BOTANICAL SOCIETY OF THE BRITISH ISLES

WELSH BULLETIN

Editors : R. D. Pryce & G. Hutchinson

No. 79, JANUARY 2007

Photocopy of chasmogamous form of *Danthonia decumbens* (Heath-grass) at NMW (x 0.45), originating from top of sea cliffs, Pencribach, Aber-porth, Cards. (see pp. 7, 11).

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Most back issues of the BSBI Welsh Bulletin are still available on request (originals or photocopies). Please enquire before sending cheque (made payable to BSBI Wales), @ £2 per issue, which includes p. & p., to - Dr G. Hutchinson, Department of Biodiversity & Systematic Biology, National Museum, Cathays Park, Cardiff CF10 3NP, specifying the issue number, or year (which would have to include the season or month). Large runs - price negotiable.

Publication date of last BSBI Welsh Bulletin (No. 78) - June 2006.

EDITORIAL

It is fitting that there are two articles in this issue of the Welsh Bulletin written by Tony Lewis. As many of you will know Tony passed away in October after a short recurrence of the cancer which had afflicted him some years ago. Having Cornish connections and living for many years on the English south coast, after spending some years as an accountant in London, he changed direction and became the editor for a house magazine for the Ministry of Defence. He had always been interested in birds and rambling and on retiring to the Swansea area, he met Viv whilst walking with the Ramblers and they were subsequently married. From that day on they were inseparable. He became acutely interested in the British flora, and latterly undertook much plant recording in Gower and Carmarthenshire. In recent years they travelled widely in the UK as well as the Channel Islands and Scillies where he was able to broaden his interest in plants having a southern distribution. This was very useful when determining many of the alien and casual species he discovered as garden escapes and adventives in South Wales.

His absence at meetings will be sorely missed. His authoritative, although quiet, gentle nature will not be forgotten. In recent years, as well as leading several local BSBI excursions, he gave us an extra, valuable surge of records for the Carmarthenshire Flora. In the last few weeks, George, whilst updating the embryonic text of the Carmarthenshire Flora, found that Viv and Tony have contributed one of the first three vice-county records for nearly sixty species! Thirty eight of the plant specimens that he donated to the National Museum of Wales have already been accessed on to the museum's computer system.

Gwynn Ellis, Andrew Stevens, Kath and I represented the BSBI at his funeral and several more local naturalists were also present. I take this opportunity on behalf of all those in the BSBI who knew Tony, to convey sincerest condolences to Viv. Our thoughts are with you.

George's Index to Bulletin nos 51 to 75 has been included in this mailing. Very many thanks to him for carrying out this job, and thanks also to Kath Pryce for assisting in the collation and stapling of the 360 copies!

Our meetings programme has been collated as usual by Wendy McCarthy and is printed elsewhere in this issue of the Bulletin. Thanks to her for all her chivvying and encouragement-of-others to lead meetings, a thankless task at which she is very successful. Thanks also to all those who have offered to lead meetings but particular thanks to Julian Woodman for his hard work in making the arrangements for the 2007 Welsh AGM which is to be based at Swansea University between 13th and 15th July. The theme of arable weeds will take us to both Gower and the Vale of Glamorgan – both very popular botanical locations. The booking of this venue seemed to be a particularly stressful process but I am sure that accommodation and facilities will be first class, so please book as early as possible to avoid disappointment.

I hope you had a good Christmas. I wish you a happy New Year and look forward to seeing you all again soon.

Richard Pryce
17th December 2006

45th WELSH ANNUAL GENERAL MEETING & 25th EXHIBITION MEETING

Friday 13th – Sunday 15th JULY 2007
at

SWANSEA UNIVERSITY

OUTLINE PROGRAMME

This meeting will have the identification and conservation of "**ARABLE WEEDS**" as its main theme. The main focus of the meeting will be to vascular plants but arable bryophytes will also be covered to some extent. All levels of experience will be catered for and participants are encouraged to bring their own material for determination and discussion. I hope to discuss the Important Arable Plant Area system, so information on fields with good assemblages would be interesting to see.
Speakers / workshop organisers / field trip leaders should include Sam Bosanquet, Trevor Dines, Quentin Kay, John Poland, Tim Rich, Phil Wilson.

Friday 13th July

1.00 pm	Main exhibit room open for setting up.
2.00 pm	Welcome & registration, Fulton House, Swansea University.
3.00 pm	Afternoon tea and Workshop on Arable weeds i.d.
6.30 pm	Evening banquet meal in café west room at the university, moving on to informal talks in the same room.

