie over the top of the sorus, finally shrivelling considerably and after some time, dropping off, but not shrivelling as much as in *D. borreri* and persisting longer, becoming brown. Spores markedly larger than in *D. affinis* and containing a markedly higher proportion of abortive ones; also somewhat darker in colour. Fronds turning brown and dying down in mid autumn.

***Dryopteris cambrensis* ssp. *pseudocomplexa* Fras.-Jenk.**

Somewhat similar to *D.* × *complexa* Fras.-Jenk. [*D. affinis* × *D. filix-mas* (L.) Schott], but with a paler coloured lamina and smaller, narrower, less lobed pinnules, and with a higher proportion of good spores. It also differs in forming extensive populations. Generally similar to ssp. *cambrensis*, but with pale to very pale-russet, thin, but slightly glossy, ovate stipe-base scales; the lamina thin, pale- to mid-green, wider and more lax than in ssp. *cambrensis*; pinnules usually rather widely separate, or at least not as crowded, long and narrow, with the side-lobes smaller and neater when present. Pinnule-apices narrowly rounded, often becoming somewhat pointed or rounded-pointed in larger plants, varying from being ± toothless to bearing small, somewhat narrow, often acute teeth, more acute than in ssp *cambrensis*. Indusia somewhat thin, inflected at first, not as tall as in ssp. *cambrensis* and not or seldom splitting, soon lifting and shrivelling markedly.

*Dryopteris borreri* (Newman) Newman *ex* Oberh. & Tavel

Usually nearer in morphology to *D. filix-mas* than are the other taxa (except *D. schorapanensis* [a continental species] and *D. cambrensis* ssp. *pseudocomplexa*). Frond usually ± wide and, except when exposed, with a relatively long stipe, the lamina not usually tapering much below, or not as much as in the other taxa, except in more exposed plants and rarely in some localised clones. Stipe and rachis sometimes less densely clothed in scales than in the other taxa (except *D. cambrensis* ssp. *pseudocomplexa*) and the scales often paler (sometimes with dark bases) and wider, though very variable. Lamina relatively thinner (except in exposed plants) than the other taxa (except *D. cambrensis* ssp. *pseudocomplexa*), less coriaceous, hardly glossy, but more matt above, and usually lighter green than in *D. affinis*, though the colour varies considerably, veinlets not impressed above or darkened beneath, lamina not glaucous beneath. Pinnae ± flat; pinnules not as regular in length as in *D. affinis*, adjacent, but not crowded, though seldom much separated (or occasionally so, by V- or U-shaped gaps). The lower pinnules on lower pinnae, particularly the lowest basiscopic one of the frond, usually lobed with characteristic ± rectangular side-lobes, and a large, rectangular basal auricle (though they can be absent); the lowest opposite pair of pinnules of each pinna often curved slightly away from the rachis, usually ± the same length as the rest, except that the basiscopic one frequently becomes a little longer, at least in the lower pinnae. The lowest, or second lowest basiscopic pinnule of the lowest pinna is usually the longest in the frond, is often markedly developed and lobed with rectangular side-lobes, and is fully stalked or stipitate. Pinnule-apices characteristically markedly squarely truncate in the lower parts of the frond, but becoming rounded or pointed, particularly in the upper frond, in many larger specimens, but at least some of the lower- or mid-frond pinnule-apices usually remain truncate, rounded-truncate, or obovate, as opposed to their all being more rounded as in *D. affinis* and in most *D. cambrensis* ssp. *cambrensis*, etc. In normal plants the pinnule apices bear characteristically long, mostly acute teeth, similar to those in *D. filix-mas*, but some plants are occasionally almost toothless, when they can become difficult to separate from *D. cambrensis* ssp. *cambrensis*. In the truncate-pinnuled plants the teeth may be longer above each corner of the pinnule than in the centre of the apex (H.V. Corley's 'cat's head outline – the corner teeth representing the

cat's ears). Fronds eglandular. Sori smaller than in *D. affinis* or *D. cambrensis*, and indusia noticeably relatively thin and less tall, whiteish or pale- to mid-brown, eglandular, becoming curved down at the sides (but not inflected, or turned in, as in *D. affinis* and *D. cambrensis*) until the spores ripen, when they lift right up, without splitting, shrivel and shrink markedly, to become a very small, inverted, wrinkled cone, or funnel on top of the fully exposed sporangia, and soon drop off. Spores relatively larger and with more abortive material than in *D. affinis* and quite often with as many abortive spores as in *D. cambrensis*, but they are usually more regular and often noticeably smaller than in the other triploid taxa, and can be considerably smaller than expected. Spores ripen from two weeks to up to nearly a month earlier than in *D. affinis*. Fronds mostly turn brown and die down early in winter though some persist longer.

**Acknowledgements**:
We are most grateful to Ken Trewren, of Egton Bridge, Whitby, N. Yorkshire, for general information regarding the distribution of the subspecies. He has also produced a highly informative set of annotated photographs of the British subspecies of the *D. affinis* group that show clearly the main diagnostic features. They can be viewed on the internet by joining the Yahoo group http://techgroups.yahoo.com/group/uk-ferns . We are also grateful to L.J. Margetts, of Honiton, Devon, who originally suggested to PDP that he attempt the adaptation of the key to apply to British and Irish members of the *D. affinis* complex. BKB had the same idea independently and constructed an almost identically adapted key.

**Reference**:

C.R. FRASER-JENKINS 2007. The species and subspecies in the *Dryopteris affinis* group. *Fern Gazette* **18(1)**: 1-26

## Ordnance Survey Maps at 1:25,000 scale for your computer

MICHAEL BRAITHWAITE, *Clarilaw, Hawick, Roxburghshire, Scotland, TD9 8PT*

A firm called Memory-Map now sells OS 1:25,000 map tiles in blocks equivalent in size to 25 hectads for £80. These are available online at www.memory-map.co.uk or from outdoor equipment specialists such as Tiso. You pick your own area after purchase and order it online. It is then posted to you on CD. You get a basic electronic road map on which you plot your chosen area (you outline it roughly on the map and then edit the waypoints). It must be in one block but can be of a highly irregular shape, e.g. to track a v.c. boundary.

You can print maps of any part of your tile at any scale for your own use, but you can only import them into Word files by using Print Screen>Paste, so you have the screen border round the map (with your name and licence number showing). The search facility is superb. You can type in part or all of a place name, choose from a pick list, and then be taken straight to the right place on the map. There you can read off the exact GR and altitude just where you wish, as this information follows the cursor.

The package is designed to work in tandem with GPS and PDA equipment. You can import or export routes with waypoints to or from such devices. These work on latitude/longitude and although you can set the programme to convert to GR the whole time you cannot import a list of GRs from Excel and have them accepted as waypoints, which is a pity. However you can copy an individual GR from Excel to set up a waypoint, though the format is unfamiliar as the GR NT617435 must be converted to NT 61700 43500 (note the spaces).

The map format is not suitable for importing to MapMate, but I guess it would slow down MapMate considerably if such a thing was possible, as the file size is about 100MB.

If you buy, you have no excuse left for not keeping a copy map to support your botanical records with a detailed route of where you have been!

## *Cicendia filiformis* (Yellow Centaury) new to W. Galway (v.c.H16)

PAUL R.GREEN, *46 Bewley Street, New Ross, Co. Wexford, Ireland* (paulnewross@eircom.net)

I was taking a group of botanists around Connemara for four days to see the various rare plants of the area. We were looking at *Anagallis minima* (Chaffweed) and *Radiola linoides* (Allseed) and I said *Cicendia filiformis* (Yellow Centaury) normally grows with these two species in Ireland. One member of the group said she would like to see it if possible. Later on in the trip I said that a particular damp lay-by looked good for *Cicendia*. It did not take me long to find a number of plants along the edge of the lay-by on the north side of the N59 (L79054780), west of Glencoaghan Bridge, north of Ballinafad (on 9th August 2007). The *Anagallis* and *Radiola* were also both growing in the lay-by.

It was not until I was looking in the *New Atlas* (Preston *et al.*, 2002) to see how common it was in Ireland that I realised how good my record was. *Cicendia* is widespread in the south-west in vice-counties West Cork (H3), where I have often seen it, South Kerry (H1) and North Kerry (H2). This is around 150km south of my record. There is one 10km-square record away from the above mentioned area and that is from West Mayo (H27), about 80km north of Connemara. I wonder if it is an over-looked species in the Connemara area, as it was growing in the habitat that I expected to find it and growing with species I consider associated plants of the habitat.

The photo of *Cicendia* in the Colour Section (Plate 1) was kindly provided by Ian Benallick and was taken on the Lizard in Cornwall.

**Reference:**

PRESTON, C.D., PEARMAN, D.A. & DINES, T.D. 2002. *New atlas of the British and Irish flora*. Oxford University Press, Oxford.

## Giant Figwort in the Scottish Borders

MICHAEL BRAITHWAITE, *Clarilaw, Hawick, Roxburghshire, Scotland, TD9 8PT*

We live near the village of Denholm in Roxburghshire, and when my wife Paddy was called over to look at a mystery plant that had appeared in a plant pot on Mrs Chris Nicol's patio she certainly wasn't expecting a figwort eleven and a half feet tall! (See photo, Colour Section, Plate 1). It seems to be *Scrophularia auriculata* (Water Figwort), which is not native in these parts. It flowered and seeded profusely and, as the house is near the river Teviot, it will be no surprise if it crops up again in the wild. Has anyone had a similar experience?

## Ash (*Fraxinus excelsior*) as cattle food?

ROY VICKERY, *9 Terrapin Court, Terrapin Road, London, SW17 8QW*

When recently talking to my father, who was born in 1922 and has spent all his life farming on the Devon-Dorset-Somerset borders, he commented that 'animals [i.e. cattle] love ash leaves, and if a branch falls from a tree they soon eat all the leaves'. This set me wondering. Were ash leaves ever fed to cattle when grass was in short supply? Did people cut down ash boughs and feed them to cattle during summer droughts? If not, why not? I have never come across any record of the practice, and wonder if anyone else has. (Incidentally, I asked my father if he had any knowledge of holly *Ilex aquifolium* being fed to cattle, as it was (perhaps still is) in some parts of the country. He had no knowledge of this).

# Noteworthy aquatic species on Scottish macrophyte surveys, 2007

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Britain's water resources are under pressure from activities such as abstraction, impoundment, river engineering and diffuse- and point-source pollution. In Scotland the Scottish Environment Protection Agency regulates these activities and tries to reduce their impact in order to meet the legal requirements of the Water Framework Directive that all water bodies be of good ecological status by 2015.

Through these requirements the environment agencies of U.K. and Europe are now tasked with the development of new aquatic monitoring and classification systems based on ecological assessment. SEPA's annual surveys of aquatic plant communities began in earnest in 2007, and there is an opportunity to put these ecological data to multiple uses. The following is a brief summary of the more noteworthy species recorded by ecologists in Scotland in 2007:

*Najas flexilis* (Slender Naiad) was located by the authors in Loch Nan Gad, Kintyre (v.c.101) in October. The species was last recorded for this loch in 2000, having not been found by surveyors in 2005. Concern regarding the decline of this species in its natural range, largely through eutrophication, led to its inclusion under Schedule 8 (Wildlife & Countryside Act, 1981). Its world distribution is disjunct circumpolar, more frequent in North America than Eurasia, though declining even there, and in Europe most densely frequent in Scotland and Ireland. This deceptively simplistic plant shows the opposite-leaved, diminutively-flowered convergent evolution of several other aquatic flora: our image of the female plant (see front cover #) displays its denticulate sheaths and naked, sessile carpels. *N. flexilis* spends its entire life-cycle submerged, at a depth of more than 1.5m in the U.K., although in the U.S. Kevin Murphy finds it 'rooted in the wave lap zone, shallow enough to pull up by hand' (pers. comm.) and, being unable to reproduce vegetatively, it relies on seed production.

*Utricularia stygia* (Nordic Bladderwort) was also recorded on the same survey of Loch Nan Gad. The quadrifid hairs (fig. 2. Colour Section, Plate 2) display the diagnostic features (Stace, 2005) of a long/short arm ratio of 1.2 – 2, the two short arms diverging at (30)52 – 97(140)°. This insectivorous plant is native to northern Europe and north America and, in contrast to the other species mentioned in this article, shows prevalent vegetative reproduction. It is listed as Data Deficient (JNCC, 2006), although Fred Rumsey (pers. comm.) finds it a considerably more frequent plant than *U. intermedia* (Intermediate Bladderwort) *sensu stricto*.

*Isoetes echinospora* (Spring Quillwort) was recorded by Maria Hauxwell, Nikki Broad and Judi Forsyth in Loch Sgamhainn, West Ross (v.c.105) in late August. It was occurring in rare combination with the more common *I. lacustris* (Quillwort), though the smaller dimensions and spiny ornamentation of the megaspores of the former (fig. 3. Colour Section, Plate 4) enable diagnosis. *I. echinospora* is rare in northern Britain, frequent in northern Europe and present as very scattered populations south to northern Spain and Greece.

Possibly the rarest of the pondweeds, *Potamogeton rutilus* (Shetland Pondweed) was recorded by Angela Darwell, Jacqueline Lawrie and Maria Hauxwell in Loch Ussie, East Ross (v.c.106), in mid-August. First recorded at this site in 1994, it occurs in unpolluted mesotrophic or eutrophic lochs and adjoining streams in northern and northwestern Scotland. Its global range is restricted from the Arctic Circle south to northern France, Germany and Poland. As with other members of the genus, *P. rutilus* overwinters vegetatively as turions, though fruiting specimens are rare in Britain.

*Elatine hexandra* (Six-stamened Waterwort) was recorded by Angela Darwell & Eleanor Shield in Loch Stack, West Sutherland

(v.c.108) in mid-August. This is a putative new record for the vice-county, although no specimen was taken. The species occurs in west and central Europe and northwest Africa, although in Britain is rather local and widely-scattered, mostly in the west and southeast. Individuals can spread by growth of the prostrate stem, although most reproduction is by seed. *Subularia aquatica* (Awlwort), a localised species of north and west Britain, was also recorded in this survey.

Scotland's water continues to be an essential resource for key industries such as distillers, bottled drinking water and the production of renewable energy, and its wildlife habitats are of increasing importance for recreation and tourism. Recent ecological water classifications (SEPA, 2006) designated 146 rivers and 17 lochs as being sensitive to pollution, equating to 43% of the water bodies in the Scotland river basin district at risk of being harmed, which compares to over 80% of waters in most of Europe.

## The 'National *Taraxacum* Collection'

JOHN RICHARDS, *High Trees, South Park, Hexham, NE46 1BT*

Ever since I first became interested in dandelions in 1964, my collaborators and I have built up an herbarium. This is primarily composed of the British and Irish species, but there are also European and 'world' collections that are stored separately. This collection was originally housed in the Botany (then Plant Biology, then Biology) Department at the University of Newcastle. However, Taraxacology did not sit well with the supposed activities of a University academic, so when Chris Haworth of Whitehaven became very active and expert, the herbarium transferred to his house. On Haworth's untimely death, the herbarium moved a few miles to the house of his close friend and collaborator, Andrew Dudman, who possessed a fine attic, fit for the purpose. When Dudman himself became ill, and decided to move back to the Manchester area, the herbarium once again returned to the University of Newcastle, where it has resided until recently. In the meantime, the herbarium had in some sense served its purpose, as after herculean efforts by Haworth and then Dudman, the BSBI Handbook, *Dandelions of the British Isles* appeared in 1997.

Material in the herbarium has three main sources: firstly, specimens collected over the years by Haworth, Dudman and myself; secondly, duplicates of British and Irish material sent to us for identification and kept, with the owners' permission because of the quality and/or interest of the collection; thirdly, and by no means least, gifts from major continental authorities, many of them *exsiccata*, that have enabled us to give our taxonomy an international context. In total there are probably more than 10,000 specimens, of which more than 6,000 are of British species.

Since I retired in 2004, this collection has remained in the University of Newcastle, where it has been curated and consulted rather infrequently. For some time I have felt that it was time for this material to be transferred to a national herbarium with the facilities to look after it properly (much of the material is unmounted), and where it can be readily accessed. Thus, I am delighted that, as from February 2008, the National Museum of Wales (NMW) has agreed to house this material. The exception is the type material which was cited as being deposited at the Oxford University herbarium (OXF) and which has now been housed there. I am most grateful to Tim Rich and the National Museum of Wales who have agreed to undertake this major responsibility.

As with all collections at the National Museum of Wales, the collections are held in public trust and are accessible for research and loans. The collection will probably take about a year to be fully integrated into the Welsh National Herbarium, but in the meantime the museum will endeavour to maintain access to anyone who needs it. Please contact Tim Rich at the museum.

# Would the development of a U.K. list of ancient grassland indicator species be beneficial for grassland biodiversity conservation practice?

RICHARD G. JEFFERSON, *Senior Specialist – Grasslands Evidence Team, Natural England, Peterborough* (richard.jefferson@naturalengland.org.uk)

Over the last year or so I have been giving some thought to the concept of vascular plant indicators of ancient grassland. This was prompted initially by a conversation with Dr George Peterken who queried why grassland ecologists had not developed such indicators for grasslands! I have also had preliminary discussions on the topic with colleagues in Natural England, other Country Conservation Agencies and the Grassland Trust.

As many BSBI members will be aware, the identification of ancient woodland indicator species have contributed to woodland conservation practice. However, it is important that such indicators should be used cautiously, as no plant will be an infallible indicator of habitat continuity.

In the case of grasslands, the idea would be to identify vascular plant species which would give a strong indication that grassland had had a long period of continuity without periods of other land use, especially arable cultivation. Such ancient grasslands might be considered to have additional biodiversity and heritage value and also perhaps play a role in the identification of undisturbed soil profiles.

Identification of candidate species would largely rely on analysis of plant life history traits as documentary evidence of ancient grassland/grassland continuity is largely lacking. It might be predicted, for example, that plants which would make good ancient grassland indicators would have i) low seed production, ii) poor dispersal powers, iii) poor establishment in new habitat due to the prevailing environment and/or competition. It would seem likely that at least some such candidate plant species would also be represented amongst those species identified as positive indicators in the Country Agency Common Standards Monitoring Protocol for grasslands (see for example Robertson & Jefferson 2000) and axiophytes as described by the BSBI (see: http:// www.bsbi.org.uk/ html/axiophytes.html).

A project funded by Natural England and the Countryside Council for Wales and entitled *Scarce plants in British lowland grassland* is currently being undertaken by BSBI and the Centre for Ecology and Hydrology. This project could help to inform the identification of potential ancient grassland indicators although it is probable that some candidate indicator species will not be threatened or near threatened as defined in the current Red Data list.

I would be grateful for any comments on the use or otherwise of the idea.

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# From downy to shaggy: identifying types of hairiness in plants

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Hairs on plants are frequent: probably most parts of most plants have hairs of some kind, at least while young. Apart from their use to the plant in providing some protection from excessive water loss or from herbivores, hairs can be useful for identifying families, genera or species of plants. Types of individual hair and their occurrence in the British flora have recently been summarized by one of us (Poland, 2006). In this article we discuss hairs collectively, the way in which they determine the appearance and feel of surfaces such as leaves and stem, i.e. the types of hairiness and the terms used to describe them.

Hickey & King (2000) illustrate 19 types of hairiness, in rather diagrammatic drawings and without naming the species. Experienced field botanists may be able to identify these types at sight but most of us struggle to distinguish tomentose from canescent, or to find where pilose grades into sericeous, and so on. Morphologists and writers of floras may use the terms differently; in particular a flora may keep to a restricted subset of types of hairiness, for simplicity. Keys exist (e.g. in Harris & Harris, 1994) but these can be hard to use. Neither drawings of examples or keys give any indication of how common or rare any particular type of hairiness is. Without experience it is all too easy to end up claiming a rare type of hairiness, apparently, when what you have is a common type, perhaps in slightly unusual form. Inevitably most keys eliminate the exceptional or rare cases early on, especially if they can be picked out by a simple, definite character. But no one wants to toil all the way through a key to find 'pubescent', the commonest type of hairiness, at the end.

The experience gained from constructing a vegetative key to the British flora (Poland & Clement, in prep.) enables us to provide some helpful information. In Table 1 we list the commonest types of hairiness in order, with brief descriptions and mention of a few plants as examples. With this information, the next thought was to make a key in which types of hairiness key out in order of commonness, as far as possible. Such a key can be constructed, but in limited experience so far it has proved far from perfect (it is not given here but can be supplied on application to PLM).

Table 1. Descriptions and examples of the twelve commonest types of hairiness, applicable to plant surfaces (leaves and stems).

| Type of hairiness | Description | Examples |
|---|---|---|
| 1. Pubescent | Downy: with short, soft, flexible hairs; but *without* an overall whitish appearance. | *Holcus lanatus* (Yorkshire-fog)<br>*Cerastium fontanum* (Common Mouse-ear) |
| 2. Pilose | Hairy: with rather long, soft, flexible hairs. | *Achillea millefolium* (Yarrow)<br>*Pilosella officinarum* (Mouse-ear Hawkweed) |
| 3. Tomentose | With a tomentum: a dense covering of short cottony or woolly hairs, often curly and tangled; giving a whitish appearance. | *Cerastium tomentosum* (Snow-in-summer)<br>*Sorbus intermedia* (Swedish Whitebeam) |
| 4. Hirsute, hispid, setose | Roughly hairy, to the point of being bristly. Some botanists would distinguish these types, as follows.<br>Hirsute is coarsely hairy: covered with rather stiff hairs.<br>Hispid is coarsely and stiffly hairy: covered with long and stiff hairs which are often sharp.<br>Setose is bristly. | *Borago officinalis* (Borage)<br>*Echium vulgare* (Viper's Bugloss) |

| | | |
|---|---|---|
| 5. Sericeous | Silky: with long, soft, flexible hairs that lie along the surface. | *Potentilla anserina* (Silverweed )<br>*Alchemilla alpina* (Alpine Lady's-mantle) |
| 6. Scabrous | Roughly hairy: with short, stiff hairs so that the surface feels rough but not bristly. | *Ulmus glabra* (Wych Elm)<br>*Trachystemon orientalis* (Abraham-Isaac-Jacob) |
| 7. Floccose | With tufts of woolly hairs; often appearing tufted or patchy because the hairs are easily rubbed off. | *Tussilago farfara* (Colt's-foot)<br>*Lavandula* × *intermedia* (Garden Lavender) |
| 8. Strigose | Roughly hairy but with hairs that lie along the surface. | *Papaver hybridum* (Rough poppy)<br>*Lithospermum officinale* (Common Gromwell) |
| 9. Lanate | Woolly: like tomentose but with long hairs that are dense, and obscure the surface. | *Verbascum thapsus* (Great Mullein)<br>*Stachys byzantina* (Lamb's-ear) |
| 10. Villous | Shaggy: like lanate (woolly) but less dense so that the surface is visible between the hairs. | *Pilosella peleteriana* (Shaggy Mouse-ear Hawkweed)<br>*Hypericum elodes* (Marsh St John's-wort) |
| 11. Canescent | Hoary: short and dense hairs, making the surface appear grey. | *Helianthemum oelandicum* (Hoary Rock-rose)<br>*Matthiola sinuata* (Sea Stock) |
| 12. Velutinous | Velvety: densely hairy like tomentose but not tangled or matted. | *Althaea officinalis* (Marsh-mallow)<br>*Lavatera arborea* (Tree Mallow) |

An alternative approach is a diagram for 'sorting out' the types of hairiness (Figure 1). The advantage over a key is that it provides an overview and can show links and one-step differences between types of hairiness. It assumes that one is likely to have something common but offers choices to move towards a better match with other types of hairiness that are less common. If 'pubescent' is clearly unsatisfactory, then from the description under 'pubescent' consider the qualifications written along the arrows to move to the right, to a different type more closely agreeing with the specimen. This diagram is a fuzzy version of a key; it may be easier to use than a key, which has to be definite and rigorous. We hope that this idea may be useful to those examining hairy plants, whether for identification of species or simply because hairy plants are attractive and offer interesting challenges to the illustrator.