Saturday 18th

7.30–9.00 am	Breakfast in Fulton House (collect pack-lunch).
9.30 am	Assemble in car-park for excursions to farms on Gower.
3.00 pm	Return to university. Afternoon tea, second Workshop on Arable weeds and AGM in Fulton House. Welsh Committee meeting.
6.30 pm	Evening meal in the College Refectory.
8.00 pm	Illustrated talks in Fulton House.

Sunday 19th

7.30-9.00 am	Breakfast in Fulton House (collect pack-lunch).
9.30 am	Excursions to Vale of Glamorgan farms, finish 3 - 4 pm.

Organising Secretary: Julian Woodman, Countryside Council for Wales, Unit 7 Castleton Court, Fortran Road, St Mellons, Cardiff, CF3 0LT, j.woodman@ccw.gov.uk. Please mark "personal" on any post.

Further details and a booking form will be included with the January mailing of BSBI News. The cost for full board accommodation from Friday evening to Sunday morning is expected be in the region of £120, which includes Conference fee; ensuite or standard single rooms (standard sharing shower/bathroom between 3 rooms); special banquet meal on the Friday and standard conference meal on Saturday evening; packed lunch and tea / coffee, welsh cakes, biscuits in afternoon.
EXHIBITS: Details for booking exhibit space will appear on the main meeting booking form in January. Any material that will be of interest to other members is welcome - don't worry about producing a highly polished poster!

BSBI MEETINGS WALES 2007

Full details and procedure for booking are also available in the BSBI Year Book for 2007.

Saturday March 31st: Conifer workshop, Leighton Arboretum, nr. Welshpool, Montgomeryshire, v.c. 47. Leaders: Jean Green & Andy Jones. An introduction to this widely overlooked group, especially *Pinus*, *Abies* and Cupressaceae, followed by an indoor workshop with cones and foliage, with reference to the Royal Forestry Society's excellent collection of specimen trees, including the most impressive grove of *Sequoia sempervirens* anywhere outside of its' native range. Please bring lunch. Meet at 10.30 a.m. in the Royal Forestry car-park, SO247034. Bookings (with s.a.e.) to Mrs. J.A.Green, 3, Caren Court, Denbigh, LL16 3RB. Tel. 01745 812195.

Saturday June 9th: Rhydymwyn Valley nature reserve, Flintshire, v.c. 51. Leaders: Delyth Williams & Joe Phillips.The Valley Works in Rhydymwyn, a Government owned site that was for years so secret that it was never even shown on maps of the area, has been transformed recently into a nature reserve and a site of historic interest. It was originally part of the R. Alyn flood plain, subsequently becoming an abandoned industrial site and now 35ha of grassland, some woodland, with an interesting variety of native and introduced species. So far, over 300 have been recorded, so come along and find some more! Meet at 10.30 a.m. at the main gate, just off the A541 in Rhydymwyn at SJ205668. Numbers limited to 14. Bookings, preferably by email, to Delyth Williams at delyth.williams56@uku.co.uk or (with s.a.e.) to The Quillet, Heol y Berwyn, Llandrillo, Corwen. LL21 0TH. Tel: 01490 440 418.

Saturday 16th June: Moelyci Environmental Centre, Tregarth, Caernarvonshire, v.c. 49. Leaders: John Harold & Sam Thomas. Moelyci is a unique community farm which manages 340 acres of land, of which 217 acres are SSSI and SAC. Habitats include upland and lowland heath, unimproved acidic and neutral grassland and small seasonal marshy areas. Many pteridophytes will be seen, including *Equisetum sylvaticum*, *Dryopteris oreades* and *D. aemula*, as well as a wide range of flowering plants. We will meet at the farm and travel by bus up to the mountain, and walk down through forest and meadows. Meet at 10.30 a.m. at Moelyci Environmental Centre, Lon Felin Hen, Tregarth, nr. Bangor, at SH593677. Bookings (with s.a.e.) to Mr. J. Harold, Hen Ardd, Carreg y Garth, Rhiwlas, Bangor. Tel. 01248 361126.

Saturday 23rd June: Cae Blaen Dyffryn Plantlife reserve, near Lampeter, Carmarthenshire, v.c. 44. A Plantlife meeting to which BSBI members are invited. Leader: Trevor Dines. Join in the annual vegetation survey of this small but wonderful neutral grassland reserve. As well as recording changes in the vegetation, we'll survey the meadow for both *Platanthera chlorantha* and *P. bifolia* – with over 8000 recorded last year, it's quite a site! We'll also monitor *Botrychium lunaria* and *Viola lutea*, as well as enjoying the wealth of sedges and hybrid *Dactylorhiza*. Meet at 11 a.m. on the road verge car park at SN605442 (on the inside of the tight corner). Bookings (with s.a.e.) to Trevor Dines, Plantlife Wales, c/o CCW, Maes y Ffynnon, Ffordd Penrhos, Bangor, Gwynedd, LL55 2LQ. Tel. 01248 385445.

Saturday 23rd June to Saturday 30th June: Glynhir mansion, Llandybie, Carmarthenshire, v.c. 44. Leaders: Kath and Richard Pryce. The annual Carmarthenshire Recording and Monitoring Meeting will include visits to well-botanised sites as well as areas in need of additional recording within the county. The meeting will cater for both experienced and inexperienced botanists and will provide an opportunity for the informal development of identification skills.

Glynhir is located about 2km east of Llandybie on the western flank of the Black Mountain at SN640151. The River Loughor runs through the estate and at one point plunges

over a 10m waterfall into a rocky gorge where *Dryopteris aemula*, *Hymenophyllum tunbrigense* and *Asplenium trichomanes* ssp. *trichomanes* are included among the ferns growing on the cliffs. There will be ample opportunity in the timetable to visit the site. Large parkland trees provide the setting to the mansion, including *Tilia cordata*, and there remains much scope for further discoveries to be made in the vicinity.

The mansion is run by the Jenkins family providing first class facilities including a large common room for the evening. The cost of the week from lunchtime Sat 23rd to breakfast on Sat 30th, including full board and packed lunches, will be approximately £350.00 en suite, but will be limited to about 20 participants. Accommodation for part of the week will be charged *pro rata*.

Please make initial bookings with the leaders as soon as possible. A £25 deposit will be required by Glynhir followed by full payment six weeks prior to the meeting. Bookings to Mr & Mrs R.D. Pryce, Trevethin, School Road, Pwll, Llanelli, Carmarthenshire, SA15 4AL. Tel:/ Fax: 01554 775847; PryceEco@aol.com.

Saturday 30th June: Caeau Tan y Bwlch Plantlife reserve, Clynnogfawr, Caernarvonshire, v.c. 49. A Plantlife meeting to which BSBI members are invited. Leader: Trevor Dines. Join in the annual vegetation survey of this famous neutral grassland reserve. As well as recording changes in the vegetation, we'll survey the meadow for *Platanthera chlorantha*. We'll also search for *Ophioglossum vulgatum* and have a look at the various *Euphrasia* taxa found here. If we have time, the stunning views are great too! Meet at 11am at the car park beside the reserve at SH431488. Bookings (with s.a.e.) to Trevor Dines, Plantlife Wales, c/o CCW, Maes y Ffynnon, Ffordd Penrhos, Bangor, Gwynedd, LL55 2LQ. Tel. 01248 385445.

Saturday 7th July: Ogof Ffynnon Ddu NNR, Penwyllt, Breconshire, v.c. 42. Leader: Ray Woods. We will examine areas of limestone pavement including site for Genista pilosa. Meet at 11 a.m. in the reserve car-park at SN857156. Please bring lunch and come equipped with stout footwear & clothing suitable for an upland site. Bookings (with s.a.e) to Mr. R.G.Woods, c/o CCW, Eden House, Ithon Road, Llandrindod Wells, Powys LD1 6AS.

Friday 13th July to Sunday 15th July: Welsh AGM and Exhibition Meeting and associated field meetings, Swansea, Glamorgan, v.c. 41 [*see* Outline Programme, p. 4].

Saturday 18th August: Llyn Crafnant, Trefriw, Caernarvonshire, v.c. 49. Leader: Wendy McCarthy. An upland lake with a typical acidic flora, surrounded by wooded cliffs and with marshy grassland at the head of the lake. A variety of sedges and wetland plants will be seen, including *Wahlenbergia hederacea* and *Scutellaria minor*, and, if time permits, a steep walk to look for *Vicia sylvatica* and *Sedum forsterianum*. Meet at 10.30 a.m. in the car-park (fee payable) at the north end of the lake at SH754617. Please bring lunch and waterproof footwear. Bookings (with s.a.e.) to Mrs W. McCarthy, 5, Ty'n y Coed, Great Orme, Llandudno LL30 2QA. Tel. 01492 877451.