**Acknowledgements**:
This article was originally published in the 2007 issue of *Eryngium*, the journal of the Institute for Analytical Plant Illustration (IAPI) and is reproduced here with permission. It is felt by the authors that this note would be of great benefit to all users of Floras, not just botanical illustrators. For more information on IAPI, please visit www.iapi.org.uk.

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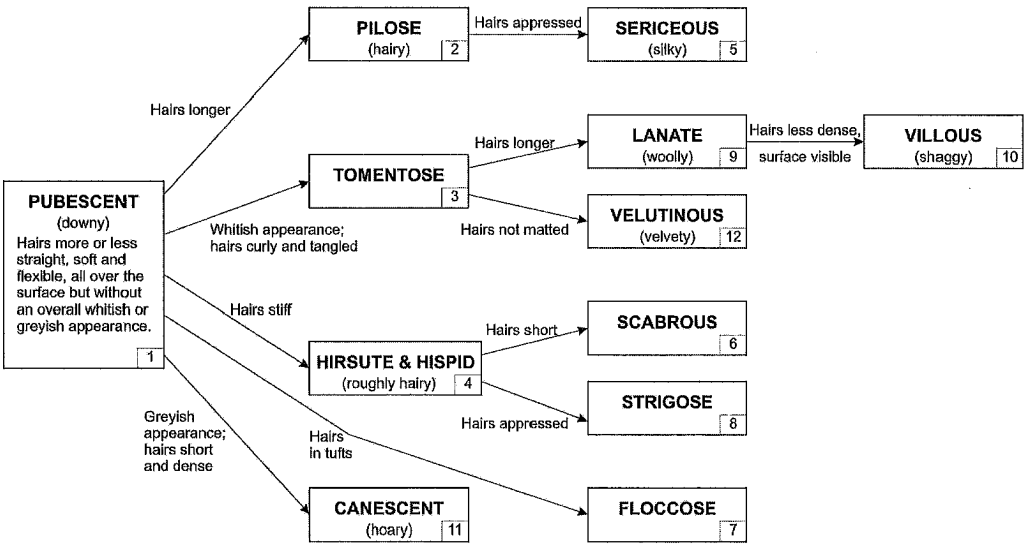


Figure 1. Diagram for sorting out types of hairiness on plant surfaces.

Start by assuming that the surface is pubescent, by default, unless pilose, tomentose, or hirsute and hispid look immediately appropriate. Then look at the qualifications, written along the arrows, and consider a move to the right if one of the qualifications applies. Repeat for further steps to the right if necessary. The numbers in the boxes are from the commonest type of hairiness (1) to the least frequent (12).

# Garden weeds – a reply

LUKE GASKELL, *Kittyfield Farm, Gattonside, Melrose, TD6 9DG*

I enjoyed David Pearman's article on garden weeds in *BSBI News*: 107. I am bothered by some of the same garden weeks, notably *Aegopodium podagraia* (Ground-elder) (known as Bishop-weed here, supposedly as an insult to the C. of E.). *Elytrigia repens* (Couch-grass) and *Allium triquetrum* (Three-cornered Garlic) are also troublesome, as is *Calystegia sepium* (Hedge Bindweed), which seems to be on the increase in recent warm years. Most of the other weeds mentioned are present, too, with the exception of *Anemanthele lessoniana*, *Euphorbia serrulata* (Upright Spurge) and *Sedum stoloniferum* (Lesser Caucasian Stonecrop), though we do have *Chelidonium majus* (Greater Celandine) instead. It is notable that most of the troublesome plants are perennials that spread vegetatively, not annuals reproducing from seed.

I was wondering if one of the main reasons for the varying success of the natives and aliens in the wider countryside is down to grazing and to a lesser extent trampling. *Hedera* (Ivy) ssp., for example, are readily eaten by sheep and cattle with no apparent ill effects, so that the only good patches on my farm are in well fenced woods (see photo Colour Section, Plate 1). The *Hedera helix hibernica* (Irish Ivy) in the garden is to some extent controlled by roe deer, which I have failed to fence out. *Lamiastrum galeobdolon* (Yellow Archangel) similarly never spreads into grazed fields and is only seen near garden dumps (rural lay-bys are popular). The *Alliums* seem sensitive to trampling. I don't think livestock eat them. Fenced off wet stream sides can be densely covered with *A. ursinum* (Ramsons) on the damper ground and *A. triquetrum* on the drier, but with no spread into the adjoining pasture.

An explanation for a good deal of the change in the weed flora of the countryside could be the loss of mixed farms with livestock, particularly sheep, being replaced by monocrops. Similarly the expansion of non-farm use of land in the countryside in the form of gardens, nature reserves, recreation areas, etc. may also be having an impact.

# Gardens and the open countryside – a reply

DAWN NELSON, *Old Stables, Elsted, Midhurst, West Sussex, GU29 0LA*

In response to David Pearman's article in *BSBI News* 107, I feel compelled to add my observations. I am a keen gardener. In fact I work part-time as a garden coach. My experience of 'weeds' is as follows:-

*Aegopodium podagraria* (Ground-elder) is ineradicable. In one garden I inadvertently introduced a tiny piece of root in a pot of *Crocus* I bought at a plant stall. Despite trying to dig it out and removal almost weekly of every tiny piece that showed its head above ground, I only succeeded in keeping it from spreading, I never got rid of it. In other peoples' gardens I have seen it as the dominant plant of huge areas. It seems to thrive and increase rapidly in loose, cultivated soil, and, once in, it is impossible to remove. Mowing, however, does seem to keep it in check, or is it just that it never gets a foothold in lawns in the first place?

In dry areas the principal weeds in my garden were: *Poa annua* (Annual Meadow-grass), *Arabidopsis thaliana* (Thale-cress), *Cardamine hirsuta* (Hairy Bitter-cress), *Lotus corniculatus* (Common Bird's-foot Trefoil), and the purple-leaved form of *Oxalis corniculatus* (Creeping Yellow-sorrel) that I was stupid enough to think was pretty and introduce. An introduction of *Petrorhagia nanteuilii* (Childing Pink) seemed set to take over the world for a couple of years, but settled down to a civilised rockery ingredient after that, self-sowing but ultimately, I think, decreasing.

In heavier soil (and we were on Gault clay): *Holcus mollis* (Creeping Soft-grass), *Ranunculus repens* (Creeping Buttercup), *Prunella vulgaris* (Self-heal), *Tussilago farfara* (Colt's-foot) all caused problems, but *Calystegia sepium* (Hedge Bindweed) was the worst (and I found it equally impossible to control on pure sand in a previous garden). *Veronica hederifolia* (Ivy-leaved Speedwell) and *Galium aparine* (Goose-grass) needed constant vigilance, but could be kept at a tolerable level. Even *Equisetum arvense* (Field Horsetail) was gradually (very gradually) decreasing after a 10½ year regime of continuous pulling and spraying.

Other introductions that needed constant editing, by way of removing about half to three quarters of the self-sown seedlings, were *Verbena bonarienis* (Argentinian Vervain) and *Oenothera glazioviana* (Large-flowered Evening-primrose). The latter seems to have escaped into the wild but does need disturbed soil to keep going. The former I have only ever seen in the wild as a garden throw out, despite talk of it being an ineradicable weed in other warmer countries. I would be interested to hear of any more rampant encroachment.

I agree that *Allium ursinum* (Ramsons) seems to have spread remarkably in the last 15 – 20 years. One used to have to hunt it out if you wanted a few leaves for a salad or to cook with, now it proliferates to the detriment of other plants in many woodlands and verges. We moved to our previous house in 1997 and there was a smallish patch in deep shade under mixed woodland and two large *Tilia* ×*europaea* (Common Lime). By the time we left last summer it had spread all along the woodland path for about 60m and was self-sowing into sunny, sparse and consequently rarely-cut grass as well. Another plant that also appears to have increased its foothold hugely in the same period, both in gardens and the wild, is *Petasites fragrans* (Winter Heliotrope). Whole verges are now often covered in it for many metres, where it used to occur in just occasional patches and rarely increase. Both these seem to manage without the advantage of the disturbed soil of garden life.

Plants that appear to have decreased during this time, at least in West Sussex, are *Ophrys insectifera* (Fly Orchid) (markedly) and *Paris quadrifolia* (Herb Paris) (a little). Perhaps we should be nurturing them in our gardens.

# Assessment of the Scottish population of *Lychnis alpina* (Alpine Catchfly)

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*Lychnis alpina* (Alpine Catchfly) is a small, rosette-forming, perennial plant with an amphi-atlantic distribution. In the U.K., it is found at two sites: Hobcarton Crag in the English Lake District and at Meikle Kilrannoch (MK) in the eastern Cairngorms of Scotland. The MK site has two outcrops of ultramafic rocks that have given rise to a well-known serpentine plant community over soils low in major plant nutrients and very high in magnesium and nickel (Proctor *et al.*, 1991; Nagy & Proctor, 1997). On the northern outcrop is a large (thousands) population of *L. alpina,* whereas the southern outcrop, which is about 1km away, has a much smaller (tens) population. The populations were assessed in 1986 by Proctor *et al.* (1991) and found to be 68,000 and 46 respectively. Given that *L. alpina* is rare in the U.K. and is on the BSBI Threatened Plants Database (VU-D2), it was considered prudent to re-assess the populations and determine any potential changes since the last assessment. Therefore on 17-18th August 2007, I set up a series of 210 1m$^2$ quadrats spaced regularly across the northern outcrop (MK1) and counted all individuals of *L. alpina* within each quadrat. A total of 463 plants were recorded, the majority (89 %) of which were found in quadrats predominantly over serpentine debris soils where their mean density was 7.9 plants/m$^{-2}$. The remainder of the plants were found in quadrats dominated by grass- or dwarf shrub-heath where their mean density was 0.3 plants/m$^{-2}$. Given that the total area of MK1 is 3.5ha, this gives a total population of 77,200 plants, indicating a slight increase since the last assessment. However, minor fluctuations in numbers are equally likely due to the random nature of the placing of quadrats. On the southern outcrop (MK2) I counted all individuals in its western quarter and found 141 plants. The MK2 population appears to be increasing in size, as Proctor & Woodell (1971) did not find any individuals, Proctor & Johnston (1977) found a single plant in 1976 and Proctor *et al.* (1991) noted 46 plants in 1986. I collected leaves (under license from Scottish Natural Heritage) from a small number of plants that will be used to assess genetic diversity within these, and the English, populations.

**Acknowledgements**:
I thank Graham Christer, Shona Hill, Heather McHaffie and Ken Slater for their help, landowners for access permission, and the Alpine Garden Society and BSBI for financial support.

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# More thoughts on the name 'Bee-balm'

NANCY DAWSON, *2 The Old House, Ickwell Green, Biggleswade, Beds., SG18 9EE*

Peter Horn (*BSBI News* **106**:15) makes a very valid point about the confusion that could arise if 'Bee-balm' were adopted to replace Bastard Balm as the English name for *Melittis melissophyllum*. As he says, Bee Balm, with or without the hyphen, has long been a name for *Melissa officinalis*, especially among beekeepers. Some authors claim that this is because *Melissa* flowers are loved by honey bees (Mabey, 1996, p. 317), but this does not appear to be the case, as

the bees' tongues are rather too short to reach the nectar at the bottom of the flower's long corolla (Hooper, 1988, p. 104). Eva Crane (1990, p. 184) gives the real reason for its name. She says: 'In times past, beekeepers in temperate zones encouraged swarming as part of their management system and they often set up a bait hive, having prepared it by rubbing the inside with a mixture of materials thought to make it attractive to bees, such as ... certain fragrant herbs. Leaves of one such herb, balm (*Melissa officinalis*), produces an oil which contains 63% Citral and small amounts of Geraniol and Nerol (Burgett, 1980) all substances also produced by the honey bee's Nasonov gland'.

The Nasonov gland is at the end of the honey bee's tail and produces a pheromone which is fanned away by the bee's wings. My husband calls it the 'Cathy come home' gland as the pheromone attracts other bees. The ancient Greeks knew that the leaves of *Melissa* had this effect, and Gerard in his *Herbal* quotes Pliny as calling it Apistrum and saying that it can be used to call home straying bees. It has even been suggested (Howes, 1945, p. 103) that rubbing your hands with leaves of *Melissa* may help to prevent stings. This would be quite easy for a beekeeper to test if he or she rubbed one hand and used the other as a control. I wonder if it has been done?

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## Promotion of the qualifier 'gp.' before specific names

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Modern research, particularly using molecular methods, is revealing that more of our 'species' are, in truth, aggregates of closely related 'cryptic' species – *e.g.* a recent study reveals that the three British subspecies of *Gymnadenia conopsea* (Fragrant orchid) are better treated as full species, even though the morphological differences are weakly defined. Many botanists will struggle to separate such entities, and will prefer to record using the old name in an aggregate sense, writing either 'agg.', '*sensu lato*' or 'group' after the familiar specific name. This format always looks inelegant to me, and I much favour the method, occasionally used on the Continent, of preceding the epithet with the qualifier 'gp.' The brevity also appeals to me. This parallels other qualifiers like '*cf.*' (Latin: *confer*: 'compare with'), often used by professional botanists when a plant closely matches a taxon, but the critical detail (*e.g.*: a ripe fruit) is absent.

I will list a few more familiar examples. When an immature example of the *Carex muricata* group (Prickly Sedge), as defined in Jermy *et al.* (2007) (pp. 220-221) is found, it is better to leave a record of *Carex* gp. *muricata*, rather than to ignore it totally. Similarly, a record of *Amaranthus* gp. *hybridus* (Green Amaranth) is much preferable to no record for the species 1-8 in Stace (1997) (pp. 152-154), where extreme examples are often easy to name, but many plants seem to be somewhat intermediate. I am sure that *Festuca* gp. *ovina* (Sheeps' Fescue) and *F.* gp. *rubra* (Red Fescue) will appeal to many. This is undoubtedly better than a mis-naming of one of the 'splits'.

Sadly, most botanical databases currently do not have a 'qualifier' field. An entry in the 'comments' field is often the only option available. I hope that this will be remedied in the future.

Have members other views? My proposal is little more than a minor point of written style. It is certainly more convenient in speech to refer to, *e.g.*: 'the *Festuca rubra* aggregate'.

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# Botany in Literature – 47
# *The Purple Pileus* by H.G. Wells – Identification – The effects of psychotropic and muscarine poisoning

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Although there are either four or three plant kingdoms depending on whether or not one groups the Fungi with the Protista (green, red, and brown algae), each of these plant kingdoms, with the exception of the Monera (bacteria), is treated the same by the *International Code of Botanical Nomenclature* (*ICBN*), that is to say, that both phycology (the study of algae) and mycology come under the broad umbrella of botany, thus a fungus, being of vegetable origin, is studied as a plant, at least in the traditional sense of the word.

*The Purple Pileus* ('pileus' being the Latin for cap, just as 'stipe' is for stem, 'lamellae' for gills) by H.G. Wells, whom I introduced in *BSBI News* 104: 29-31 (January, 2007), is a short story in which the protagonist, a Mr Coombes, a struggling shopman, has, due to his ungrateful and insulting wife, for long not been master in his own home, especially every 'Sun Day' when company which can only be described as a trifle coarse, descends for dinner at his wife's behest, not his. A 'pale-faced little man, with dark eyes and a fine and very black moustache' who wore 'a very stiff, upright collar slightly frayed', he decides on this particular Sunday that he will take no more of big, noisy 'beastly Jennie' with her loud colours, strident laugh, and a predilection for playing the piano and tum tumming on the banjo as if it were a weekday (arriving on this occasion with her 'intended', 'a chap as showy as herself'), and stands up to them, ordering them out of the house. But they won't go, so he goes himself, dressed in his shabby astra-khan-trimmed overcoat, his black and brown striped gloves split at the finger ends, and his silk hat. Thus the story begins: Mr Coombes was sick of life. He walked away from his unhappy home, sick not only of his own exist-ence, but of everybody else's, turned aside down Gaswork Lane to avoid the town, crossed the wooden bridge that goes over the canal to Starling's cottages, and was presently alone in the pinewoods and out of sight and sound of human habitation'. His mind dwell-ing on 'razors, pistols, bread-knives, and touching letters to the coroner denouncing his enemies by name', the topic of death is upper-most ...

> He thought of the canal he had just crossed, and doubted whether he shouldn't stand with his head out, even in the middle, and it was while drowning was in his mind that the purple pileus[1] caught his eye. He looked at it mechanically for a moment, and stopped and stooped towards it to pick it up, under the impression that it was some such small leather object as a purse. Then he saw it was the purple top of a fungus, a peculiarly poisonous-looking purple: slimy, shiny, and emitting a sour odour. He hesitated with his hand an inch or so from it, and the thought of poison crossed his mind. With that he picked the thing, and stood up again with it in his hand.
>
> The odour was certainly strong - acrid, but by no means disgusting. He broke off a piece, and the fresh surface was a creamy white, that changed like magic in the space of ten seconds to a yellowish-green colour. It was even an inviting-looking change. He broke off two other pieces to see it repeated. They were wonderful things these fungi, thought Mr Coombes, and all of them the deadliest poisons, as his father had often told him. Deadly poisons!
>
> There is no time like the present for a rash resolve. 'Why not here and now?' thought Mr Coombes. He tasted a little piece, a very little piece indeed - a mere crumb. It was so pungent that he almost spat it out again, then merely hot and full-flavoured. A kind of German mustard with a touch of a horse-radish and – well, mushroom. He swallowed it in the excitement of the

moment. Did he like it or did he not? His mind was curiously careless. He would try another bit. It really wasn't bad - it was good. He forgot his troubles in the interest of the immediate moment. Playing with death it was. He took another bite, and then deliberately finished a mouthful. A curious tingling sensation began in his finger-tips and toes. His pulse began to move faster. The blood in his ears sounded like a mill-race. 'Try bi' more,' said Mr Coombes. He turned and looked about him, and found his feet unsteady. He saw and struggled towards a little patch of purple a dozen yards away. 'Jol' goo' stuff,'[2] said Mr Coombes. 'E - lomore ye'.' He pitched forward and fell on his face, his hands outstretched towards the cluster of pilei. But he did not eat any more of them.

He forgot forthwith. He rolled over and sat up with a look of astonishment on his face. His carefully brushed silk hat had rolled away towards the ditch. He pressed his hand to his brow. Something had happened, but he could not rightly determine what it was. Anyhow, he was no longer dull - he felt bright, cheerful. And his throat was afire. He laughed at the sudden gaiety of his heart. Had he been dull? He did not know; but at any rate he would be dull no longer. He got up and stood unsteadily,[3] regarding the universe with an agreeable smile.[4] He began to remember. He could not remember very well, because of a steam roundabout that was beginning in his head. And he knew he had been disagreeable at home, just because they wanted to be happy. They were quite right; life should be as gay as possible. He would go home and make it up, and reassure them. And why not take some of this delightful toadstool with him, for them to eat? A hatful, no less. Some of those red ones with the white spots[5] as well, and a few yellow.'[6]

**Notes**:

1. *purple pileus*: the identification of this fungus, if it exists, is not readily made. The purple cap suggests *Cortinarius violaceüs* (Violet Cortinarius); the fact that it is viscid, either *Cortinarius variëcolor*, *Russula cyanoxantha* (Charcoal Burner), *R. puellaris*, or *R. xerampelina*, but it is no doubt shiny because it is damp (cf. *Suillus luteüs* (Slippery Jack) which is shiny on drying). The white flesh when cut suggests *Tricholoma virgatum* (cf. *Amanita pantherina* (The Panther/Panther Cap), the flesh of which is permanently white, *A. porphyria*, *Clitocybe nebularis* (Clouded Agaric/ Clitocybe), *Entoloma nitidum*, all of which are purplish in hue, although not strictly purple), yet the changing of the colour of the flesh is more often a feature of, for example, *Lactarius* and also *Russula* species. As for the 'sour' or 'acrid' odour, *Mycena pura* (Lilac Mycena), *Amanita porphyria*, and *Tricholoma virgatum* all have a smell of radish (or raw potato, or earth, depending on one's perception) which can be unpleasant. The pungent mustard taste, however, very much indicates *Tricholoma virgatum*, which has an immediate peppery, hot, burning flavour, as do *Lactarius* species generally. *Mycena pura*, in keeping with its smell, has a radishy taste, and also grows in colonies or 'patches', under pine in the autumn. Many of the above also grow under conifers in this season. Yet, none of them, other than *Cortinarius violaceüs*, which is rare in Great Britain and grows under beech or birch, is, as already pointed out, purple enough, although *Lepista nuda* (Wood Blewit) is amethyst purple when young, and *Lactarius indigo* (Indigo Lactarius) is the colour its name suggests, while *Russula cyanoxantha* is a cloudy violet or purple or steely blue; but this is odourless, and has a pleasant taste. The best all round candidate is possibly *Tricholoma virgatum* (cap lilac-grey or silvery grey with violaceus tints), but consuming this does not, as far as I know (although considered poisonous by some), give the effects experienced by Mr Coombes, unlike the other relatively strong possibility of *Mycena pura*, which, despite its watery flesh, is implicated in muscarine poisoning. In conclusion, Wells's 'purple

pileus' is doubtless a composite specimen. For better identification one must turn to the symptoms of poisoning below.

2. *'Jol' goo' stuff'*: This expression, and several others in the story, indicate that Coombes was the prototype for Wells' Mr Polly in his novel *The History of Mr Polly* (1910). He is also a fictional portrait of Wells's father, an unsuccessful struggling tradesman of the lower-middle class.
3. *'Unsteady'*: When he arrives home there is 'a sound of some complicated step exercise in the passage' before Coombes opens the door with 'rational 'njoyment. Dance.', followed, after his wife's shriek, with 'Tea... 'Jol' thing tea. Tose-stools, too. Brosher.' and Jennie's 'He's drunk'. This appearance of drunkenness is a feature of hallucinatory or psychotropic poisoning (*Mycetismus cerebralis*) and occurs after consumption of *Amanita muscaria* (Fly Agaric) or *A. pantherina* (Panther Cap), which also cause muscarine poisoning (*Mycetismus nervosus*). The two types of poisoning may occur concurrently. Thus, one may ingest *Mycena pura* (or *Clitocybe deälbata*, *Inocybe* species, *Omphalotus olearius*) which contain muscarine, and suffer from muscarine poisoning, and *Amanita muscaria* and *A. pantherina*, which also contain this (although only in very small quantities), as well as muscimol, ibutenic acid, and muscazone which cause the hallucinatory poisoning (as do psilocin and psilocybin, both of which belong to the indole group of compounds). Thus the sound of a mill-race or current of water in Coombes' ears, and also the increased blood pressure (a feature, however, found more in indole group symptoms of poisoning).

   The effects of both muscarine and psychotropic poisoning can be apparent as little as 20 minutes following ingestion (cf. cytolytic (cell damaging) poisoning by, for example, *Amanita phalloïdes* (Death Cap), and *Cortinarius* species, which is usually longer than four hours and sometimes as many as eight or more).
4. *'agreeable smile'*: This continues even when he again encounters the unwanted Mr Clarence, but not for long: 'At that moment he was genial. Then at the sight of their startled faces he changed, with the swift transition of insanity, into overbearing fury.'

   Although Coombes is no doubt releasing his pent-up anger, this is also a feature of the Pantherian Syndrome or poisoning where initial feverish excitement gives way to irritation. Loss of consciousness can also occur and the fact that the 'concluding incidents' of that Sunday afternoon end 'in the coal cellar, in a deep and healing sleep' again point to *Amanita* consumption, in this case of *A. muscaria*.

   The 'livid white' and 'pale blue lips drawn back in a cheerless grin', especially the pallor, are more characteristic of *A. phalloïdes* poisoning, and the grin of the face of Death (such as found in Albrecht Dürer's drawings).
5. *'those red ones with the white spots'*: Obviously there can be no mistaking the identity of this fungus as the Fly Agaric (*Amanita muscaria*), especially as Wells refers to it by name later on in the story. Before his geniality disappears, Coombes offers a handful of 'scarlet agaric' to Clarence, saying 'Jo' stuff,' ... 'Ta' some.', which no doubt indicates that Coombes must have already consumed some himself. When Clarence 'approved himself a coward', Coombes clutches him by the collar and 'tried to thrust the fungus into his mouth. Clarence was content to leave his collar behind him and shot out into the passage with patches of fly agaric still adherent to his face.' This and the next scene, with Coombes and his 'respectful hat of fungi still under his arm', wherein, 'smitten with remorse at the mess he was making of his guest's face', he drags him under the sink and scrubs this face with a blacking brush, are Wells at his comic best.

   The vernacular name of the Fly Agaric comes from the practice of breaking the cap into platefuls of milk as a means, used since the Middle Ages, of stupefying flies. It was

also used in its dried state as a strong hallucinogen by the Lapps, who possibly acquired the habit after observing the effects of the fungus on their reindeer. As the muscimol in the coloured cap is more potent in the dried pileus (and being the result of the degradation of unstable ibotenic acid), Coombes's 'intoxication' as a result of eating the fresh fungus was relatively mild. But Wells, as well as conflating several species of fungi, would appear to have done the same with the effects of the poisoning, pupil dilation and increase in pulse being found in psychotropic poisoning (indole group) by *Psilocybe cubensis*, *Pancæolus* species, and *Gymnopilus junonius*. The effects of mild muscarine poisoning by, for example, *Mycena pura* are salivation, sweating, and weeping; Coombes does not suffer from these.

6. '*a few yellow*': Wells's mention of Gaswork Lane at the beginning of the story leads one to deduce that this fungus must be none other than *Tricholoma suphureüm*, which has a bright yellow cap, gills, stem, and flesh, and because of its very unpleasant smell of coal gas is known in the vernacular as the Gasworks Tricholoma. Although it is generally not recorded as being toxic, there is a suspicion that it causes digestive problems when consumed, and therefore, like *Amanita muscaria* (and *A. pantherina*, which can be lethal) and also *Mycena pura*, it should be considered as poisonous.

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## Corrections to Botany in Literature – 46

My apologies to Margot for this 'catalogue of errors' that should have been corrected but somehow slipped through my net!

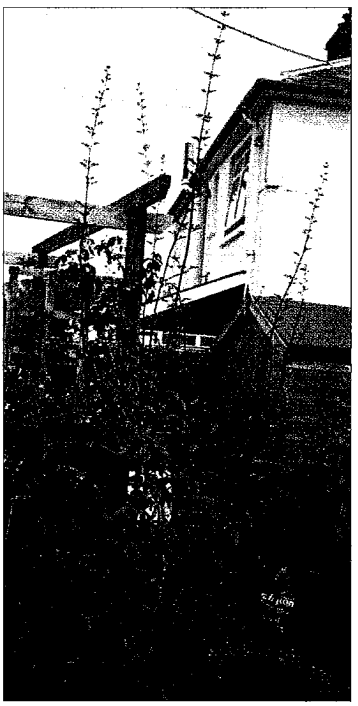
1. The author's name here and on the contents page should read Margot É. Souchier.
2. On p. 30, penultimate line of para. 2 for *crie* read *cri.*

References:

3. In the first STUESSEY reference: for 'HVRANDL' read 'HÖRANDL' and for 'Hvrandl' in the same reference read 'Hörandl'. Also in the same reference 'morphlogy' should read 'morphology', and the whole title of the book should read, Deep Morphology: Toward a Renaissance of Morphology in Plant Systematics.
4. In the VASARI reference, *piy* should read *più.*
5. Replace the WEBER reference with:
   WEBER, A. 2003. 'What is morphology and why is it time for its renaissance in plant systematics?' *in*: Stuessey, T.F., Mayer, V., & Hörandl, E., (eds.). *Deep Morphology: Toward a Renaissance of Morphology in Plant Systematics*. A.R.G. Gantner Verlag, K.G. Ruggell, Liechtenstein. [*Regnum Vegetabile* Volume 141].
6. In the WEBERLING reference, the word Eugen should have been preceded by the copyright symbol ©.

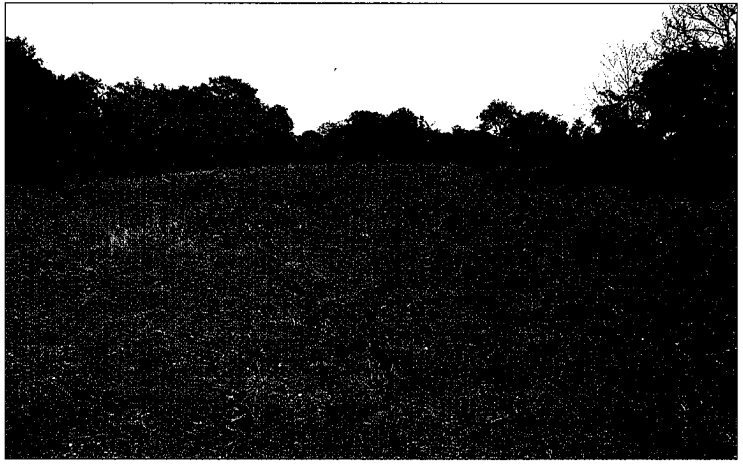
*Cicendia filiformis,* Mullion, The Lizard, Cornwall (v.c. 1). Photo I. Benallick © 2005 (see p. 25).

Grazed *Hedera helix,* Gattonside (v.c.80). Photo L. Gaskell © 2007 (see p. 31)



Giant *Scrophularia auriculata* (Water Figwort) in Denholm (v.c.80). Photo M. Braithwaite © 2007 (see p. 25)

*Anagallis monelli* (Garden Pimpernel) (see p. 45)



Alien site at filled in quarry (v.c.13) (see p. 45)

*Silene pendula* (Nodding Catchfly) (See p. 46)
All 3 photos at filled quarry (v.c. 13). Photo M. Shaw © 2007

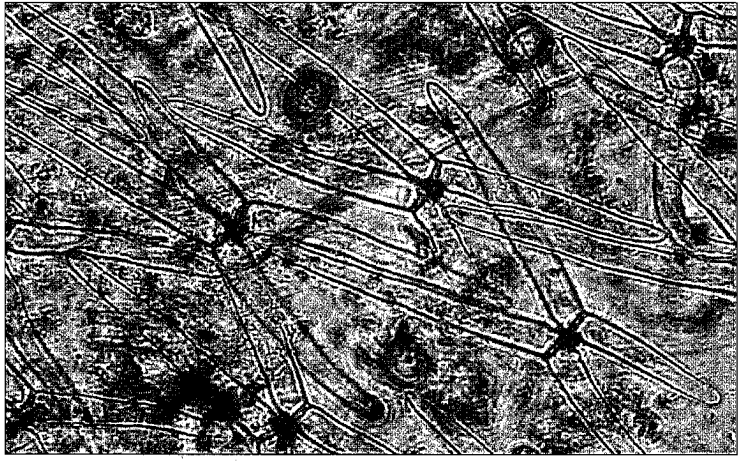


Fig. 2. *Utricularia stygia* quadrifid hairs. Photo D. Hicks © 2007
(see p. 26)

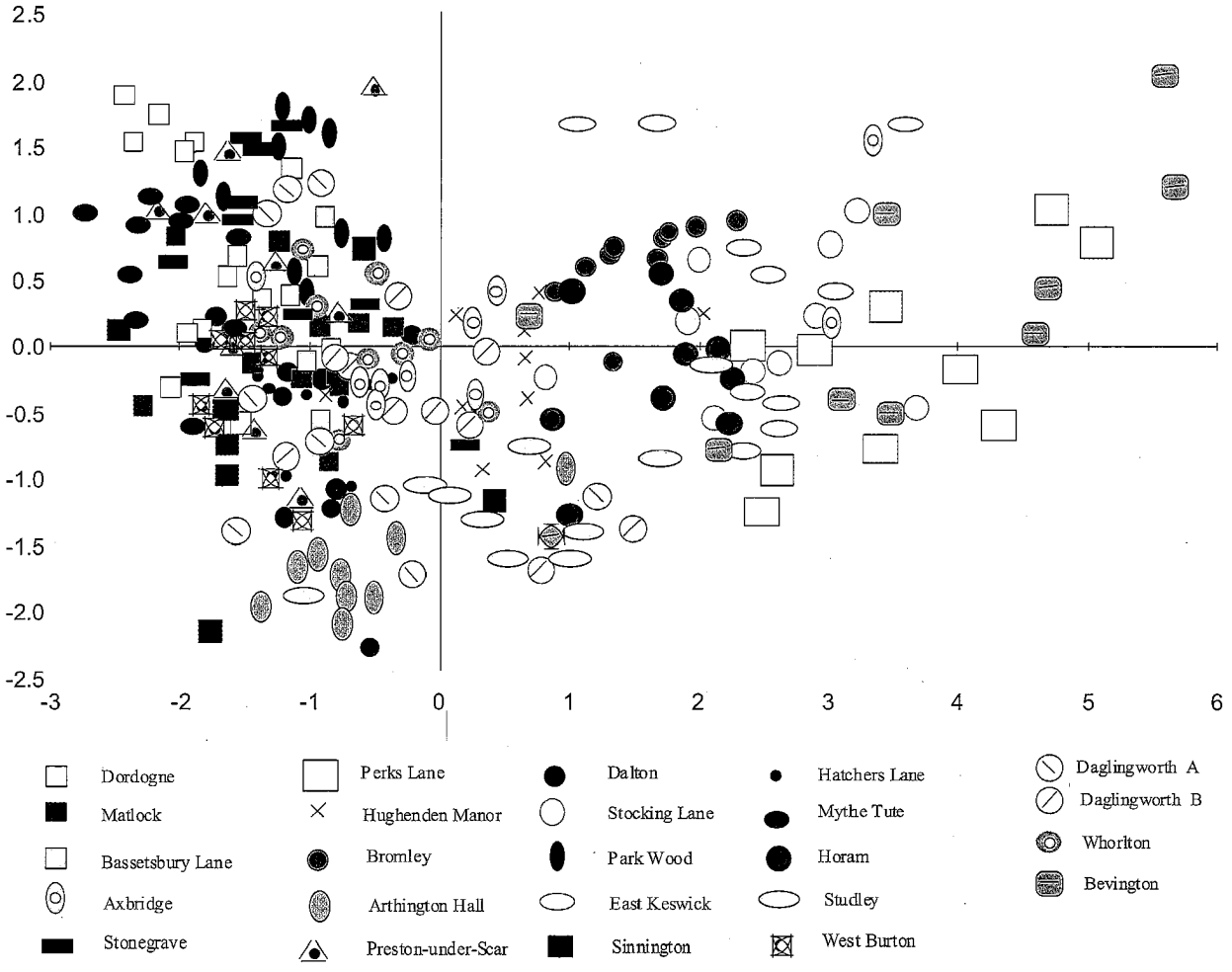
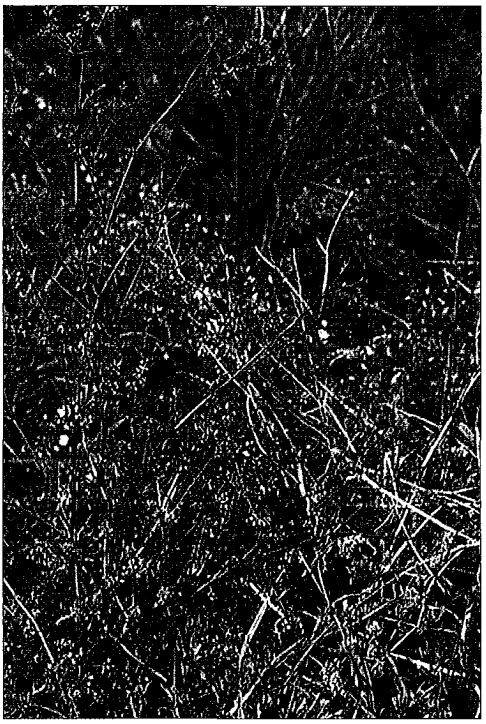



**Figure 1: Principal Components Analysis of 24 populations of Carex divulsa s.l.** (see p. 13)



*Petroselinum segetum* with *Torilis nodosa*, (v.c.61). Photo D. Constantine © 2007 (see p.6)

Fig. 3. Capsules of: *Juncus anthelatus* (left) and *J. tenuis* (right), Scale – capsules 2.5mm & 3.5mm respectively. Note the capsules fit the key relative to tepal length here. The capsule on the right is also for the plant in fig. 2. Photo M. Wilcox (see p. 52)

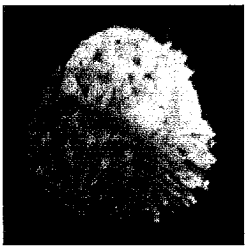
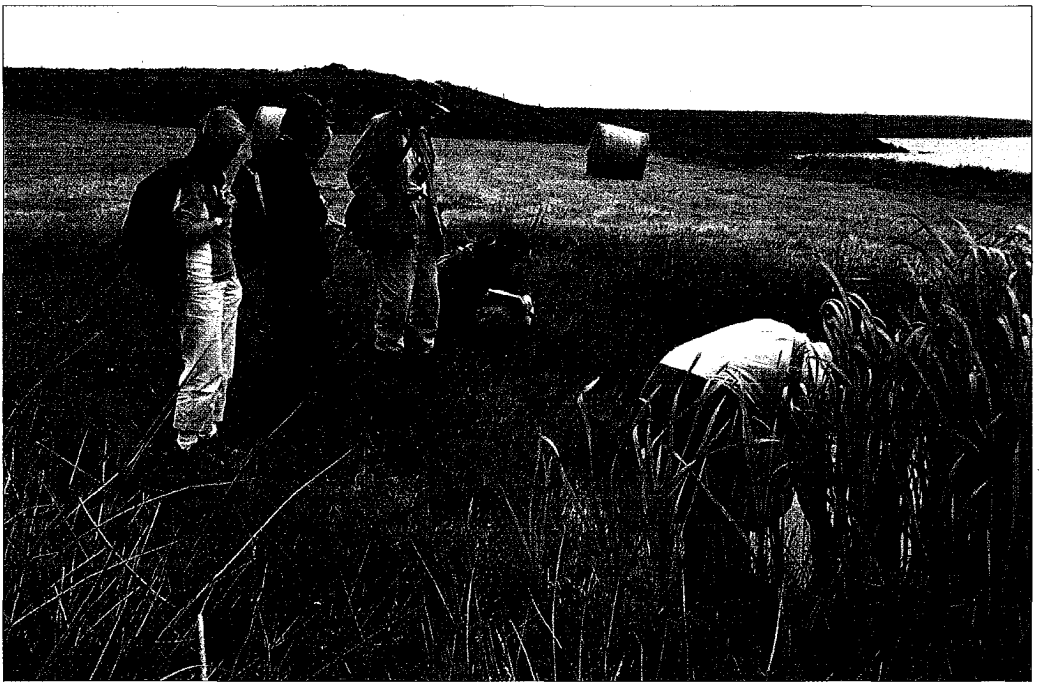


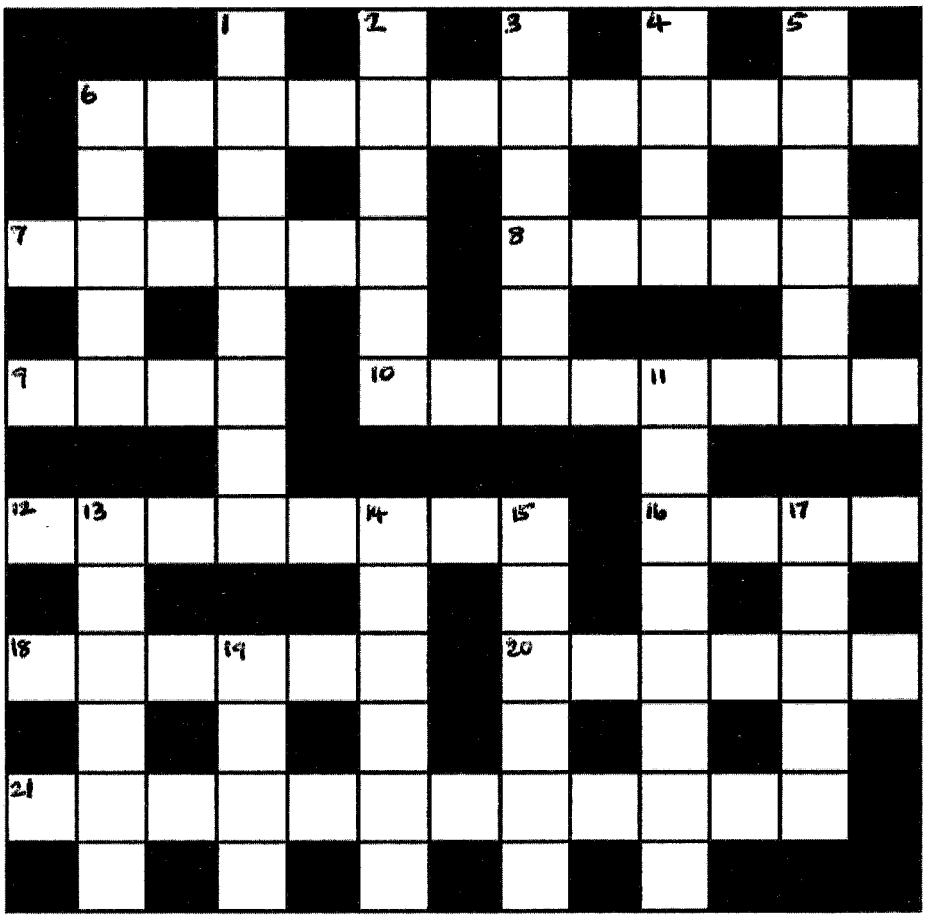
Fig. 3. *Isoetes echinospora* megaspore, Loch Sgamhainn (v.c.105). Photo D. Hicks © 2007 (see p. 26)



BSBI members at Pits Pond, Marloes (v.c.45). Photo M. Sutton © 2007 (see p. 63)

# Botanical Crossword No. 10

BY CRUCIADA



**Across**

6. Palestinian, perhaps, is on a different plain, creeping over rocks on Skye (6,6)
7. Penny-pinching at the seaside? (6)
8. Grass whose name is 'arsh to us (6)
9. Bifid earthnut supplies inspiration (4)
10. Taking sides over 12 (8)
12. In orchids may be magnifique, mais ce n'est pas la guerre (L.) (8)
16. Up to scratch at distinguishing Geraniums, for example (4)
18. Undoubtedly will remain male, as we hear (6)
20. Meat and veg (6)
21. Stamp on sage's other plant (8,4)

**Down**

1. Behead, behead – heady (8)
2. Its lip may be mistaken for carpel (6)
3. A tree put on a par with a woman and a dog (6)
4. The impetus behind 12 (4)
5. Big book of a short life (6)
6. Passage in monograph identifies plant pest (5)
11. Bending over backwards in debt, turn a corner (8)
13. Short sweet spring grass (6)
14. Pride of the Saxifrages (6)
15. Is Mom a possible bearer of pompoms? (6)
17. A price to pay for coral island (5)
19. Space found back in the uplands (4)

# ALIENS

## Difficulties with *Conyza* (Fleabanes)

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I have taken an interest in the spread of *Conyza* species in Hampshire for a number of years, and have been struck and sometimes puzzled by the variability in many populations, which at times seems to go beyond the bounds of published descriptions. Treatment of the genus in British floras has been incomplete, given current knowledge, and while several useful notes have appeared in *BSBI News*, they do not add up to a complete and consistent account. Problems are compounded by shifting nomenclature, making it difficult to know what one is making comparisons with in the foreign literature.

So, with some excitement I turned to the new account in Sell & Murrell (2006), which separates *C. bilbaoana* (Bilbao's Fleabane) and *C. floribunda* (Many-flowered Fleabane), elsewhere widely confused or considered synonymous, and gives us another species that can be considered a 'split' from *C. sumatrensis* (Guernsey Fleabane) – *C. daveauiana* Sennen (Small-headed Fleabane). (This latter is originally characterised as a hybrid, and appears as such in Gigi Crompton's catalogue of Cambridgeshire plants). It also proposes new varietal names within *C. canadensis* (Canadian Fleabane) and *C. floribunda*.

After two seasons with this new account, I find myself only a little farther forward. Discussions with *Conyza*-fanciers from Norfolk, Dorset, Cheshire and other parts of Hampshire tell me that I am not alone. It seems to me that problems are of two kinds: a few errors and uncertainties in the key and accounts, which can be quickly dealt with; and a larger set of questions relating to variability and morphological/genetic boundaries, calling for further work. Sell says that he has based his account on some 200 specimens in CGE. The following notes are based on looking in detail 'on the bench' at roughly 100 plants from Hampshire, the majority in a fresh condition, and a more cursory field examination of populations containing tens of thousands of plants mostly in the south of the county (v.c.11). Incidentally, I have never knowingly seen a live specimen of *C. bonariensis* in Hampshire, and I have not yet tried to work out how well the varieties given for *C. canadensis* fit Hampshire material. In fact, in many parts of south Hampshire it is now difficult to find sizeable populations of this species, it having been supplanted by its congeners.

### Errors and ambiguities

Couplet 3 of the Sell & Murrell key makes a distinction between *C. sumatrensis* ('...involucral bracts suddenly narrowed halfway to the top') and *C. bonariensis* ('...involucral bracts gradually narrowed all the way to the top'). This had me completely stumped. Apart from one aberrant specimen shown to me by Tony Mundell with a small proportion of deformed bracts, I have never seen any plants with this character, which is in any case contradicted by the detailed account. Eric Clement then pointed out that it was probably meant to refer to the involucre as a whole. Illustrations of *C. sumatrensis* do not seem to show this character well: Wurzell (1994) does not bring it out at all, but I suspect his specimen is a fruiting one; while Walker, in Clement, Smith & Thirlwell (2005), suggests it in the habit drawing but not in the individual capitulum. It is shown beautifully in a photograph in Milovic (2004). It is also a feature of *C. bilbaoana* (fig. 1, inside back cover), but even allowing for the early stage in development in the photograph, seems much less pronounced in plants with '*daveauiana* habit' in Hampshire (fig. 2, inside back cover and see below).

The number of corolla-lobes on the (central) tube-florets is not given as a diagnostic character for *C. canadensis*, and the account states that this

species has 5 lobes. In my experience the overwhelming majority of central florets have 4 lobes. One occasionally meets a plant with a small proportion of florets with 5 lobes. What this portends taxonomically I would not like to say. I have never seen tube-florets on any of the other species with 4 lobes, and would say that this stands as a good diagnostic character from earlier accounts. This may seem a very obvious feature, but lobing can be shallow and irregular on fully mature florets. It is most easily observed just after the buds have opened. Rodney Burton comments, I think correctly, that it is as good as impossible to observe this character on herbarium material.

The terms 'few', 'numerous' and 'very numerous' are used for the number of capitula in the descriptions, usually without definition; but for *C. daveauiana* capitula are said to be 'very numerous... often well over a hundred...in a long, wide, broad, often obovoid panicle'. If this is meant to be a count for the whole plant then it is misleadingly low. From a single average-sized basal branch of a plant with characters of this taxon I counted 414 capitula, giving an estimated total for the plant of 6000 – 7000. This was a plant roughly 1.5m high. Plants of other species, for which the accounts merely state 'numerous', will still be found to have panicles bearing hundreds of capitula.

*C. sumatrensis* capitula may be large in comparison to some other species, often helping to make plants distinctive at a distance. But Hampshire plants that do not have the '*daveauiana* habit' may have capitula smaller than 5mm; while plants that do, clearly often exceed 3mm. The accounts also give *C. sumatrensis* leaves as 'more or less acute at apex' and *C. daveauiana* as 'obtuse'. The plants detailed above show variation ranging from obtuse through subacute to broadly acute.

In the absence of any distinctive characters other than the habit, I would be reluctant to name any Hampshire plant so far seen as *C. daveauiana.*

The distinction between *C. bilbaoana* and *C. floribunda* in Sell & Murrell is:

Ultimate flowering branches short and wide; involucral bracts obtuse at apex: *bilbaoana*

Ultimate flowering branches long and narrow; involucral bracts acute at apex:: *floribunda*

Without quantitative measures it is difficult to know how to read the branching character, but one can certainly find plants showing a marked divergence. The West Quay area of Southampton (SU4111) currently has intermixed populations, all plants of which tend to one extreme or

**Variability**

Sell & Murrell separate *C. daveauiana* from *C. sumatrensis* on the following diagnostic characters:

Inflorescence of long, slender, rigidly erect, straight branches often from low down the stem; involucral bracts 3-4 x 0.4-0.5mm: *daveauiana*

Inflorescence of shorter, stouter branches with a great tendency to be curved; involucral bracts 4-5 x 0.5-0.6mm: (*sumatrensis* / *bonariensis*)

Plants with the habit here described for *C. daveauiana* have been found in small numbers in Winchester (fig. 3, back cover) and two places in Bournemouth, and a Winchester plant now resides in HCMS. But the distinction on involucral bract size does not work at all on these plants, and, in fact, in the accounts, bract size for *C. sumatrensis* is given as 2-5 × 0.4-0.6mm, completely enveloping the range of 3.5-4.0 × 0.4-0.5mm for *C. daveauiana.* Also in the accounts, capitulum breadth for *C. sumatrensis* is given as 5-8mm, and for *C. daveauiana* as 2-3mm. I have assumed that these dimensions should be taken at anthesis. Here are measurements taken from three Hampshire sites for '*daveauiana* habit':

| | Involucral bracts | Capitulum breadth |
|---|---|---|
| Chilcomb House, Winchester (SU4928) | 2.5-4.5 x 0.4-0.6mm | 2.5-4.0mm |
| Bournemouth Cliffs (SZ0990) | 3.0-5.0 x 0.4-0.6mm | 3.0-5.0mm |
| Portman Ravine, Boscombe (SZ1291) | 2.5-4.0 x 0.4-0.6mm | 2.5-3.5mm |

the other (fig. 4, back cover), but elsewhere the distinction is less clear. However, the involucral bract character does not seem to work on these plants. Apices tend to range from more (outer) to less acute (inner) (see plate 1), but most specimens go no farther than subacute. The only exceptions I have seen are in a few plants in a population at Hamble (SU4706), where the bracts range from broadly acute to obtuse. This is not always an easy character to judge, as the inner bracts typically have a scarious margin that becomes somewhat fimbriate with age.

Some correspondents have had difficulties with the primary key distinction 'Involucral bracts distinctly hairy / Involucral bracts glabrous or with an occasional hair' which separates *C. sumatrensis / C. daveauiana / C. bonariensis* from *C. canadensis / C. bilbaoana / C. floribunda. C. sumatrensis* group plants have bracts sufficiently hairy to give the capitula a fuzzy look. *C. bilbaoana* group plants typically have one or two stiff hairs on the bract midrib. Often, on fresh material, one can also see a scattering of white glands, sessile in the upper parts of the bract and shortly stalked at the base. These are not easy to make out in the field and are most apparent at ×30 or higher. Sell & Murrell mention such glands for *C. sumatrensis / C. daveauiana* but not for *C. bilbaoana.* The 'dull greyish-green... appearance' given for the whole plant is a matter of hue rather than gloss, and says nothing about the hairiness of the whole *C. sumatrensis / C. daveauiana* plant. The felted look of the latter is a useful distance recognition character.

Finally, there is a distinctive group of plants that appear and flower very late in the year. Rosettes are conspicuous from August onwards; flowering typically starts in October and continues even into December. They are robust, often exceeding 1m in height, with one or a few stout strongly ascending densely leafy main stems. In recent years they have appeared near Town Quay, Southampton (SU4111), in Swaythling, Southampton (SU4315) and on imported soil at Fryern Hill, Chandlers Ford (SU4421). Because these plants tend to have a cylindrical inflorescence rather than the typical domed corymb of *C. bilbaoana,* I have occasionally had specimens submitted under the name *C. canadensis.* However they have none of the other characters of that species.

Two similar less robust plants, but with many branches arising from the base and ascending at an angle, appeared in Bar End, Winchester (SU4828) in 2006 ( fig. 5, back cover). They have the '*daveauiana* habit' and until the panicle started to develop and I looked properly, I took them for a form of *C. sumatrensis.* The main stem in these plants is less densely leafy than the less branched forms.

All these plants come out to *C. bilbaoana* in a broad sense, and I had hoped that they would fit the description for *C. floribunda*; and so they do in many respects: 'Stems... robust... often branched from the base, the branches long, straight and the ultimate branches long and narrow, very leafy', 'Capitula very numerous... forming a long panicle of many branches.', '...outer [flowers] with very short, cream ligules...'. They lack the reddish tips to the involucral bracts and the pale lilac tints in the ligules that usually characterise *C. bilbaoana.* Most plants seem to fit var. *linearifolia* P.D. Sell: 'Bracts long and linear extending beyond the capitula'.

However Sell & Murrell give 5-7mm as the capitulum diameter for *C. floribunda,* while these Hampshire plants measure 2-3.5mm. (Incidentally, they give 3-4mm for *C. bilbaoana,* which is larger than I would expect to see. The 2mm given in Stanley (1996) is closer). Also, while they give *C. bilbaoana* leaves as '...entire to sparsely serrate, or the basal with pinnate lobes...', for *C. floribunda* they have '...entire or the lower shortly dentate...'. In these Hampshire plants, rosette and lower stem leaves are usually deeply incised-dentate.

Only *C. canadensis* has a ligule that can be described as conspicuous; even then it is possible to find material with a much less pronounced ligule that matches in all other respects. Sell & Murrell describe all species other than *C. bonariensis* as having ligulate outer florets. I have been in dispute with Eric Clement over this. I agree with Sell & Murrell,

but admit that in the other species the ligule can be extremely short and feel that it might be more useful to describe the outer florets as either actinomorphic or zygomorphic.

What does this add up to? Certainly that Sell & Murrell is not going to stand as a definitive account for British *Conyza* populations. But then Sell said as much in his overview of the genus. He states that, apart from the diploid *C. canadensis*, most plants appear to be selfing or apomictic, breeding true from seed. Certainly their ability to go from opening bud to abundant, well-formed achenes in warm weather, even while being transported in sealed bags and then pressed, is prodigious. On the other hand, Eric Clement has suggested (pers. comm.) that *Conyza*, like many other genera of Asteraceae, includes taxa that are largely self-incompatible, and are not apomictic. He has passed me specimens grown in isolation that are apparently entirely sterile. Michael Wilcox (*in litt.*) has suggested that numbers of tube- and ray-florets may also be a useful character. Perhaps in the future we can look forward to a BSBI *Conyza* handbook to rival Dandelions!

A draft for a working key

I offer the following not as an authoritative key but as a work in progress that helps toward placing plants in the main taxon groups. I am sure that considerable refinements can be made, but without more work on the plants' biology and cytology I would not want to propose another taxonomy (a job for which I am not qualified, in any case).

1. Involucral bracts densely hairy: ..... 2
1. Involucral bracts glabrous or with occasional bristly hairs: ..... 3
   2. All leaves narrow (≤5mm), linear; inflorescence profile usually domed, corymbose; flowers all actinomorphic, 5-lobed: ..... *C. bonariensis*
   2 Leaves 3-20mm, linear or narrowly elliptical; inflorescence profile usually ovate or rhomboid; inner flowers actinomorphic, 5-lobed; outer flowers zygomorphic: ..... *C. sumatrensis* group
      3. Whole plant dull greyish-green in appearance; inflorescence profile broadly cylindrical to broadly domed; involucral bracts often purplish- tipped; inner flowers actinomorphic, 5-lobed; outer flowers zygomorphic with a short inconspicuous ligule: ..... *C. bilbaoana* group
      3. Whole plant yellowish-green in appearance; inflorescence profile usually cylindrical; involucral bracts not purplish-tipped; inner flowers actinomorphic, 4-lobed or with an occasional 5-lobed individual; outer flowers zygomorphic, usually with a conspicuous (1mm+) whitish or pale lavender ligule: . . . *C. canadensis*

**Acknowledgements:**
I am grateful to Michael Wilcox for sending me fresh material of *Conyza bonariensis* and for several discussions. Robin Walls, Ted Pratt and Mike Rowe have sent me material from various parts of southern England, and Tony Mundell, Ron Payne, Eric Clement and Paul Stanley have all contributed information and discussion. Rodney Burton, the BSBI *Conyza* referee, has kindly read a draft of this article (without the key) and commented.

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SELL, P.D. & MURRELL, G. 2006. *Flora of Great Britain and Ireland* Vol. 4: 456-459. Cambridge University Press, Cambridge.

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WURZELL, B. 1994. A history of *Conyza* in London *BSBI News* 65: 34-39.

# Curry Plant at Dungeness, East Kent (v.c.15)

BILL LAST, *26 Long Ley, Harlow, Essex, CM20 3NJ*

While botanising at Dungeness during August 2007 I noticed a couple of small plants of *Helichrysum italicum* (Curry Plant), closest to ssp. *serotinum* (det. E.J.Clement), growing on the landward side of the road, adjacent to gardens (TR093183). I mentioned the plants to D.Walker, the warden of Dungeness Bird Observatory, and he showed me a mature plant on the other, seaward side of the road, growing on shingle. The plant, from the Mediterranean, is unmentioned in Stace's *New flora of the British Isles* (2nd ed.) (1997), but maybe it is just beginning to find a natural home here.

I notice that Peter Lawson found it in 2006 as a pavement weed in Wenhaston, Suffolk, reported in *The Wildflower Magazine*, 496: 24 (Summer, 2006); but, perhaps wisely, no subspecies was mentioned.

The English name originates from the intense curry aroma given off when fresh by the greyish, linear, downy leaves, which separates it from its allies. I am indebted to Eric Clement for help in writing this short note.

# A missing mistletoe re-appears

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

Clement & Foster (1994) attempted to present details about every alien plant ever recorded from our area. It certainly included *Fumaria agraria* that confounded several members recently (*BSBI News* 106:74). This book did, however, miss many manuscript records. One example lies in a letter dated 1911, written by Dr David Moore (Dublin Botanic Garden), now in the Herbarium Archive at RBG, Kew, that tells of a wild specimen of *Loranthus europaeus* Jacq., a mistletoe from SE Europe, that DM spotted on a tree at Kew in 1873, but which died some years later.

Amazingly, this warmth-loving semi-parasite has now returned, and is currently thriving at Kew (v.c.17: Surrey). In May 2005, Tony Hall, one of Kew's tree experts, noticed a large plant on a solitary, young north American *Quercus velutina* (Black Oak). Records showed that the tree had been grown from an acorn at Kew, so the arrival here of its incumbent is a total mystery.

The plant could be overlooked elsewhere in Britain (and Europe!). It much resembles our *Viscum album* (Mistletoe), but has brown, woody stems, not green ones. There are two fine colour photographs of it in *Kew* (Winter 2006: 12-13), with an accompanying article by Gail Vines. This is the source of almost all the information presented here.

I cannot resist from quoting further from this fine magazine. The Summer 2007 issue had a fascinating article (pp. 22-27) on climate change at Kew, where it reveals that the flowers of *Anemone nemorosa* (Wood Anemone) had an average opening date of 1st April in the 1980s; in the 2000s it is 13th March – an alarming advance of 19 days. Other (woody ) species have advanced by just 8 days.

For those interested, a subscription form for the magazine can be obtained from www.kew.org./publications/kewmag or by telephoning 01768 342263.

**Reference**:

Clement, E.J. & Foster, M.C. 1994. *Alien plants of the British Isles: a provisional catalogue of vascular plants (excluding grasses)*. BSBI, London.

# An Unusual Collection of Aliens

MIKE SHAW, *The Walnuts, 118 Manor Way, Aldwick Bay, Bognor Regis, West Sussex, PO21 4HN*

On 7th May 2007 I was on a Sunday afternoon walk with my wife and two non-botanist friends to the north-west of Chichester in West Sussex. We were returning to our car along a footpath that skirted an old filled-in quarry when my eye was drawn to a splash of red colour in the quarry, and a quick detour was made to investigate further. To our surprise the rough grass cover was studded with dwarf red *Mimulus* plants and a closer look revealed other aliens including *Phacelia tanacetifolia* (Phacelia), *Allium subhirsutum* (Hairy Garlic), *Borago officinalis* forma *alba* (Borage ) and *Cerinthe major* (Greater Honeywort) (see inside front cover). Despite my excitement at these finds we reluctantly resumed our walk but later I spoke to Alan Knapp, the v.c.13 recorder, who was interested as only two days earlier he had had a similar report from Rod Stern a fellow member and chairman of the Sussex Botanical Recording Society. I phoned Rod, who likewise had been on a walk with his wife when he saw the site, but it was getting dark and he intended to return another day.

We agreed to revisit the site together on May 16th and I invited Eric Clement to join us. Meanwhile I returned alone on May 12th and spent several hours photographing the plants. The site is an old quarry on sloping ground and measures about 200 × 50m (see Colour Section, Plate 2). It has been filled in, except for part of the lower section where a large steel barn has been erected with an asphalt access drive from a nearby track. Amongst the new plants I saw were *Allium roseum* (Rosy Garlic), *Lagurus ovatus* (Hare's-tail), *Lathyrus latifolius* (Broad-leaved Everlasting-pea), *Matthiola longipetala* (Night-scented Stock), *Salvia viridis* (Annual Clary), *Schizanthus pinnatus* (Poor-man's-orchid) (see inside back cover), *Silybum marianum* (Milk Thistle) and *Viola* × *wittrockiana* (Garden Pansy). Where had this eclectic collection of aliens come from? The ground vegetation was fairly dense with grasses, thistles, medicks and clovers and other native species.

Rod and his wife Vanessa, Eric and I met at the quarry on the morning of 16th May and spent some hours thoroughly surveying the area. Sadly, since my visit on the 12th, large parts of the vegetation had been cut back and some plants including the *Matthiola longipetala, Mimulus* and *Schizanthus pinnatus* had been destroyed. Nevertheless many new ones were found, including *Barbarea intermedia* (Medium-flowered Winter-cress), *Echium plantagineum* (Purple Viper's-bugloss), *Euphorbia oblongata* (Balkan Spurge), *Geranium pyrenaicum* f. *albiflorum* (Hedgerow Crane's-bill), *Limnanthes douglasii* (Meadow-foam), *Linaria maroccana* (Annual Toadflax), *Lobelia erinus* (Garden Lobelia), *Malcolmia maritima* (Virginia Stock), *Melissa officinalis* (Balm), *Nigella damascena* (Love-in-a-mist), *Phalaris canariensis* (Canary-grass), *Silene coeli-rosa* (Rose-of-heaven) and *Verbena bonariensis* (Argentinean Vervain). Also several interesting natives were seen, such as *Descurainia sophia* (Flixweed), *Geranium rotundifolium* (Round-leaved Crane's-bill), *Lepidium campestre* (Field Pepperwort) and *Marrubium vulgare* (White Horehound). We remained unsure about the origin of all these species, although Eric felt it was unlikely they originated from a seed mix.

During the rest of the summer I made three further visits to the site, on 26th May with Alastair Stevenson, 6th June, again with Eric Clement and finally on 27th September. Each time there were more surprises: *Allium moly* (Yellow Garlic), *Anagallis monelli* (Garden Pimpernel) (see Colour Section, Plate 2), *Camelina sativa* (Gold-of-pleasure), *Clarkia amoena* (Godetia), *Coriandrum sativum* (Coriander), *Cyperus eragrostis* (Pale Galingale), *Echium boissieri* (Boissier's Viper's-bugloss) (see inside front cover), *Lavatera trimestris* (Royal Mallow) (see inside front cover#), *Limonium sinuatum* (Statice), *Phlox drummondii* (Annual Phlox), *Polypogon viridis* (Water Bent), *Silene pendula* (Nodding Catchfly) (see Colour Section, Plate 2) and

*Verbascum blattaria* (Moth Mullein) in both white and yellow forms. Eric was most intrigued by the *Echium boissieri*, a biennial native to mountainous regions of the Iberian peninsula and western North Africa. To the best of his knowledge he felt this was the first U.K. record for this species, whose blue anthers help to distinguish it from *E. italicum* (see inside front cover). There were several robust specimens of the plant reaching about 1 metre in height. He wasn't aware of it in cultivation in Britain, although the RHS Plantfinder now lists four nurseries that supply it. Again, unusual native plants including *Stachys arvensis* (Field Woundwort) and *Torilis nodosa* (Knotted Hedge-parsley) were also found.

On my last visit to the quarry a wire fence had been erected around the boundary and I met two men from the Environment Agency who were monitoring the site for health and safety purposes. They didn't know any further details about the flora but were able to tell me the name of the owner, a local farmer who was quite interested and helpful when I subsequently met him. He confirmed the empty quarry had been filled with rubble and then covered with old garden topsoil to a depth of one metre. He was unsure of the origin of the topsoil but said he had only seeded it with native grasses and clovers, not with any wildflower mix. His main concern was to suppress the rapid spread of thistles and docks and said his son was due to spot weed-kill these later that day.

In total 167 species were recorded from this small site, only 63 of which were native. It would seem therefore these unusual plants were of garden origin and had arisen from seed in the top soil, apart from those deliberately sown by the site owner. The huge variety of plants suggests the soil was sourced from many sites and it will be fascinating to see how many recur in 2008, or whether there will be new surprises. The origin of some of the rarer native or archaeophyte plants is obscure. *Marrubium vulgare* has always been uncommon in West Sussex, with only six records in the Sussex Rare Plant Register from just three localities. There are only 2 post-1987 records in Sussex for *Descurainia sophia* (Flixweed) , both of which were short-lived casuals near Brighton following soil disturbance (Alan Knapp pers. comm.). The RHS Plantfinder lists 12 nurseries supplying *Marrubium vulgare*, the nearest to Sussex being in Kent (although there are some mail order suppliers), and none for *Descurainia sophia.* I therefore feel it is probable that long-buried seed from native plants has also arrived in the topsoil, but not as a result of deliberate intoduction. *Marrubium vulgare* seed is known to have long viability in soil and *Descurainia sophia* seed has germinated after burial for up to 30 years (Ødum, 1974).

I have been deliberately vague as to the exact location of this site as it is on private land. I would like to thank Eric Clement for his help in identifying many of the species listed above.

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ØDUM, S. 1974. Seeds in ruderal soils, their longevity and contribution to the flora of disturbed ground in Denmark. *Proceedings of the 12th British Weed Control Conference*: 1131-1144. Brighton.

**Species list 2007**

*Achillea millefolium*
*Alcea rosea*
*Allium moly*
*Allium roseum*
*Allium subhirsutum*
*Allium triquetrum*
*Alopecurus myosuroides*
*Alopecurus pratensis*
*Anagallis monelli*
*Anchusa arvensis*
*Anisantha sterilis*
*Antirrhinum majus*
*Aquilegia vulgaris*
*Arenaria serpyllifolia* ssp. *leptoclados*
*Armeria maritima*

*Atriplex prostrata*
*Aubrieta deltoidea*
*Barbarea intermedia*
*Barbarea vulgaris*
*Borago officinalis*
*Borago officinalis* f. *alba*
*Borago pygmaea*
*Brassica nigra*
*Briza maxima*
*Calendula officinalis*
*Camelina sativa*
*Cardamine pratensis*
*Catapodium rigidum*
*Centaurea cyanus*
*Centaurea montana*
*Cerastium tomentosum*
*Cerinthe major*
*Chenopodium murale*
*Clarkia amoena*
*Clinopodium ascendens*
*Cochlearia danica*
*Conyza sumatrensis*
*Coriandrum sativum*
*Coronopus didymus*
*Crepis vesicaria*
*Cymbalaria muralis* ssp. *muralis*
*Cynara cardunculus*
*Cyperus eragrostis*
*Datura stramonium*
*Daucus carota* ssp. *carota*
*Descurainia sophia*
*Digitalis purpurea*
*Diplotaxis muralis*
*Echium boissieri*
*Echium plantagineum*
*Echium vulgare*
*Epilobium hirsutum*
*Eschscholzia californica*
*Euphorbia helioscopia*
*Euphorbia lathyris*
*Euphorbia oblongata*
*Euphorbia peplus*
*Fallopia japonica*
*Fumaria muralis*
*Galega officinalis*
*Geranium dissectum*
*Geranium lucidum*
*Geranium pusillum*
*Geranium pyrenaicum*
*Geranium pyrenaicum* f. *albaflorum*
*Geranium rotundifolium*
*Holcus lanatus*
*Hyacinthoides non-scripta*
*Hyacinthoides ×massartiana*
*Iberis umbellata*
*Juncus bufonius* s.l.
*Knautia arvensis*
*Lagurus ovatus*
*Lamium purpureum*
*Lapsana communis*
*Lathyrus latifolius*
*Lavatera trimestris*
*Lepidium campestre*
*Ligustrum vulgare*
*Limnanthes douglasii*
*Limonium sinuatum*
*Linaria marococcna*
*Linaria purpurea*
*Linum usitatissimum*
*Lobelia erinus*
*Lobularia maritima*
*Lunaria annua*
*Malcolmia maritima*
*Marrubium vulgare*
*Matthiola longipetala*
*Medicago arabica*
*Medicago sativa* ssp. *sativa*
*Melissa officinalis*
*Mentha spicata*
*Mimulus guttatus*
*Narcissus* agg.
*Nemesia fruticans*
*Nicotiana forgetiana*
*Nigella damascena*
*Oenothera biennis*
*Oenothera glazioviana*
*Oenothera stricta*
*Onopordum acanthium*
*Orobanche minor*
*Oxalis articulata*
*Oxalis exilis*
*Papaver nudicaule*
*Papaver somniferum*
*Pentaglottis sempervirens*
*Persicaria lapathifolia*
*Persicaria maculosa*
*Petunia axillaris* × *integrifolia* = *P. ×hybrida*
*Phacelia tanacetifolia*
*Phalaris canariensis*
*Phlox drummondii*

*Poa annua*
*Poa trivialis*
*Polypogon monspeliensis*
*Polypogon viridis*
*Polystichum setiferum*
*Pseudofumaria lutea*
*Pulicaria dysenterica*
*Quercus ilex*
*Ranunculus bulbosus*
*Ranunculus sardous*
*Ranunculus sceleratus*
*Reseda luteola*
*Rorippa nasturtium-aquaticum*
*Rubus armeniacus*
*Rumex crispus*
*Sagina procumbens*
*Salvia verbenaca*
*Salvia viridis*
*Schizanthus pinnatus*
*Senecio jacobaea*
*Senecio squalidus*
*Sherardia arvensis*
*Silene coeli-rosa*
*Silene pendula*
*Silybum marianum*
*Sisymbrium officinale*
*Solanum nigrum*
*Stachys arvensis*
*Stachys byzantina*
*Sutera cordata*
*Symphytum officinale*
*Symphytum orientale*
*Tanacetum parthenium*
*Taxus baccata*
*Thlaspi arvense*
*Torilis nodosa*
*Trifolium pratense*
*Trifolium repens*
*Urtica urens*
*Valerianella carinata*
*Verbascum blattaria*
*Verbascum blattaria* f. *alba*
*Verbascum nigrum*
*Verbena bonariensis*
*Verbena* × *hybrida*
*Veronica chamaedrys*
*Veronica montana*
*Viburnum lantana*
*Vicia faba*
*Vicia sativa* ssp. *segetalis*
*Viola tricolor* ssp. *tricolor*
*Viola* ×*wittrockiana*

# *Carex buchananii* (Silver-spiked Sedge) in Ireland

PAUL R. GREEN, *46 Bewley Street, New Ross, Co. Wexford, Ireland* (paulnewross@eircom.net)

The new BSBI handbook on *Sedges of the British Isles* (Jermy *et al.*, 2007) list *Carex buchananii* (Silver-spiked Sedge) as being recorded from Cessnock (v.c.77) in 1990 and from Orchardstown (v.c.H6) in 2004. The following account gives an update on the Irish records.

A single clump was first found in Ireland by me in Co. Waterford at Orchardstown (S5408) on 22nd July 2004, on waste ground. A specimen was sent to Arthur Chater who determined it as *C. buchananii* and that specimen is placed in DBN. In 2007 the clump was destroyed by the dumping of a very large bag of sand on the plant. I re-found it for the county on 5th December 2007, on waste ground in Waterford City (S6011), where a single clump survives.

On 20th August 2007 I added it to Co. Wexford at New Ross (S7025), growing in a field gateway where it must have been dumped at some time, as it grew with *Anemone* ×*hybrida* (Japanese Anemone), another garden species. In September 2007 I found a single clump growing at the edge of the road, Adelaide Road, Dun Laoghaire, Co. Dublin (O2526). I went the following day to get a photo. A road-sweeper was coming down the road. It passed the *Carex*, and when gone there was no sign of the sedge: a new way of controlling our alien species!

*Carex buchananii* is now commonly sold in Irish garden centres and could have the potential of becoming a widespread garden escape.

**Reference**:

JERMY, A.C., SIMPSON, D.A., FOLEY, M.J.Y. AND PORTER, M.S. 2007. *Sedges of the British Isles*. BSBI Handbook No. 1 (ed. 3). Botanical Society of the British Isles, London.

# A404/M40 junction, Handy Cross, High Wycombe, Bucks

ROY MAYCOCK, *17 Osborne Street, Bletchley, Milton Keynes, MK2 2LU*
ALAN SHOWLER, *12 Wedgwood Drive, Hughenden Valley, High Wycombe, Bucks., HP14 4PA*

A slip road between the Marlow bypass (A404) and the M40 has recently been completed at the Handy Cross junction south of High Wycombe. The new road lies in a cutting and much of the spoil extracted has been piled to the south of the junction, but leaving a ditch and balancing pond between it and the road. Other earthworks have left smaller mounds - but all have turned out to have interesting floras associated with them.

Alan Showler's attention was first drawn to the site on the 17th July 2007, when he began a species list. A second visit was made on 27th July, and then a third with Roy Maycock. Subsequently, several other visits were made, one with the addition of Graham Giles, and so the list became increasingly longer. George Hounsome noticed the site in October and he, too, made further visits, one with Eric Clement. With all of these visitors, the length of the list of species around the site continued to expand and, at the last count, had some 250 records!

How did such a relatively small area come to have such a vast diversity? It must be said that most of the species are aliens and include garden species, those of bird-seed origin or other casuals. Sometimes species were in large numbers whilst several others were only seen once. Like many places now, garden waste is collected from houses in High Wycombe. Close by (in High Heavens Wood) is the local dump for such collections and it may be that compost from this site (or possibly some other) was spread as top soil over the excavated mounds. Normally such compost is treated at high temperatures to destroy seeds within it, so, could it be that this compost was not subjected to this treatment? If not, what other explanation can be given for the spectacular display of so many alien and native species?

Had all of the plants been in sufficient quantity, one might have been able to survive for a day or two. Breakfast cereal could have been made from the *Zea mays* (Maize), vegetables for lunch could include *Spinacea oleracea* (Spinach), *Beta vulgaris* ssp. *sicla* (Swiss Chard), *Brassica oleracea* (Cabbage), *Pisum sativum* (Peas), *Cucurbita pepo* (Marrow) with *Coriandrum sativum* (Coriander) or *Foeniculum vulgare* (Fennel) flavouring, and with *Armoracia rusticana* (Horse-radish) sauce, if beef were on the menu. *Rubus fruticosus* agg. (Brambles) for sweet, before tea with *Lactuca sativa* (Lettuce), *Cucumis sativus* (Cucumber), *Lycopersicum esculentum* (Tomato), *Raphanus raphanistrum* (Radish) and *Tropaeolum majus* (Nasturtium). *Triticum aestivum* (Wheat) was present, so bread might be made! Looking out of the window the garden borders have *Lobularia maritima* (Sweet Alison), *Lobelia erinus* (Lobelia), *Nemesia strumosa* (Cape-jewels) and *Viola* ×*wittrockiana* (Pansies), and there is a *Buddleja davidii* (Butterfly Bush) for the butterflies as well as bird feeders with *Guizotia abyssinica* (Niger) and *Cannabis sativa* (Hemp), and *Fagopyrum esculentum* (Buckwheat) with *Helianthus annuus* (Sunflowers) for any visiting pheasants. There are too many weeds to mention, so let's not dwell on them - nor yet think of visiting this garden, as most of its plants will soon be gone! This year it will be interesting to see if any have survived.

# *Juncus anthelatus* (Wiegand) R.E.Brooks in Britain

MIKE WILCOX, *32 Shawbridge St. Clitheroe, BB7 1LZ*[1]
B.A. TREGALE, *24 Ashborne Drive, Bradford BD2 4AQ*[2]

In 2006-7 a derelict site was investigated in Bradford, SE133 339 v.c.63. The site was called Fairweather Green Mills, which included Illingworth's Wool Combers, which has now been cleared for redevelopment with only a few rubble piles remaining. It appears to have been derelict for about 2-3 years. This type of site, in an ex-industrial area sometimes develops interesting species. Most of the species were pioneer species, such as grasses and early annuals. However, as we only noticed the site late in the year there seemed to be very little other than bare ground at the time. On closer inspection however, there were a few interesting plants noted.

These plants included: *Anemone blanda*, *Astilbe* ×*arendsii*, ×*Agropogon littoralis*, *Calamagrostis epigejos*, *Catapodium rigidum*, *Cotoneaster monopyrenus*, *Crocus* × *stellaris*, *Cyperus eragrostis*, *Filago vulgaris*, *Geranium endressii*, *G. sanguineum*, *Limnanthes douglasii*, *Medicago arabica*, *M. polymorpha*, *Muscari armeniacum* 'Blue Spike', *Oxalis exilis*, *Polypogon monspeliensis*, *Setaria pumila*, *Stipa tenuissima*, *Symphoricarpos* ×*chenaultii*, *Trifolium angustifolium* and *T. fragiferum*. One plant that was noted early in the season appeared to be a young plant of *Juncus tenuis* Willd. s.l. The site was visited several times over the period of 2007 and other interesting plants appeared around the site at least for SE13. B.A. Tregale and B.K. Byrne also found *Muscari latifolium*. We determined the plants and some vouchers of the more difficult taxa were confirmed at a later date by Eric Clement (EJC); the *Cotoneaster* was determined as above and was confirmed by J. Fryer. By this time the *J. tenuis*-like plant had changed appearance and was much stouter with a very diffuse (lax) inflorescence, (see fig. 1).

This rush now seemed clearly different and so specimens were collected and sent to EJC and Dr T. Cope. Upon return the specimens were identified as *J. tenuis* var. *anthelatus*

Fig. 1 - *J. anthelatus* on the left and *J. tenuis* on the right (scale: *J. anthelatus* inflorescence 17cm) Scan MW[1]

Wieg., (EJC). We then sought information on the Internet and an article 'Botanical Notes' (Woodlot Alternatives INC. 2001) describing differences in this group was found[2]. It was noted that this plant was now considered as a species in America and a copy of the article was sent to EJC suggesting we had *J. anthelatus*. EJC later confirmed this as being most like *J. anthelatus* and was happy to accept it as such and Dr. T. Cope accepted them based on Kirschner's (2002) revised taxonomy. This article showed the differences between *J. tenuis*, *J. anthelatus*, *J. dudleyi* and *J. dichotomous*. Previously, *Juncus anthelatus* and *J. dudleyi* were varieties of *J. tenuis* and *J. dichotomous* is similar to *J. dudleyi*, (*J. macer* is also a synonym within this group). It is not certain whether *J. dudleyi* is a species as it is mainly separated on the short (0.2-0.6mm), yellow-brown cartilaginous blunt auricles as opposed to the longer, (2.0-6.0mm) translucent and scarious auricles in *J. tenuis* and *J. anthelatus*, (Woodlot Alternatives INC.

2001). In Britain *J. dudleyi* is at present considered conspecific with *J. tenuis* (Stace 1997) but this work in America suggests it is a species.

However, according to this article it was now possible to say without doubt that our plant belonged to *J. anthelatus*. Kirschner (2002) in a revision of *Juncus* gives the key characters as:

28 Capsules up to ¾ as long as perianth; flowers usually widely spaced in a usually diffuse inflorescence; plants usually 70-90cm tall 225. *J. anthelatus*

28: Capsules reach more than ¾ of perianth length: flowers in irregular groups, not widely spaced; plants usually less than 70cm tall 224. *J. tenuis*

Whilst this gives key characters it is worth noting other characters that are perhaps useful diagnostic features, see below. In a search for this plant in Britain, *J. tenuis* var. *anthelatus* is listed in Clement & Foster (1994). This reference work states that some records of *J. tenuis* may be this variety and a further reference is given. This is a useful reference and it is quoted below:

718/16b. JUNCUS TENUIS var. anthelatus Wieg., 1900, *Bull. Torr. Bot. Club*, 27, 523. 24, Bucks,; abundant in gravel pit close to Denham Golf-club railway platform, 1955, LONDON NATURAL HISTORY SOCIETY EXCURSION, det. N. Y. Sandwith. Plant taller and stiffer (5-9 dm. High); leaves broader; sheaths numerous and loose, often causing the base of the stem to appear stout. Inflorescence large, open and diffuse (5-15 cm. Long); flowers scattered and smaller (2.5-3.5 mm); capsule not over three fourths the length of the perianth, round-ovate, shining. Native of U.S.A. - D. H. Kent.

This description was an identical match for our plant in Bradford, see figure 1 illustrating the two species. A contact in the London Natural History Society (**LNHS**) Prof. John Edgington was contacted to see if there were any specimens of this plant lodged with the Natural History Museum[1] (**NHM**). Dr. Mark Spencer of **NHM** replied saying that they had three sheets of this plant from Denham, v.c.24, Bucks, though I have not seen these. Interestingly, a visit was made to Liverpool Museum's herbarium (**LIV**) to search for plants like this.[1] In **LIV** there were approximately forty sheets of *J. tenuis* s.l. (approximately 240 fruiting inflorescences) and all but one sheet had relatively typical specimens. However, this one other sheet had 3 specimens from Denham, v.c.24 and the information and date were exactly the same as those in **NHM** but without the description of the plant from the reference above. These plants were also an exact match to the ones seen in Bradford and match the key in combination with the description given above. Prof. John Edgington also sent a subsequent letter with information about the variety written by the then recorder J. E. Lousley. This information in the London Naturalist (1956) gives a brief account by Lousley of the **LNHS** visit to Denham. Therein it states; 'On the Botany Section ramble to Denham on September 25th, E. B. Bangerter collected specimens of a rush previously known to T. G. Collett from an overgrown gravel pit...' It was later identified by N. Y. Sandwith as *Juncus tenuis* Willd. var. *anthelatus* Wiegand.

Additionally, outside Britain, in a letter to B.A. Tregale, EJC commented that *J. anthelatus* was recorded in the new 'Catalogue of neophytes in Belgium,' (Verloove 2006). Dr Quentin Groom kindly checked this and it is recorded as follows;

*J. anthelatus* (Wiegand) R. Brooks; Mode of introduction – accidentally; first record 1977; most recent record – 1977; at Turnhout (Villa 'Het Heiken' – now probably gone). Origin North America; Flanders – Casual – Means of introduction? – Synonym *J. tenuis* Willd. var. *anthelatus* Wiegand.

Further to this, Filip Verloove has sent further information which states that *J. anthelatus* was found more recently in Kapellen, 2007 and says that it is known from the Netherlands. Filip kindly sent scans of the specimens which were confirmed by Jan Kirschner. The flowers are distant even more so than those

from Britain, but unfortunately neither specimen is fully mature, though the most recent suggests that the capsules are spherical-ovate, both being collected early in the season (July) when the capsules are not fully developed. The non-contiguous flowers appear to be a useful indicator.

It was noted that there were some difficulties with the key and that there appear to be characters that are perhaps additional to the ones given in Kirschner's (2002) key. The length of the tepals in relation to the length of the capsule is difficult to assess and measure, often seeming to be fairly similar between the two species. The main differences are in the capsules, (see fig. 3 Colour Section, Plate 4). The capsule for *J. tenuis* is obovate and obtuse; often a pale green colour (pale brown later) and slightly shiny but often dull looking. The capsules of *J. anthelatus* are more or less spherical-ovate, pale brownish and often more shiny. This information should be added to Kirschner's (2002) key [part] above. In good specimens the capsules are usually $\geq$ ¾ the length of the tepals in *J. tenuis* and $\leq$ ¾ in *J. anthelatus* (see fig. 3) but they can vary in size throughout the plant, as fruits vary in their stages of maturity and so several need to be examined. From the limited material the individual flowering/fruiting heads of *J. anthelatus* are generally smaller than *J. tenuis*, but this would be difficult to assess if only one species is available and or present.

In some plants of *J. tenuis* the flowers can be more spaced out and appear to mimic the jizz of *J. anthelatus*, (see fig. 2). These plants tend to at least have some flower clusters in twos (occasionally threes) lower down the branches, and usually show contiguous to overlapping flower heads, and from figure 2, clearly a plant like *J. anthelatus*, it shows that the fruiting capsules are more diagnostic and this plant is *J. tenuis*. The plant in fig. 2 is from Halifax W. Yorks., SE02 found by Andrew Kafel. We were asked to look at it as a possible *J. anthelatus* but determined it as a form of *J. tenuis*. However, it maybe be useful to test these *J. tenuis* variants to see if they breed true as there may yet be variety of *J. tenuis*, [as a working name I propose var. '*pseudoanthelatus*'[1] a name suggested by Clive Stace]. It will be interesting to see if *J. anthelatus* is more widespread and overlooked and at present the Denham specimens represent the first record for Britain. It would also be useful to see if there is any *J. dudleyi* still occurring in Britain. Clive Stace says that it used to occur at Crainlarich in Perthshire and is probably still there though no post 1986 records have been submitted, (pers. comm.). I would be grateful if anyone can visit this area and send in material to the address above.[1] Also it would be useful to find out if there are other records of *J. anthelatus*, and if anyone thinks that they may have *J. anthelatus* in their collection to please use the contact address above, and I would be interested in fruiting plants of the *J. tenuis* form shown in fig. 2.[1]

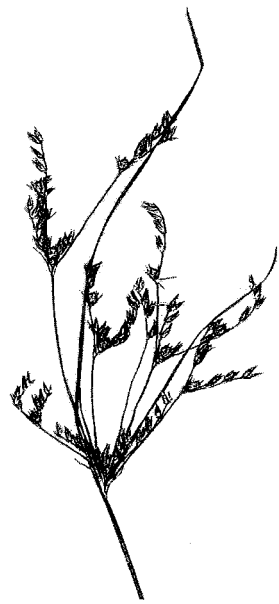

Fig. 2 - *J. tenuis* with an '*anthelatus*-like' inflorescence, ['*pseudoanthelatus*'] Confirmed as *J. tenuis* by the capsules.[1] (Scale: inflorescence 10cm) Scan MW[1]

**Acknowledgements**:
Dr Alan Bedford of Edgehill University, Arthur Chater, Eric Clement, Dr. Tom Cope, Prof. John Edgington of LNHS, Jeanette Fryer, Dr. Quentin Groom, Prof. Clive Stace,

Dr. Mark Spencer of NHM, Filip Verloove and staff at Liverpool World Museums - botany section.

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## *Fraxinus excelsior* 'Pendula' a question

M.J.P. SCANNELL *(formerly National Botanic Gardens, Dublin)*

Publications on trees often name a variant of *Fraxinus excelsior* (Common Ash) – the form with pendant branches – as var. *pendula* or cv. 'Pendula'. Brimble (1946) remarks, 'another variety of *F. excelsior* is of weeping habit. It arose as a "sport" from a tree growing at Wimpole in Cambridgeshire and has since been propagated from cuttings'. Hessayon (1983) lists 'another garden variety of the Common Ash in 'pendula', a large weeping tree which can grow about 25 ft high'. Mitchell (1976) lists 'pendula' under *Fraxinus excelsior* and states, regarding the grafted tree, 'foliage as in the type'. However P.S. Green (in Cullen et al. (1997) under *F. excelsior* notes that 'numerous cultivars have been selected in this species ... of which one of the best known is 'DIVERSIFOLIA' ...'. There is no mention of the weeping form.

In the course of observing *F. excelsior* and *F. angustifolia* in recent years I have come across many specimens of the weeping or drooping ash tree. I wondered if the var. *pendula* is correctly associated with *F. excelsior*. Is there another species of *Fraxinus* implicated?

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# REQUESTS & OFFERS

## Searching for Saltmarsh Sedge – can you help?

MARY DEAN & PAUL A. ASHTON, *Department of Natural, Geographical and Applied Sciences, Edge Hill University, St Helens Road, Ormskirk, Lancashire L39 4QP*
(deanm@edgehill.ac.uk &: ashtonp@edgehill.ac.uk)

*Carex salina* Wahlenb. (Saltmarsh Sedge) was discovered on saltmarsh at the head of Loch Duich in v.c.105 in 2004. Seventeen other saltmarshes in western Scotland were surveyed in 2006, but no additional populations were found. Because the sedge is likely to be rare in the British Isles it is important to establish its distribution and we would like your help. This ongoing project aims to survey as many Scottish saltmarshes as possible. The method used is to walk along the lower marsh and any tidal creeks (tide and condition of terrain permitting), searching for *C. salina* and recording the species present using a checklist. If you are visiting Scotland this summer, particularly western and northern Scotland, please go and botanise the local saltmarsh. Also look out for other closely related sedges found in Scandinavia but not recorded from Britain, namely *C. vacillans* Drej., *C. paleacea* Wahlenb. and *C. subspathacea* Wormsk. A key to these coastal species in this group can be found in our recent paper in *Watsonia* (Dean *et al.*, 2008). You can also access our research webpage from http://www.edgehill.ac.uk/ngas for the method used, checklist (down-loadable), and a list of saltmarshes already surveyed. Please let us know if you are successful in finding *C. salina* or any other interesting plants, and where you found them. Even if you do not find *C. salina*, please tell us where you surveyed so that we can update our list.

**Reference**:

Dean, M., Ashton, P.A., Hutcheon, K., Jermy, A.C. & Cayouette, J. 2008. 'Description, ecology and establishment of *Carex salina* Wahlenb. (Saltmarsh Sedge) - a new British species'. *Watsonia* 27:51-57.

## *Senecio inaequidens* (Narrow-leaved Ragwort)

CHARLES COYLE, *Sir Harold Mitchell Building, University of St Andrews, Fife, KY16 9TH*
(charlespcoyle@hotmail.com; 01334 463381)

I have just started a PhD student at the University of St Andrews supervised by Professor Richard Abbott, the main focus of my research is invasive weed species, particularly *Senecio inaequidens* and *S. madagascariensis*. I will attempt to revise the taxonomy of these species and other closely related species from their native range, South Africa. I also intend to compare alien populations of these species with native populations to ascertain what genetic differences there are between native and alien populations. It is hoped that this may give an insight into the origins and evolution of these invasive plants.

Having read the recent articles by Mr Quentin Groom in *BSBI News* and consulted the *New Atlas of the British & Irish Flora* I know that there are records of *S. inaequidens* throughout the British Isles and that this species is becoming more and more widespread. I am very keen to know what the present status of these populations are and would be interested in collecting some material from them. Therefore I would like to ask the members of the BSBI for information on this species, particularly population's locations and the status of those locations.

If anyone can provide the information I require or would like to discuss my project further, please write, email or phone me at the addresses or number given above.

## Sedge samples from the British flora

COLIN SMITH, *Edge Hill University, NGAS Department, St Helen's Road, Ormskirk, L39 4QP* (smithco@edgehill.ac.uk)

I have been compiling a series of digital images of transverse leaf sections of as many of the genus *Carex* as possible and would be grateful for the assistance of BSBI members in collecting further material. I would appreciate a leaf from a non flowering tiller from all of the subgenera and also hybrid material. Details of site location would be helpful too. The images will form part of a reference source that will shortly appear on the Edge Hill University Research website.

There are a number of species where collecting is problematic due to inaccessibility, rarity and the observation of conservation principles. There are about eight species from which, because of their widespread distribution patterns, I would appreciate more samples. The aim is to gain clear understandings about which of the anatomical characters are conserved in plants that are widely dispersed in the U.K.

The best way of getting the material to me in a state fit for sectioning is to wrap the leaf tissue in a wet (not damp) piece of paper tissue and enclose it in a plastic bag. In this fashion the sample will stay in good condition for up to a week.

Widespread Species

*Carex nigra*
*Carex flacca*
*Carex sylvatica*
*Carex otrubae*
*Carex arenaria*
*Carex leporina*
*Carex hirta*
*Carex panicea*

## *Bunias orientalis* (Warty Cabbage) – locations and seeds

PROF. JAMES BULLOCK, *Centre for Ecology and Hydrology, Benson Lane, Crowmarsh Gifford, Wallingford, Oxon, OX10 8BB.* (jmbul@ceh.ac.uk)

*Bunias orientalis* is a native of the Caucasus and southern Russia. It was, according to the *New Atlas*, first recorded in the wild in Britain in 1739. It has never been particularly common and the *New Atlas* suggests that it declined over the 20th Century. It is found mainly in the Thames Basin and around Edinburgh and Glasgow. Until recently, it seems to have shown a similarly long and benign presence in many other European countries. However, over the last 20 years it has become newly-invasive in countries including Germany, Estonia and Sweden. It remains of little or no concern in some other countries including Britain, the Netherlands and Austria.

This poses many interesting questions as to why it is invasive in some parts and not others. Colleagues at Wageningen in the Netherlands are looking at the secondary chemistry of *B. orientalis* from different sources. Secondary chemicals act to deter and reduce performance of insects eating the plants and these chemicals seem to differ in form and concentration among the different populations of *B. orientalis*. We are interested to see if differences in the ability to deter herbivores can be related to differences in invasiveness. To this end, could I make a request to let me know of the locations of any *B. orientalis* populations of which you know personally? Further, it would be very useful to have a sample of about one hundred seeds taken from several plants in the population, along with a grid reference (or map) and, if possible, a digital photograph of a representative plant. Alternatively, we could visit the population to take seed samples. Seeds are produced from July to September.

## *Eleocharis* / *Juncus*

MIKE WILCOX, *32 Shawbridge St. Clitheroe, BB7 1LZ, Lancs* (michaelpw22@hotmail.com)

***Eleocharis:*** In Britain there are very few species of *Eleocharis*. Some are very scattered and often not within easy reach. I would be grateful for specimens of any species of *Eleocharis* from anywhere in the British Isles. Please collect (with permission where necessary) several vouchers from a good sized population (not where very few individuals) from the base and in fruit, (will accept vegetative material if necessary). The specimens should have GR and other recording details and sent loosely dried or pressed on paper. I would be particularly interested in *E. palustris* ssp. *palustris*, *E. mamilata* agg, *E. acicularis*, and *E. parvula* (others if possible). Postage refunded if required.

***Juncus*:** At present an article is in preparation (almost finished) for the hybrid *J.* ×*kern-reichgeltii*. I am extending the study so that I can get fresh material for B/W photos which the study needs. Therefore, late in the season when there are few other plants around, (Aug-Dec) only needs half an hour in your local area or anywhere you can, I would be grateful for additional material to add to the study. These should ideally be populations of 60-100 stems either with ridges and or mixed smooth and ridged stems (keep separate), cut about 5cm below the inflorescence with the bract intact, placed between newspaper, no need to press or be in any order, each population separate, with recording details. An analysis of your population will be sent to you at my cost plus your P&P return if required; it is likely that this hybrid occurs throughout the range of the parents. I mainly have material from v.c.46 from Arthur Chater, where the hybrid is very common (I would be willing to identify individuals if necessary, including *J.* ×*diffusus*). Similarly, I still believe that *J. acutiflorus* more or less occurs mostly as the hybrid *J.* ×*surrejanus* in perhaps a hybrid continuum and in 2007 saw 1000's of plants in N. England and Scotland all being the hybrid with a only a very few partially fertile plants. Please collect late in the season (early plants look like *J. acutiflorus*) collect vouchers from anywhere either individuals or more, from one or more sites so recording can be done towards a clearer picture of the distribution of these rushes, (other species welcome).

**Note to All v.c. Recorders**: if one population from each vice county could be received this would be extremely useful. If you see this note and would like a reminder please do not hesitate to contact me at the above address or email and I will keep a list for reminders – happy hunting!

## Bees and botany

CHRISTOPHER J. LOWE, *25 North End, Hutton Rudby, Yarm, TS15 0DG*

The relationship between bees – and other pollinators – and plant-life is obvious. I wonder whether any BSBI members can tell me of instances where the two interests have merged? In particular, I would like to learn of occasions when a natural history or wildflower group has combined with the local Beekeepers' Association to share concerns or exchange expertise.

We have recently re-joined our local Beekeepers' Association, and I have been asked to give them a talk, in which I hope to reinforce the connections between bees and botany. Any (pollen) grains of information will be gratefully received.

# Seeds from Ware 2007

GORDON HANSON, *1 Coltsfoot Road, Ware, Herts. SG12 7NW*

2007 was a bumper year in my garden so the annual list is even longer this time. If you would like to grow any of the following then please send small labelled packets and a s.a.e.

*Acaena ovalifolia* (New Zealand)
*Acanthus hungaricus* (cult.)
*Acinos rotundifolius* (Turkey)
*Agrostemma githago* (Turkey)
*Allium roseum* (Croatia)
*Althaea cannabina* (Turkey)
*Alyssum saxatile* (Croatia)
*Alyssum parviflorum* (Turkey)
*Amaranthus blitum* (Slovakia)
*Amaranthus hybridus* (wool alien)
*Amaranthus spinosus* (wool alien)
*Amblyopyrum muticum* (Turkey)
*Asperugo arvensis* (Turkey)
*Ballota larendana* (Turkey)
*Berkheya purpurea* (S. Africa)
*Beta procumbens* (Tenerife)
*Boissiera pumilio* (Turkey)
*Browallia viscosa* (cult.)
*Bupleurum rotundifolium* (Turkey)
*Campanula lyrata* (Turkey)
*Cardaria draba* (Turkey)
*Carduus acanthoides* (Turkey)
*Carthamus dentatus* (Turkey)
*Carthamus lanatus* (wool alien)
*Centaurea carduiformis* (Turkey)
*Centaurea cyanus* (USA)
*Centaurea melitensis* (Australia)
*Centaurea solstitialis* (Turkey)
*Cerastium dichotomum* (Turkey)
*Cerinthe minor* (Turkey)
*Chenopodium foliosum* (Turkey)
*Chenopodium giganteum* (bird seed)
*Chenopodium glaucum* (Herts.)
*Cicuta virosa* (cult.)
*Clematis orientalis* (Turkey)
*Conyza sumatrensis* (Herts.)
*Coronilla glauca* (cult.)
*Crambe orientalis* (Turkey)
*Cucubalus baccifer* (cult.)
*Cynoglossum dioscoridis* (Turkey)
*Datura discolor* (cult.)
*Datura innoxia* (Tenerife)
*Datura tatula* (wool alien)
*Digitalis ferruginea*(cult.)
*Dipsacus pilosus* (Turkey)
*Dovyalis caffra* (cult.)
*Echinochloa crus-galli* (bird seed)
*Echium boissieri* (cult.)
*Erigeron acer-vergens* (Turkey)
*Erigeron annuus* (Slovakia)
*Erodium acaule* (Cyprus)
*Erodium chium* (Tenerife)
*Erodium cicutarium* (wool alien)
*Erodium gruinum* (Rhodes)
*Erodium laciniatum* (Tenerife)
*Erodium malacoides* (Croatia)
*Erodium moschatum* (wool alien)
*Erysimum perofskyanum* (cult.)
*Eucalyptus pauciflora* (Australia)
*Euphorbia helioscopia* (Egypt)
*Euphorbia maculata* (Spain)
*Fremontodendron californicum* (cult.)
*Galeopsis bifida* (Slovakia)
*Galinsoga parviflora* (wool alien)
*Genista aetnensis* (Sicily)
*Habranthus tubispathus* (USA)
*Heliotropium europaeum* (Spain)
*Hieracium grandidens* (Derbys)
*Hieracium lasiochaetum* (Turkey)
*Hieracium pannosum* (Turkey)
*Hieracium plumbeum* (cult.)
*Hieracium sublepistoides* (Derbys)
*Hieracium vulgatum* (Derbys)
*Hordeum leporinum* (Australia)
*Hypericum grandiflorum* (Tenerife)
*Hypericum hircinum* (cult.)
*Iberis sempervirens* (Turkey)
*Ipomoea purpurea* (cult.)
*Ipomopsis aggregata* (cult.)
*Iris foetidissima* (Spain)
*Iris sibirica* (cult.)
*Lavatera arborea* (Isle of Wight)
*Lavatera cretica* (New Zealand)
*Lavatera maritima* (Spain)
*Linum grandiflorum* (USA)
*Lotus formosissimus* (cult.)
*Madia capitata* (USA)
*Malope trifida* (USA)
*Marrubium vulgare* (Turkey)
*Melica penicillatus* (Turkey)
*Meum athamanticum* (cult.)
*Nepeta cadmica* (Turkey)
*Nepeta cilicia* (Turkey)
*Nonea lutea* (cult.)
*Oryzopsis miliacea* (Spain)
*Papaver pavoninum* (Turkey)
*Paspalum dilatatum* (New Zealand)
*Paspalum quadrifarium* (cult.)
*Petrorhagia cretica* (Turkey)
*Physospermum cornubiense* (Bucks)
*Phytolacca americana* (Turkey)
*Phytolacca polyandra* (cult.)
*Pilosella laticeps* (Finland)
*Polypogon viridis* (Spain)
*Potentilla recta* (Turkey)
*Pseudorlaya pumila* (Spain)
*Pterocephalus plumosus* (Turkey)
*Ranunculus parviflorus* (Scillies)
*Rumex crispus* (Turkey)
*Ruta chalepensis* (Turkey)
*Sagina procumbens* (Turkey)
*Salvia aethiopis* (Turkey)
*Salvia nubicola* (cult.)
*Salvia przewalskii* (cult.)
*Salvia sclarea* (Turkey)
*Salvia verticillata* (Turkey)
*Satureja thymbra* (Turkey)
*Scabiosa argentea* (Turkey)
*Scaligera napiformis* (Turkey)
*Scandix stellata* (Turkey)
*Schizostylis coccinea* (cult.)
*Scorzonera laciniata* (Spain)
*Scrophularia sambucifolia* (Spain)
*Scrophularia smithii* (Tenerife)
*Scutellaria albida* (Turkey)
*Setaria verticillata* (wool alien)
*Sideritis scordioides* (cult.)
*Sigesbeckia serrata* (wool alien)
*Silene apetala* (Turkey)
*Silene compacta* (Turkey)
*Silene hifacensis* (Majorca)
*Sisymbrium irio* (Cyprus)
*Solanum fiebrigii* (cult.)
*Solanum pessicum* (Russia)
*Stachys cretica* (Turkey)
*Tanacetum macrophyllum* (Turkey)
*Tordylium maximum* (Turkey)
*Tragopogon dubius* (Turkey)
*Turgenia latifolia* (Turkey)

## *Allium vineale* (Wild Onion) colour variant

MICHAEL O'SULLIVAN, *Knockravota, Milltown, Co. Kerry, Ireland*

In late summer 1984 a colony of *Allium vineale* L. (Wild Onion) was discovered growing by the roadside near Milltown, Co. Kerry (v.c.H2). Most of the plants that were in flower had rather dense heads of a rare blue-purple variation. In all the years since, the colour has remained constant. I would be keen to hear from any other members who may have encountered these non-typical flowering wild onions.

## Wanted – '*Proceedings of the BSBI*' and first three volumes of *Watsonia*

KEVIN WALKER, *BSBI, 97 Dragon Parade, Harrogate, North Yorkshire HG1 5DG*

If you are considering dispensing with either of the above then they would find a happy and useful home in my library here in Harrogate. I would be happy to pay postage or alternatively arrange to pick them up at a future BSBI event.

## *Watsonia* and *BSBI News* for disposal

RON PORLEY, *Vascular Plant Botanist & Bryologist, Evidence Team, Block A, Government Buildings, Coley Park, Reading, RG1 6DT.* (0118-9581222);
ron.porley@naturalengland.org.uk

As a result of leaving these shores I have a run of *Watsonia* and *BSBI News* that I wish to dispose of, at cost. My run is from 1986 to date. Interested parties would have to collect from Reading. Please contact me at the address above – all offers considered!

# NOTICES

## Amazing rare things

### The art of natural history in the age of discovery
### The Queen's Gallery, Buckingham Palace
### 14th March to 28th September

This extraordinary exhibition, recently shown in Edinburgh at The Queen's Gallery, Palace of Holyroodhouse, has been selected from the collections in the Royal Library by Royal Collection curators in collaboration with the distinguished naturalist and broadcaster Sir David Attenborough. It brings together the works of four artists and a collector who have shaped our knowledge of the world around us. Leonardo da Vinci, Cassiano dal Pozzo, Alexander Marshal, Maria Sibylla Merian and Mark Catesby are diverse figures who shared a passion for enquiry and a fascination with the beautiful and bizarre in nature. All lived at a time when new species were being discovered around the world in ever increasing numbers. Many of the plants and animals represented in the exhibition were then barely known in Europe. Today some are commonplace, while others are extinct.

# Excursion to Benasque, Aragonese Pyrenees - June 2008

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

There are still a few places available for the summer field meeting in the spectacular Pyrenean valley of Benasque. Dates are from Tuesday 24 June to Tuesday 1 July.

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

# Mountains and meadows of Transylvania

## BSBI Field Meeting, June 2009

JOHN AKEROYD, *Lawn Cottage, West Tisbury, Wilts, SP3 6SG*

Southern Transylvania comprises a remarkable fragment of an older Europe, both in landscape and biodiversity. Few places on the continent have such a tangible sense of history and so intact a traditional agrarian culture as Transylvania. Here is a countryside, cradled in the Carpathian Mountains, that western Europe has lost – mountain forests, heath and grassland, and foothill hay-meadows rich in animal and plant diversity alongside traditional agriculture. The excursion will take in mountain National Parks and protected areas such as Piatru Craiului and Retezat, together with the unspoilt wooded hills and glens of the Saxon Villages region, famous for medieval churches, strongly fortified against Turk and Tartar, and astonishing wildflower meadows, probably the best to survive in lowland Europe. Bears and wolves (in the woods), many different songbirds, shrikes and corncrakes, numerous amphibians and clouds of butterflies complement a rich flora. There is a wealth of old buildings and fascinating village life.

To a Romanian botanist, many of the plants, animals and habitats of the region are not particularly rare or threatened, but from a western European perspective their survival in such substantial numbers and extent massively compensates for their loss elsewhere. That said, much of the Saxon Villages region is to be included in the EU's Natura 2000 network of protected areas. The mountain areas too are astonishingly rich, and rightly protected. The plants we will see are a floristic mix from central and western Europe, from mountains and lowlands, the Mediterranean region and the Eurasian steppe. Some were once widespread in Britain, others are excitingly exotic. To list a few: *Cortusa matthioli*, *Dianthus* spp., *Dictamnus albus*, *Echium russicum*, *Linum flavum*, *Melampyrum biharense*, *Polygala major*, *Salvia pratensis*, *S. transylvanica*, *Scorzonera purpurea*, *Trifolium pannonicum* and other clovers, and sheets of *Filipendula vulgaris*, *Onobrychis*, *Rhinanthus*, not to mention gentians and orchids.

The tour will be led by Dr Owen Mountford, who has researched Romanian vegetation for several years and lived in the country for much of the last two years, and Dr John Akeroyd, who is working with an Anglo-Romanian sustainable development project combining farming, food production and biodiversity conservation in the Saxon Villages. Home-produced food is a highlight of any visit to the region, part of its living history.

Please register your interest in this excursion now, as numbers will be limited. Send a s.a.e to the Field Secretary, Jane Croft, 12 Spaldwick Rd, Stow Longa, Huntingdon, PE28 0TL

# FIELD MEETING REPORTS : 2007

Reports of field meetings are collated by Dr Alan Showler, and copy for these should be sent to him direct, not to the editor of *BSBI News*. His address is: 12 Wedgwood Drive, Hughenden Valley, High Wycombe, Bucks., HP14 4PA (tel.: 01494 562082). Copy for day meetings should generally be up to 500 words, and for weekend meetings, up to 1000 words.

## Leighton Arboretum, near Welshpool, Montgomeryshire (v.c.47): conifer workshop, 31st March

JEAN GREEN & ANDY JONES

Twenty-three people came to this Royal Forestry Society site at Leighton Arboretum, and an excellent collection of specimen trees was studied, including an impressive stand of *Sequoia sempervirens* (Coastal Redwood). The meeting promoted further study of this under-recorded group.

## Rhydymwyn Valley Nature Reserve, Flintshire (v.c.51), 9th June

JOE PHILLIPS & DELYTH WILLIAMS

This nature reserve has been created on the once-secret site of a government World War II munitions and storage factory. So secret, in fact, that it was the only U.K. wartime installation never located by German intelligence. From 1938, miners were employed in tunnelling for the storage of mustard gas, by 1942 being manufactured at a rate of 40,000 25lb shells per week. From 1942-1944 work went into the production of enriched uranium, necessary for the atomic bomb. Decommissioning and disposal began in 1959, and then it was closed to the public. Now the site is managed by Defra, and since 2004 through North-east Wales Wildlife for its nature conservation. Entry is by prior arrangement and permit only.

Twelve of us met on (one of the few) rain-free and glorious days of summer to begin a circuit of the 35 ha site. Such is the variety of species, however, that it quickly became apparent that, leader included, we were not going to be able to cover the site in the time available and also do it justice. A dilemma arose. Hurrying along meant missing out *en route*; but then taking time would mean missing out at the end! We tried to compromise.

The interest of the site is not in its rarities, but in its sheer variety, including as it does all manner of native colonisers, garden escapes, planted trees and shrubs, and seeded grassland. The path began with magnificent stands of *Onobrychis viciifolia* (Sainfoin), and continued through a typical woodland flora above the bunkers used for the storage of chemicals. At the far end of the site is flat grassland, originally part of the River Alyn floodplain. Despite the baking heat, we were thrilled to find all manner of lovely things, such as *Centaurium erythraea* (Common Centaury), *Linum catharticum* (Fairy Flax), *Trisetum flavescens* (Yellow Oat-grass), *Briza media* (Quaking-grass), *Dactylorhiza fuchsii* (Common Spotted-orchid), *Papaver rhoeas* (Common Poppy) and *Erodium cicutarium* (Common Stork's-bill). We searched for evidence of *Ophrys apifera* (Bee Orchid), but to no avail. In and around this area we found eight species of sedge, including *Carex pilulifera* (Pill Sedge), which is scarce in Flintshire, and six species of *Geranium*, including *G. pusillum* (Small-flowered Crane's-bill), which is also scarce here. My personal favourite is the jewel-like and stunning *Lathyrus nissolia* (Grass Vetchling), which is rare in Flintshire.

Moving back towards the ponds and entrance, we found *Melilotus altissimus* (Tall Melilot), *Silene latifolia* (White Campion), *Poa trivialis* (Rough Meadow-grass) and *Aira*

*caryophyllea* (Silver Hair-grass). Scarce plants in Flintshire included *Sanguisorba officinalis* (Great Burnet), *Echium vulgare* (Viper's Bugloss), *Ornithogalum angustifolium* (Star-of-Bethlehem) and *Raphanus raphanistrum* ssp. *raphanistrum* (Wild Radish). Approaching the ponds via the disused works buildings, we found *Festuca gigantea* (Giant Fescue), *Picris echioides* (Bristly Oxtongue), *Reseda luteola* (Weld), *Verbascum thapsus* (Great Mullein), *Tragopogon pratensis* (Goat's-beard) and *Valerianella locusta* (Common Cornsalad).

The ponds had numerous dragonflies, *Veronica catenata* (Pink Water-speedwell), *Alisma plantago-aquatica* (Water-plantain) and plenty more...but time was running out. By the time we reached the cars, most of the party was overcome by heat exhaustion, species overload, or both. A few of us regretted that we were not able to continue exploring to our full satisfaction, clearly a sign that this interesting place needs another visit. Thanks must go to Jonathan Shanklin for providing many more names to the list, and our appreciation to North-east Wales Wildlife for managing the reserve.

## County Durham (v.c.66) & South Northumberland (v.c.67) training meeting, 7th – 8th July

CLARE O'REILLY & CHRIS METHERALL

One of the key reasons for BSBI's charitable status is that we are an educational organisation. Therefore, although training takes place informally on all of our field meetings, formal training meetings are important, to evidence that we are actually educating our members. Training meetings are also very popular, especially with our younger and newest members. This is probably because basic plant identification skills are essential for professionals working in conservation and ecology; and yet botany is sadly no longer taught at most universities offering ecology courses.

This weekend aimed to introduce the identification of grasses, sedges and rushes on the first day, followed by the characters of widespread plant families on the second.

Saturday was held at Hamsterley Forest visitor centre, south of Wolsingham, County Durham, which has a range of interesting habitats, including unimproved upland hay meadow (a S.S.S.I.), some semi-improved and improved grassland for comparison, acid grassland, heathland, mixed woodland, ponds and mire. We spent some time in the classroom looking carefully at specimens to distinguish the three families, and compare the parts of the grass, sedge and rush flowers. The species examined during the field session included useful indicators of acid substrate, such as *Deschampsia flexuosa* (Wavy Hair-grass) and *Carex binervis* (Green-ribbed Sedge), and many ubiquitous species that don't tell you very much at all, such as *Carex flacca* (Glaucous Sedge) and *Holcus lanatus* (Yorkshire-fog). We also compared *Festuca rubra* agg. (Red Fescue) to *Festuca ovina* agg. (Sheep's Fescue), using a low power microscope, so that members could 'get their eye in' for what a (very small!) open or closed sheath looks like, before attempting to see this using a hand lens. Much of the afternoon was spent keying out using Hubbard's *Grasses*, comparing the flowering and the vegetative keys. The (many) shortcomings of the latter were noted, and we are all looking forward to the publication of the forthcoming *magnum opus*: '*A vegetative flora of the British Isles*' by John Poland & Eric Clement!

On Sunday, Chris Metherall, vice-county recorder for v.c.68 (North Northumberland), led a day of basic botany. The day included visits to Havannah Local Nature Reserve near Ponteland, and the banks of the River Tyne near Wylam; and included one of our special Northumberland plants: *Epipactis muelleri* (Dune Helleborine). Members also enjoyed revising some common grasses.

# Llyn Crafnant, Caernarvonshire (v.c.49), 18th August

WENDY MCCARTHY

Unfortunately this meeting was cursed with rain from start to finish, so I was pleasantly surprised when ten participants turned up.

We set off along the path around the lake, and our first stop was to examine a tall, odd-looking willowherb, which appeared to have abortive seeds and the "clenched fist" type of stigma, both of which suggest a hybrid. After some discussion, we came to the conclusion that it was *Epilobium* ×*aggregatum*, one of the commoner hybrids, between *E. montanum* (Broad-leaved Willowherb) and *E. obscurum* (Short-fruited Willowherb), both of which were seen nearby.

Continuing along the path, we found *Isolepis setacea* (Bristle Club-rush) and *Carex laevigata* (Smooth-stalked Sedge) on the bank of a small stream. Eventually we found our way through the bracken down to the lake edge, but as the weather had followed a similar pattern for much of the summer, the level of the lake was unusually high, and this prevented us from finding some of the species known to occur. We waded in and managed to find small amounts of *Elodea nuttallii* (Nuttall's Waterweed) and *Myriophyllum alterniflorum* (Alternate Water-milfoil), the typical one of upland, base-poor waters. *Littorella uniflora* (Shoreweed) was at the water's edge, and there were also a few spikes of *Lobelia dortmanna* (Water Lobelia), just managing to flower above the surface, belying the fact that it is plentiful in the lake. The vegetation on the banks included colourful patches of *Lythrum salicaria* (Purple Loosestrife) and *Mentha* ×*verticillata* (Whorled Mint), the hybrid between *M. arvensis* (Field Mint) and *M. aquatica* (Water Mint) which seems to be less common in v.c.49 than *M.* ×*gracilis* (Bushy Mint). *Carex rostrata* (Bottle Sedge) was also plentiful.

Reaching the south end of the lake, we found our way into a small marsh dissected with streams running into the Afon Crafnant. Abundant *Menyanthes trifoliata* (Bogbean) warned us how wet it would be, and it was not easy to keep our balance on the spongy sphagnum mats. Here we saw *Drosera rotundifolia* (Round-leaved Sundew), *Scutellaria minor* (Lesser Skullcap), *Wahlenbergia hederacea* (Ivy-leaved Bellflower), and the densely tufted stems of *Eleocharis multicaulis* (Many-stalked Spike-rush), with some spikelets becoming proliferous, a character only seen in this species, I think. A patch of *Rhynchospora alba* (White Beak-sedge) was pleasing to see, though not immediately obvious, as it had finished flowering and had turned orange.

We found some shelter under trees for lunch, before continuing into the valley to an area of wet heath, where we were surprised to see many plants of *Dactylorhiza maculata* (Heath Spotted-orchid) still in flower. Here too were *Festuca vivipara* (Viviparous Fescue), *Salix repens* (Creeping Willow), *Pinguicula vulgaris* (Butterwort) and *Carex* ×*fulva*, the hybrid between *C. hostiana* (Tawny Sedge) and *C. viridula* (Yellow-sedge). There was a fine stand of *Phegopteris connectilis* (Beech Fern) on a low bank under *Salix cinerea* (Grey Willow) bushes, and on the stream banks were *Selaginella selaginoides* (Lesser Clubmoss) and *Anagallis tenella* (Bog Pimpernel). The highlight of the meeting for us was seeing a good number of plants of of the beautiful *Parnassia palustris* (Grass-of-Parnassus), just at their best. I had seen a Red Kite in the valley while preparing for the meeting three days earlier, but it did not appear on the day. My thanks to all those who braved the appalling weather to attend this meeting.

# Marloes Coast Project, Pembrokeshire (v.c.45), 9th September

MATT SUTTON

It is now four years since I started work down here, working with the National Trust tenant farmer to transform the coastal belt into a mosaic of wildlife-friendly habitats. This walk was an opportunity to showcase the work, whilst getting some sharp botanical eyes to add to the rapidly developing species-list.

The headline-grabbing work here has been the re-creation of heathland from arable, using a combination of soil-stripping to remove nutrients and 60 tons of waste sulphur from a local oil refinery to acidify the ground. As well as the establishing *Erica tetralix* (Cross-leaved Heath), *Calluna vulgaris* (Heather) and *Ulex gallii* (Western Gorse), we admired the single plant of *Agrostis curtisii* (Bristle Bent), a new species for the county. We debated its origin, and whether genetic investigations could or should be used to give us the answer. This quickly became academic, as one of our party, Jon Hudson, promptly went up to the heathland that I had taken cuttings from as a seed source for Heathers and Gorse, and found a couple of plants there. Perhaps we will find this grass elsewhere on our humid heaths. These new sulphur heaths are also growing some unusually large specimens of species such as *Plantago maritima* (Sea Plantain) and *P. coronopus* (Buck's-horn Plantain) – an artefact perhaps of the flush of phosphorus released by the acidification.

The adjacent pastures and hay meadows are rapidly becoming more species-rich under benign management. Two fields have *Lotus subbiflorus* (Hairy Bird's-foot Trefoil) spreading through them. Stephen Evans, our v.c. recorder, was able to show us the *Chamaemelum nobile* (Chamomile) that has established in the field that he negotiated a reversion scheme over in his latter years with CCW. Whilst on the seaward fringe of this field, we found a single plant of *Cystisus scoparius* ssp. *maritimus*. There is a good colony of this plant on the cliffs around Marloes Sands, but it is encouraging to see it jump across the coast path as well.

The arable fields here are now farmed with weeds and birds in mind, and the margins are full of species such as *Misopates orontium* (Weasel's Snout), *Spergularia arvensis* (Corn Spurrey) and *Polygonum rurivagum* (Cornfield Knotgrass). An unusually robust looking *Trifolium* proved to be *Trifolium striatum* var. *erectum* (Knotted Clover).

Lastly, we sploshed through the fields alongside the mere, where water levels have been raised and shallow pools dug. We were looking for the *Pilularia globulifera* (Pillwort) that I had found here the previous autumn, but water levels were too high (see Colour Section, Plate 4).

**Crossword solution**

**Across**

6. Arabis alpina
7. Thrift
8. Nardus
9. Idea
10. Laterals
12. Labellum
16. Claw
18. Stamen
20. Marrow
21. Solomons seal

**Down**

1. Capital
2. Pistil
3. Walnut
4. Spur
5. Annual
6. Aphid
11. Recurved
13. Anthox
14. London
15. Mimosa
17. Atoll
19. Moor

# OBITUARY NOTICES

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

* An obituary will be published in *Watsonia*.

With regret we report the death of **Peter Hall***a member since 1952, and we are grateful to Clive Stace for the following note: Peter, an Honorary Member, sadly died on 7th March 2008 in Poole Hospital, only a month or so short of his 91st birthday. He and his wife Joan (d. 2004) were particularly well known to members of the Society when Peter was our Honorary Field Secretary during the first mapping scheme (*Atlas of the British Flora* 1962), from 1956 to 1967, and then during the compilation of the *Sussex Plant Atlas* (1980) from 1966 to 1978. They were very keen field botanists and walkers, and continued that interest after retirement in Monmouth. He will be remembered as a very helpful and kindly person, and be badly missed by his friends.

**Geoffrey Keith Watson** (1946–2008), a member since 1982 died on February 18th 2008 and Joan Vincent, from the Liverpool Botanical Society, writes:

Leaving Newcastle University in 1973 with a Ph.D. in bacteriology, Keith moved from Scarborough to the Wirral Peninsula to take up a research post with Unilever in Port Sunlight. He first worked on washing powders and was interested in trying to develop a product which worked well at low temperatures. The aim was to help those in developing countries who had to use river water. Later he moved to the toothpaste department and back to his petri dishes. Mary Briggs remembers him saying, perhaps 'tongue in cheek', that he was the one who put stripes into toothpaste!

He joined the Liverpool Botanical Society in 1974 and was a very keen member of this and the BSBI. He could always be relied upon to have the large C.T.W. and later Stace in his rucksack to deal with queries on all the field meetings. Presently he began to lead some of the excursions, and following early retirement he attended the winter indoor meetings too. He served as President of the Liverpool Botanical Society from 2004–2007 and was Editor of the society's newsletter *Parnassia*.

Keith never sought the limelight and was willing for anyone to use his results. He recorded for Jean Green, Graeme Kay and others over many years as well as leading some BSBI meetings in the north-west. In the early 1980s he was employed by the BBC to go out to Borneo for the David Attenborough 'Life on Earth' series and among his finds was an open flower of *Rafflesia* for them to film. This was followed by further assignments, but Keith did not mention any of this himself and we only learn of it now from his family.

In the past Keith had enjoyed holidays in many parts of the world and particularly liked the Mediterranean region, to which he was introduced by joining botanical tours led by Mary Briggs in the 1980s. In recent years however he was content to stay at home but continued with a number of projects. For instance he recorded every day changes in the same stretch of hedgerow for a whole season – from time of leaves and flowers opening to butterflies emerging and birds hatching. Useful data no doubt for climate change studies. All this was interrupted when he went to bed this February, with rucksack packed at the side ready for an early start next morning, and suffered a massive heart attack in the night.

Keith will certainly be very much missed. We have lost a perfect gentleman and a dedicated botanist.

**John Brummitt**, a member since 1959 died on Feb 1st 2008 after a short illness, he was 75. We are grateful to Jean Green for the following note: John was the first BSBI recorder for Denbighshire (v.c. 50) to live in the county. He was appointed in 1965 and retired in 1984. Previously Denbigh, like many of the other Welsh vice-counties, was

serviced by the Assistant Keeper of Botany at the National Museum of Wales in Cardiff. John's meticulous records included extracts of A.A. Dallman's manuscripts and accounts of plant hunting in N.E. Wales. John started a card index of plants and 10km square records for the County which are still in use and formed the basis for many Denbigh records in R.G. Ellis' *Flowering Plants of Wales* (1983). John was for several years the head of science at Ysgol Dyffryn Conwy, Llanrwst. He is remembered as an inspirational teacher with a love of wildlife, especially botany, and was known for his enjoyment of field meetings..

We extend our sympathy to his wife and son and to his brother Dick of the Herbarium Royal Botanic Gardens Kew. .

We are grateful to Priscilla Tolfree for the following note on **Myra Burnip**, a former member of BSBI who left in 2004:

I have sadly heard recently that Myra Burnip died in August 2006. She joined the BSBI in 1972 and was also a keen WFS member. She was heavily involved in helping with the work for Gordon Graham's *The Flora and Vegetation of County Durham* published in 1988.

I knew her very well but had not heard from her recently and managed to trace her son Peter who said she had been ill in hospital for several months before she died. We met in 1969 at Kindrogan at Brian Brookes' first Mountain Flowers course.

As we go to press we regret to announce the death, on March 31 2008, of **Mr J.F.M. Cannon***, former President of this Society, an Honorary Member and one time Keeper of Botany at the Natural History Museum.

It is also with regret that we report the following deaths since the last issue: **Mrs K.R Edwards** of Launceston, Cornwall, a member since 2002; **Dr H. Rapson** of St Ishmaels, Pembrokeshire, a member since 1989 and **Miss B. Woodliff** of Hornchurch, Essex a member since 1991.

# BOOK NOTES

## Wiltshire Botany

Issue no. 10 of this journal is now published. It particularly features an account of the history and current activities of Wiltshire Botanical Society, which has now been in existence for 15 years, and of individual work by members. There follows a second supplement to issue no. 8, which was devoted to a presentation and analysis of the most important plant records since recording for the 1993 Wiltshire Flora ceased at the end of 1991. The supplement includes articles on willows, conifers, and ferns and their allies.

Also included are an account of a project for regenerating chalk grassland at Stonehenge, a description of a study of the flora of limestone dry stone walls in a West Wiltshire parish, and a 20-year study of Meadow Saffron in a South Wiltshire wood. The usual annual selection of records is also included - for 2006.

Contributions to the journal are welcome on any aspect of Wiltshire botany. Articles should be submitted to John Presland, 175c Ashley Lane, Winsley, Bradford-on-Avon, BA15 2HR, who will also be pleased to discuss proposed articles informally (tel.: 01225 865125). A leaflet is also available offering guidance to authors on the most helpful forms in which to submit articles.

Copies of no. 10, and some earlier issues, are available from Rosemary Duckett, 50a The Butts, Westbury, Wiltshire BA13 3EX (tel.: 01373 858296; email: rosemary.duckett@virgin.net). The cost is £5.00 post free. Cheques should be made out to 'Wiltshire Botanical Society'.

# RECORDERS AND RECORDING

## Panel of Referees and Specialists

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

Chris Preston has kindly agreed to act as Referee for *Trifolium* – his address is already in the Referees Section of the Yearbook.

The address of John Mason (birdseed aliens) has changed, and is now:
24 St Medard Road
Wedmore
Somerset BS28 4AY

A mistake crept into the e-mail address for Yiannis Christofides (referee for Cypriot plants) given in the list of referees in *BSBI Year Book 2008*. His correct e-mail is minerva9@cytanet.com.cy – there was an m missing from the .com

## Panel of Vice-county recorders

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

**New Recorders**

**V.c.31 (Hunts).** Mr David Broughton, 55 Star Road, Peterborough, PE1 5HT to be joint recorder (all correspondence to him). Mr Terry Wells, recorder since 1976, retires.

**V.c.50 (Denbs).** Mrs Delyth Williams, The Quillet, Heol-y-Berwyn, Llandrillo, Corwen, LL21 0TH. Jean Green, recorder since 1984, retires.

**V.c.65 (N.W. Yorks).** Mrs Linda Robinson, The Cottage, Melmerby, Penrith, Cumbria, CA10 1HN & Mr Kevin Walker to be joint recorders (*all correspondence to Mrs Robinson*).

**V.c.98 (Main Argyll).** Mr Carl Farmer, Flat 7, Polfearn House, Taynault, PA35 1JQ to be joint recorder (*all correspondence to him*).

**V.c.113G (Guernsey).** Dr Charles David, St Cergue, Saints Road, St Martins, Guernsey, GY4 6JA.

I would like to thank Terry Wells and Jean Green for their sterling efforts over so many years.

**Changes of Address.**

**V.c.54 (N.Lincs).** Paul Kirby, 15 St James' View, Louth, Lincs. LN11 9XY.

**V.c.96 (Easterness & Nairns).** Ms Sarah Smyth, 14 Cromartie Drive, Strathpeffer, Ross-shire IV14 9DB.

## Ayrshire (v.c.75) Vice-County Recorder Vacancy

JIM MCINTOSH, *BSBI Scottish Officer, c/o Royal Botanic Garden, 20A Inverleith Row, Edinburgh, EH3 5LR;* Tel: 0131 2482894; j.mcintosh@rbge.ac.uk

This large vice-county occupies much of the western seaboard of Scotland's Midland Valley and includes the mainland areas administered by North, East and South Ayrshire local authorities and the island of Ailsa Craig. As such, it contains extensive lengths of coastline, with the river valleys of the Garnock, Annick, Irvine, Ayr, Doon, Girvan and Stinchar running up to plateau moorlands and rugged uplands of the Clyde Muirshiel Regional Park and the Southern Uplands. In addition, Ayrshire is also important for its raised bogs in the north and its calcareous upland grasslands to the south, with a series of Special Areas of Conservation

designated to protect these internationally threatened habitats.

Particularly notable species in the vice-county include coastal species such as Isle of Man Cabbage (*Coincya monensis* ssp. *monensis*) and Oysterplant (*Mertensia maritima*), serpentinite rock specialists like Spring Sandwort (*Minuartia verna*) and Alpine Penny-cress (*Thlaspi caerulescens*), and Scotland's only extant populations of Green-winged Orchid (*Anacamptis morio*) and Bee Orchid (*Ophrys apifera*).

The present Vice-county Recorder, Dave Lang, would like help to cover this large vice-county, and we are looking for a keen botanist to work jointly with him and to help with the fieldwork element in particular.

Living in or near the vice-county can be an advantage, but is not essential – some VCRs live remotely and operate very successfully. But you would have to be able to spend a reasonable time in the Vice-county each year.

The principal VCR task is, of course, the collection, validation and maintenance of vascular plant records in the Vice-county on behalf of the BSBI. Being a reasonable competent botanist is important, but knowing one's limits is even more important. No one can be an expert in all aspects of a county's flora and our referees are on hand to support and help VCRs. Competency with computers, particularly e-mail, the Internet and MapMate would be desirable.

For further information, or if you are interested in the vacancy, please contact me, Jim McIntosh, on 0131 2482894, by e-mail to j.mcintosh@rbge.ac.uk or by post to BSBI Scottish Officer, RBGE, 20A Inverleith Row, Edinburgh EH3 5LR.

# PROFILES OF NEW HONORARY MEMBERS 2007

## Alastair H Fitter

MICK CRAWLEY, April 2007

Alastair Fitter is Professor of Plant Sciences in the Department of Biology at the university of York. He is a distinguished plant ecologist with a world-wide reputation for his research on the structure and function of plant root systems. His interest has centred on the way that root branching architecture affects the efficiency with which plants capture nutrients from poorly mobile resources in soil. He has revealed, for the first time under natural conditions, that colonization of roots by mycorrhizal fungi is essential for the survival of some plant species, emphasizing the multi-functional basis of the plant-fungus relationship in the mycorrhizal symbiosis. Fitter was elected to the Royal Society in 2005 in recognition of this research which is represented by more than 130 papers in refereed journals.

He has a deep interest in climate change and its effects on plant phenology. Flowering is especially sensitive to the temperature in the previous month, and spring-flowering species are most responsive. His *Science* paper (2002) with his father Richard on *Rapid changes in flowering time in British plants* showed that the average first flowering date of 385 British plant species has advanced by 4.5 days during the past decade compared with the previous four decades and that 16% of species flowered significantly earlier in the 1990s than previously, with an average advancement of 15 days in a decade. These data reveal the strongest biological signal yet of climatic change.

He has written an impressive number of plant and natural history guides, including *Atlas of Wild Flowers of Britain and Northern Europe* (1978), *Complete Guide to British Wildlife* (1981 with Norman Arlott and his father Richard Fitter), *Collins Guide to the Countryside* (1984 with Richard Fitter), *Grasses, Sedges, Rushes and Ferns of Britain and Northern Europe* (1984, with Richard Fitter and Ann Farrer), *Wild Flowers of Britain and North West Europe* (1987 with

David Attenborough), *Collins Guide to the Countryside in Winter* (1988 with Richard Fitter ), *Trees of Britain & Europe* (1990), *Wild Flowers of Britain and Northern Europe* (1996 with Richard Fitter and Marjorie Blamey), *Root Dynamics and Global Change: An Ecosystem Perspective* (2001 with Richard Norby and R. Jackson), *The Wild Flowers of Britain and Ireland: The Complete Guide to the British and Irish Flora* (2003, with Marjorie Blamey and Richard Fitter) and *Trees* (2004, with David More). These natural history books have made a significant contribution to the public understanding and appreciation of botanical science in the UK.

# Tony Primavesi

ROGER MASKEW, April 2007

I was very glad to hear that the BSBI has at last come to formerly acknowledge Tony Primavesi's achievements. In 2009 he will have been a member of the BSBI for fifty years, during which time he has made a major contribution to the study of *Rosa*.

Tony was born in Northampton on December 18th 1917, just after a German Zeppelin air raid on the town. He spent a large part of his life at Ratcliffe College near Leicester where he first went as a school boy in 1927. After a short gap he returned there in 1944 to start a long career as a master, eventually retiring in 1982. He first became interested in botany in 1947 and after contributing records for the first Atlas joined the BSBI in 1959. In 1968 he became the county recorder for Leicestershire, a post he held until 1992. Coincidentally, in his first year as county recorder the inaugural meeting of the Leicestershire Flora Committee was held to discuss the best way to proceed in order to produce a new Flora for the county. Initially Tony was responsible for coordinating the efforts of the field workers, but his main contribution was writing the majority of the species accounts. Tony and Pat Evans were the co-editors of the Flora which was published in 1988.

It was during one of the Flora committee meetings that Tony's interest in roses began. When attempting to assign the responsibility of various critical groups to particular recorders, it soon became apparent that no one was interested in roses so he reluctantly took up the challenge. His interest in the genus grew and in 1986 he was appointed joint BSBI referee for *Rosa* with Gordon Graham. In subsequent years Tony has contributed a number of papers to *Watsonia*, perhaps the most important being *Notes on some Rosa taxa as occurring in the British Isles* published jointly with Gordon in 1990, which was to typify some of the controversial names.

This, with much other research, culminated in the publication in 1993 of *The Roses of Britain and Ireland* of which he was co-author with Gordon, and was, as he described himself, "the first satisfactory treatment". Part of the research involved the examination of many herbarium specimens, a task that became almost entirely Tony's responsibility. He commenced this work well before the publication of the Handbook and continued it right up to 2001, by which time the amazing total of some 35000 specimens from at least seventeen institutions had been re-determined.

I took up the study of roses on a serious basis from 1985 onwards, and initially I sent specimens to Gordon, but as virtually all were from the southern part of England, on his advice I sent further collections to Tony. It was soon after this that I met him for the first time during a BSBI rose workshop at Leicester University in 1988. Tony was one of the very best BSBI referees always replying within a week and giving me much encouragement and helpful advice, all of which I have kept as a valuable reference. Had this not been the case I feel sure I would have soon given up on this complex genus. I was appointed joint referee in 1995 and during the following years we have managed to visit the majority of the midland counties and part of East Anglia to study the local roses, as well as exchanging

views on the many specimens received from members.

Failing eyesight forced Tony to retire as referee at the end of 2004, but he has continued to take a keen interest in roses and his thoughts on the subject are still of great value. He moved to Rugby in 2001 and from his room there is an excellent view across the sports field of the famous school. I have suggested to him that he may now have time to publish a volume of his jokes and limericks which over the years have added a touch of humour to many of our enjoyable field trips.

I am very pleased to have been given the opportunity to write this brief profile.

# NOTES FROM THE OFFICERS

## From the Head of Research and Development – *KEVIN WALKER*

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

### The Threatened Plants Project (TPP) – a national pilot for 2008

For many years the word 'threatened' has been synonymous with 'rare' with species occurring in fewer than 115 hectads being the focus of conservation action (i.e. Nationally Rare and Scarce). Recently the term has been refined to include any species, no matter how common, that has undergone significant declines in range extent or population size. This has resulted in the new British *Red Data List* which includes many widespread species (e.g. *Scleranthus annuus* (Annual Knawel)) but not, for the first time, national rarities whose populations appear stable (e.g. *Carex chordorrhiza* (String Sedge)). Many of these widespread but threatened species have not been studied in any detail and as a consequence their ecology, distribution and changing status are poorly known.

This summer we are proposing to work on ten such threatened species:

*Astragalus danicus* (Purple Milk-vetch)
*Blysmus compressus* (Flat-sedge)
*Campanula patula* (Spreading Bellflower)
*Crepis mollis* (Northern Hawk's-beard)
*Gentianella campestris* (Field Gentian)
*Monotropa hypopitys* (Yellow Bird's-nest) (both ssp.)
*Ophrys insectifera* (Fly Orchid)
*Pyrola media* (Intermediate Wintergreen)
*Scleranthus annuus* (both ssp.)
*Stellaria palustris* (Marsh Stitchwort)

Many of you will be familiar with at least a few of these species in your own vice-counties where they are likely to be genuinely rare or scarce and confined to low fertility habitats. For each species we aim to:

- update records on the past and present distribution in each vice-county:
- survey a sample of populations nationally to assess the causes of recent trends and collate habitat/management information required for their effective conservation.

More generally we expect that trends for at least some of these species will help us better understand the nature and scale of recent environmental changes (e.g. habitat loss and fragmentation, eutrophication, climate change) as well as provide a baseline from which future population changes can be assessed. By trialling a number of novel recording methods (e.g. 100m recording, null records) we also hope to refine the BSBI approach to the recording rare/scarce species more generally.

### Updating records

As part of the project we will be asking vice-county recorders to **check and verify existing records for all ten species** held centrally by the BSBI. VCRs should have already received these records (either by post or electronically) along with instructions on how to update them and submit alterations or additional records. The main tasks for VCRs (to be completed by October) will be to provide (a) more precise details for records assigned to hectad and (b) any additional records.

**National sample survey – volunteers required**

As well as checking records we will be asking VCRs to visit a small sample of pre-selected populations during summer 2008. There will be **between 30 and 80 sample populations for each species nationally** so the numbers to be visited in each vice-county is likely to be small and certainly no more then 10. By now VCRs should have received details of any sample populations located in their vice-counties with instructions on what (and how) we would like them to record at each site. We are particularly interested in the size and extent of populations, the type and condition of the habitat as well as the incidence of flowering, management, and general habitat condition. We are also asking for list of associated species which we will use (promise!) to define the ecological attributes of the vegetation in which the species occurs (e.g. mean Ellenberg scores, plant height, annuality, etc.). Sample sites may even include a few where the species has not been recorded for a long time. Don't worry - we would still like recorders to visit these and where tell us why the species is no longer present. We will also be encouraging recorders to survey additional populations especially in under-recorded areas or where status of the species is uncertain.

**Threatened Plants in Britain 2013?**

The results will be analysed over the winter and published, as updated distribution maps and species accounts, on the BSBI website in early 2009. Over the longer term we hope to extend the project to cover all 'threatened' species over the next 5 years with a view to publishing a book of species accounts by 2013. **So if you would like to get involved in this fascinating project, please get in touch with either myself or your vice-county recorder, who I'm sure will be grateful of any help you can give.**

## From the Scottish Officer – *JIM MCINTOSH*

*BSBI Scottish Officer, c/o Royal Botanic Garden, 20A Inverleith Row, Edinburgh, EH3 5LR;*
Tel: 0131 2482894; j.mcintosh@rbge.ac.uk

**The Threatened Plant Project in Scotland**

The proposed BSBI survey of ten widespread but declining species (see the Head of Research & Development report) is made somewhat easier in Scotland due to several species being local (*Blysmus compressus, Crepis mollis, Monotropa hypopitys* and *Stellaria palustris)* and two others either being absent (*Ophrys insectifera*) or introduced (*Campanula patula*).

So the main focus is likely to be on *Astragalus danicus, Gentianella campestris, Pyrola media* and *Scleranthus annuus* which are all reasonably widespread. So far we have made a start on *Pyrola media,* which is a priority species as part of SNH's five year *Scottish Species Action Framework* project. As a desk exercise we have collected existing records from a wide variety of sources. We have 'tidied' the dataset up and fed it back to Vice-county Recorders asking them for further corrections or additions. Similar work is underway for all the other species.

We will then ask VCRs to visit a small sample of pre-selected populations of these species in 2008. We are keen to survey edge-of-range populations, under-recorded areas or sites where the species' status is uncertain. We are also interested in traditional sites where the species appears to be thriving as well as former sites where populations have been lost - and the reasons for those losses.

We envisage asking for no more than 10 populations (in total) to be surveyed per vice-county. It would be great, however, if we could visit more. This is where we are at a disadvantage in Scotland, with large vice-counties and much remote terrain but so few botanists! So please do get in touch with VCRs if you are able to help, whether

you have a day or two free on a Scottish holiday or are resident.

**Site Condition Monitoring**

In many ways Site Condition Monitoring is quite similar to the BSBI Threatened Plant Project. It involves making detailed records of rare and scarce plant populations and making an assessment of the condition of those populations in SSSIs. It is a great chance to put our botanical expertise to good use, to help improve the management of these nationally important sites. As a result of our involvement, we receive the detailed plant records for *all* Site Condition Monitoring - not just the sites we are directly involved with – and that makes a valuable contribution to Vice-county recorder's datasets across Scotland. It is particularly useful for Rare Plant Registers.

We have agreed to undertake 6-8 sites per year, with 'lead' volunteers arranging the fieldwork and writing the report, and field volunteers helping them with the survey. The lead volunteers are usually, but not exclusively, the local Vice-county Recorders who have a vested interest in the sites. By the time you read this we should have just had a one day workshop for the volunteers. This year we plan to survey the following SSSIs: Ardmeaneach (v.c.103), Bennane Head (v.c.75), Glenstrathfarrar (v.c.96), Eigg-Cleadale (v.c.104), Endrick Mouth & Islands (v.c.99), Hill of Towanreef (v.c.93), Tulach Hill (v.c.88) and Whitlaw Mosses (v.c.80).

**Over ⅓ of a million records computerised!**

Work continues apace to capture Scottish Vice-county Recorders paper records electronically, and make them more widely available, to the BSBI, BRC Vascular Plant DataBase, the NBNGateway and to the Vice-county Recorders themselves, of course! This winter contractors have been working on datasets from Selkirk (v.c.79), Midlothian, (v.c.83), Kincardine (v.c.91), Moray (v.c.95), Dumbarton (v.c.99) and Mid Ebudes (v.c.103). Recent work has brought the total number of records computerised over the past three years to 340,000.

The BSBI has also contracted Lothian Wildlife Information Centre to similarly 'mobilise' the vascular plant data which underlies the *Plant life of Edinburgh and the Lothians* (Smith *et al,* 2002) flora. Another one-off project involves mobilising a 0.25 million record dataset collected by SNH from their Tayside area files and reports. Having resolved a 'site centroid' grid reference problem, that dataset is now with BRC undergoing technical checks before being disseminated to Vice-county Recorders using MapMate (novelly) and posted on the NBNGateway.

**Scottish Officer**

The current funding arrangements for the Scottish Officer Project expire in October 2008. One of the most important tasks this spring has been preparing a grant application for a further term of funding from SNH. Currently SNH are kindly supporting 50% of the project costs, and we hope they will continue to do that for a further three years. The application was submitted in early April, and we expect to hear the outcome shortly.

**Scottish Annual Meeting**

Just a quick reminder that you will find a warm welcome north of the border at the BSBI Scottish Annual Meeting at Royal Botanic Garden Edinburgh on Saturday 1 November 2008. The event is held in conjunction with the Botanical Society of Scotland, and is always very lively and enjoyable. Put the date in your diary now and watch out for the flier which will accompany the next *BSBI News*!

# Coordinator's Corner

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

**Progress with the axiophyte lists**

The concept of axiophytes is gaining ground both within the BSBI and in the wider conservation world. Eleven counties have now produced axiophyte lists (thank you, contributors!), and we are beginning to analyse the results. An axiophyte is a worthy plant – the sort of thing that elicits the response 'that's nice' when a botanist comes across it in a part of the country that they know well. We are all familiar with axiophytes of ancient woodland in the south-east of England, thanks to the many ecologists who have studied them there, but the task of extending the lists to all habitats of conservation value throughout the whole of the British Isles is much more demanding than anything that has been attempted to date. We now have lists from English, Welsh, Scottish and Irish counties, so we are beginning to achieve the geographical spread that I suspect we need to be able to do this properly. There is even interest in this initiative from Spain, but that might be a bit too ambitious for us just at the moment.

One interesting finding so far is how different the county lists are turning out to be. Out of 1,251 species chosen by the 11 county recorders, just 14 were selected by everyone. They include *Sanicula europaea* – a universal woodland axiophyte – and *Anthyllis vulneraria* – presumably always an indicator of species-rich calcareous grassland. We tend to think of species as having a characteristic habitat, but most do not quite follow this pattern. Instead, it seems a lot of plants are fairly catholic in the centre of their range, and random and unpredictable where they are rare. It is only where plants are moderately scarce that they are so predictable as to be restricted to one particular habitat. Among the interesting anecdotes sent in are observations on *Umbilicus rupestris* (the ultimate rock plant) growing on bare soil in flower beds in Pembrokeshire and *Wahlenbergia hederacea* as a garden weed in Cardiganshire. Even these plants of highly restricted ecological niches can be less demanding in their core areas.

There are many things still to think about with axiophyte lists. For example, Dorset must inevitably have a much longer list than Northumberland, but I for one feel uncomfortable with the argument that southern counties are necessarily 'better' than northern ones. If that were true, we would abolish Natural England and spend all our conservation funds in the Turks & Caicos. Species richness, *per se*, does not equate to quality. So one approach might be to produce proportional lists. If a site contained 10% of all the county's axiophyte species it would qualify as a cracking good site, whether that was six or sixty species.

So please keep the lists coming. Having county recorders draw up the lists of important species based on their experience and knowledge is an essential first stage. Kevin Walker, who is responsible for research in the BSBI, has been analysing the lists to see if there are patterns in the attributes of the chosen plants, such as Ellenberg Values. Surprise, surprise – there are! But it is good to get confirmation that what we know from years of observation is indeed related to quantifiable scientific properties.

One key test of the axiophyte concept took place in Shropshire recently when Dan Wrench, the County Ecologist, produced maps highlighting the most ecologically important parts of the county for targeting of conservation spending. A group of the county's top naturalists was called to see if the maps worked for species groups other than plants. With just one exception they did. Everyone agreed that the places that are best for plants are also best for all other organisms. The exception, ironically, was the data collected for Defra's Higher Level Schemes. This was based entirely on the conservation of farmland birds, and it was essentially the reverse of the axiophyte maps – ecologically, it seems, it is the very worst parts of the county that are

receiving the vast bulk of the conservation budgets. Perhaps not all that much has changed since the good of days of agricultural subsidies.

**Recorders' Conference**

Bookings can now be made for the Recorders' Conference on 12th-14th September. The programme is looking promising, with a workshop planned on advanced recording techniques and a parallel one on herbarium work, including Herbaria at Home. Several people have asked us to supply herbarium materials, and I am hoping we will be able to do so.

We always have panels of referees available to determine specimens, often including the experts on *Taraxacum*, *Rosa*, *Euphrasia* and *Cyperaceae*. Keep an eye on the web site for details of who will be there this year – look on the meetings page. The conference is open to anyone in the society, but places are limited and county recorders get the first option of residential places. I would recommend it for anyone who actively records for the society or who publishes in our journals or newsletter; but anyone who is just casually interested might try coming to one of the Exhibition Meetings first. There are grants available from the Training & Education Committee for students who might find the £165 fee a bit steep; we would particularly welcome posters on any current research.

**Species Accounts on the web site**

As an experiment this winter I started posting species accounts on the web site, www.bsbi.org.uk. Slightly to my surprise, these shot to the top of the table of usage, and are being viewed by thousands of people. A distinctive formula is developing which makes these rather different to anything else that I have seen. Almost all accounts of plants tell you what we know about them, but what I have been trying to do with the Species Accounts is the opposite: telling the readers what we don't know about plants. This is much harder but much more interesting. Even when I do post some 'facts' from published sources, as often as not someone writes in and points out that it is not true in their part of the country, or in their experience.

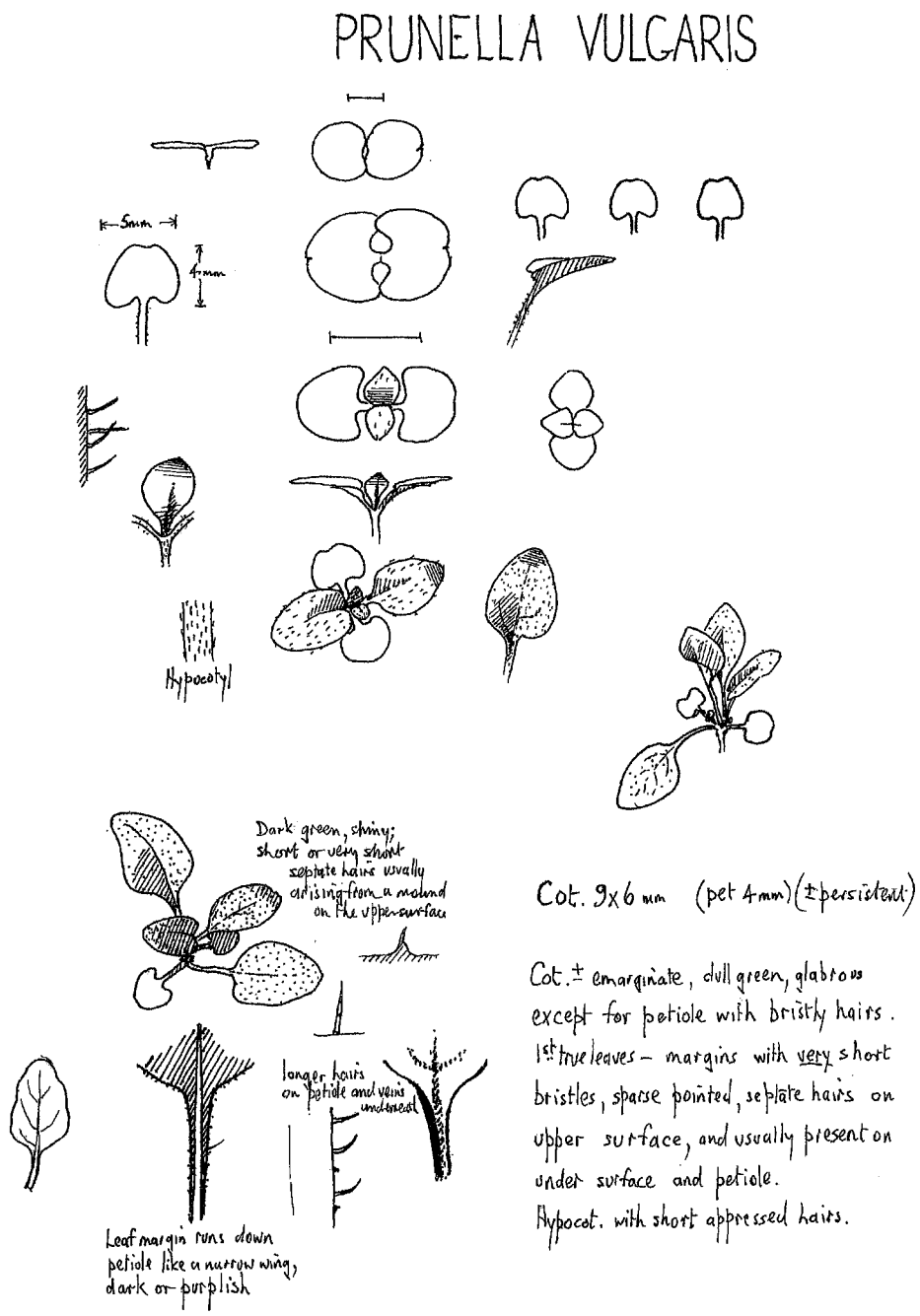
Over the next few months we are planning to explore the practicalities of maintaining a web site about all British species. We need a clear concept and realistic plan to achieve it. It would be all too easy for one person to create a few dozen species accounts of the plants they know well, but to do all the species in the British flora would require a concerted effort by many people. If anyone is interested or enthusiastic, please log on and have a look and, better still, send me some feedback or digital photographs. If a reasonable proportion of the membership of the BSBI would support it, then it would most definitely be possible. Vote with your keyboards and you could help to launch one of the biggest projects we have ever attempted.

# DRAWINGS OF WILDFLOWER SEEDLINGS

See *BSBI News* **83**: 68 (Jan 2000) for a mire detailed explanation of these drawings. They were donated to the Society by the artist, Stanley Evans and, since the number of pages in *News* has to be a multiple of 4, they are used to fill a one or two page gap that would otherwise mean leaving out one or more notes.

Stanley writes: 'These drawings are not to scale. The rate of expansion of cotyledons and stems of the various species was variable and the measurements given are generally those made at the time of the drawing and not necessarily when maturity had been reached. Moreover, the growing-medium (horticultural seed and potting compost) was not ideal for all species and this may have influenced development and size. In a number of drawings the actual size of the plant is shown by a bar or a cross with a 1cm scale bar next to it.

In the drawings the words *refuse* and *emarginate* have not always been used critically. The distinction of "shallowly notched at the apex" (*emarginate*) and "slightly indented" (*retuse*) is blurred. Both words have been used to indicate an indentation at the tip of the cotyledon.'




*Prunella vulgaris* seedlings del. S. Evans © 2003

## Keeping up with non-native species
### A National Workshop
### 10th to 11th June 2008, Leicester University

Contact : ANNA BUTCHER, *RPS Willow Mere House, Compass Point Bus. Pk., Stocks Bridge Way, St Ives PE27 5JL* ; butchera@rpsgroup.com; www.nsnuk.org/pages/workshop.html

A UK-wide workshop on current issues in ecology, identification and management of invasive plant and animal species. Bringing together a wide range of individuals involved in non-native species to share and benefit from each others experience.

With important Government initiatives in the pipeline, the key themes of the 2008 workshop will be **identification**, **biological recording** and **risk assessment** for non-native species, with presentations and workshop sessions from key speakers.

During the two days delegates will:

- have the opportunity to **see and handle over 40 invasive species**, including live specimens;
- receive **species updates** for those species considered potential risks in the UK;
- be able to **network and share experiences** across different fields of invasive species ecology and management; and learn about key issues that will influence best practice in invasive species management.

# DIARY

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

| | |
|---|---|
| 15 May | Committee for Scotland |
| 10 Jun | Non-native species Workshop, Leicester University |
| 14 Jun | Council, Slapton Ley |
| 16 Jul | Executive Committee, London |
| 9 Aug | Committee for Wales, Gregynog |
| 6 Sep | Irish AGM, Waterford |
| 10 Sep | Meetings Committee, London |
| 12 Sep | Recorders Conference, Shrewsbury |
| 20 Sep | Committee for Scotland |
| 8 Oct | Records Committee, London |
| 11 Oct | Committee for Wales, Aberystwyth |
| 15 Oct | Publications Committee, London |
| 25 Oct | Understanding our alien flora Conference, London |
| 29 Oct | Executive Committee, London |

## CONTRIBUTIONS INTENDED FOR *BSBI NEWS* 109 should reach the Receiving Editor before August 1st

The General Editor Gwynn Ellis can be contacted by answer phone or fax on 02920 496042 email: rgellis@ntlworld.com
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*BSBI News* (ISSN 0309-930X) is published by the Botanical Society of the British Isles.
Enquiries concerning the Society's activities and membership should be addressed to: The Hon. General Secretary, c/o Dept. of Botany, The Natural History Museum, Cromwell Road, London SW7 5BD. Tel: 0207 942 5002.
Camera ready copy produced by Gwynn Ellis and printed by J. & P. Davison, 3 James Place, Treforest, Pontypridd, Mid Glamorgan CF37 1SQ (Tel. 01443-400585; email: davison.litho@ukf.net)

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*Schizanthus pinnatus* (Poor-man's-orchid) at filled quarry (v.c.13).
Photo M. Shaw © 2007 (see p. 45)

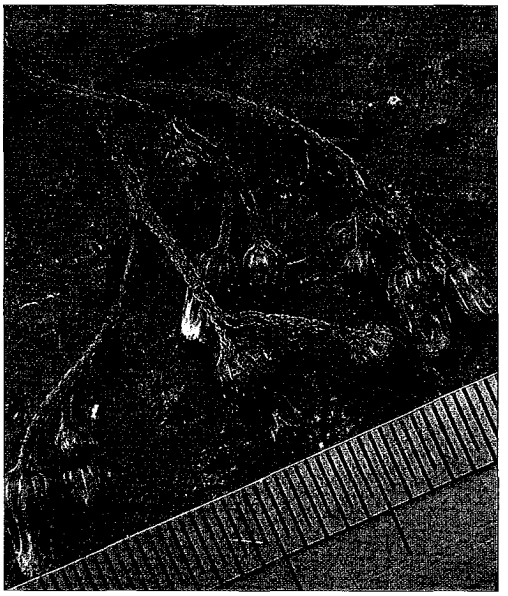

Fig. 1. *Conyza bilbaoana* agg involucre
(see p. 40)

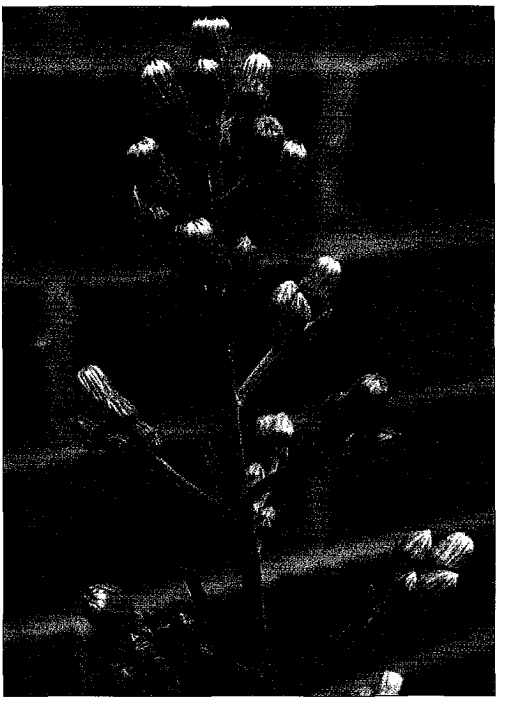

Fig. 2. *Conyza 'daveauiana* habit' involucre
(see p. 40)

Both photos M. Rand © 2007

Fig. 4. *Conyza bilbaoana* variation in inflorescence (see p. 42)

Fig. 3. *Conyza 'daveauiana* habit' (see p. 41)

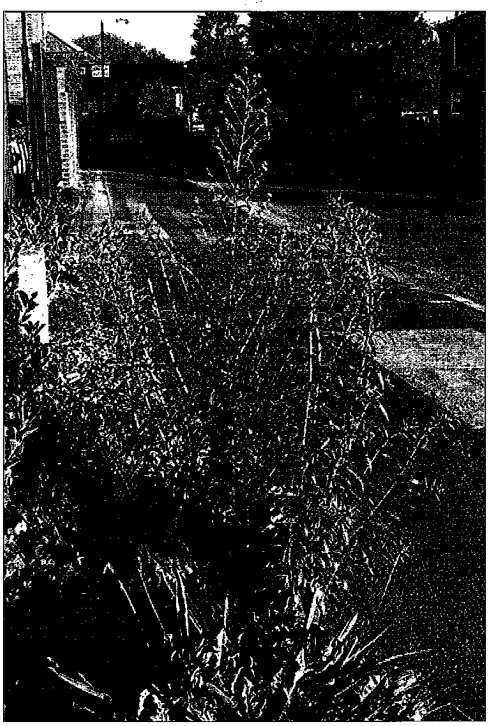

Plate 5. *Conyza 'bilbaoana'* late flowering variant (see p. 42)