Sunday 9th September: Marloes, Pembrokeshire, v.c. 45. Leader: Matt Sutton.
CCW's Marloes Coast project, conceived in 2002, aims to restore what is perhaps the county's finest stretch of coastline to its former wildlife-friendly patchwork of heathland, flower-rich grassland, scrub and ponds. Recent discoveries include *Agrostis curtisii* (new to Pembrokeshire) and *Lotus subbiflorus*. The meeting will focus on heathland re-creation work and arable weeds, as well as Marloes Mere which supports *Pilularia globulifera* and other aquatics. Meet at 10.30 a.m. in the National Trust car-park (fee payable to non-members) at Marloes Sands, SM779082. Please bring lunch and stout footwear, or wellies to explore the Mere. Bookings (with s.a.e.) to Mr. M. Sutton, CCW, Llanion House, Llanion Park, Pembroke Dock, SA72 6DY. Tel. 01646 624000.

ABSTRACTS OF EXHIBITS SHOWN AT THE 24th BSBI WELSH EXHIBITION MEETING, PLAS TAN Y BWLCH FIELD STUDY CENTRE, MAENTWROG SEPT 2006

PLANT ATLAS OF MID-WEST YORKSHIRE: A display about the production of this recently published Flora.

PHYL ABBOTT, Cedar Croft, 73 Ridgeway, Leeds LS8 4DD

***DANTHONIA*, A GRASS OF MANY PARTS:** A series of drawings and specimens to show the several of the unusual features of *Danthonia decumbens* (Heath-grass). These include chasmogamous flowers, as well as the usual cleistogamous ones, and also cleistogenes in the axils of the basal sheaths of the culm.

ARTHUR CHATER, Windover, Penyrangor, Aberystwyth, Dyfed SY23 1BJ
[The full text of the note and the illustrations form a separate article in this Bulletin.]

A CLOVER NEW TO CAERNARFONSHIRE: A specimen of *Trifolium resupinatum* (Reversed Clover) was exhibited, taken from a plant growing on an arable field headland sown with a 'nectar and seed' mixture at Cwrt, Aberdaron (Caerns, v.c. 49), 22nd August 2006. *Helianthus annuus* (Sunflower), *Phacelia tanacetifolia* (Phacelia), *Fagopyrum esculentum* (Buckwheat), *Trifolium hybridum* (Alsike Clover) and *Melilotus officinalis* (Ribbed Melilot) were also present. The BSBI Atlas Updating Project gives only four 2000+ records for this species in the UK, and the plant has not been recorded in Wales since 1985. If this species is being sown on arable field headlands in nectar and seed mixes, it may well occur more widely.

TREVOR DINES, Plantlife Wales Officer, c/o Countryside Council for Wales, Maes y Ffynnon, Ffordd Penrhos, Bangor, Gwynedd LL57 2LQ

A FIRST RECORD FOR DENBIGHSHIRE OF *VACCINIUM* X *INTERMEDIUM*:
Esclusham Mountain is a featureless plateau rising to 456m. to the west of Wrexham. Both *Vaccinium myrtillus* (Bilberry) and *Vaccinium vitis-idaea* (Cowberry) are common, together with *Empetrum nigrum* (Crowberry), *Calluna vulgaris* (Ling) and *Erica tetralix* (Cross-leaved Heath).
The hybrid, *Vaccinium* x *intermedium*, between Bilberry and Cowberry was found by P.L. Thomas, with a BSBI recording group, on 13th August 2006. The hybrid was growing in a patch of about 5m x 5m. Both parents were present, but not growing among the hybrid.
The hybrid is intermediate between the parents, it has pale pink flowers and a terete stem with a few hairs. The leaves have a few gland dots and a revolute margin. They are partially deciduous and are easily seen in January- February, when *Vaccinium myrtillus* has shed its leaves. [See colour photos].

JEAN GREEN, 3 Karen Court, Denbigh LL16 4RB

NEW (OLD?) KIDS ON THE BLOCK: Since the New Atlas was published, Cheshire has seen an explosion in the arable fields in certain areas, of the grasses not seen for nearly 100 years. It seems unlikely that their seeds are viable for that long, so they are presumably coming in with the sown grain and hence could appear anywhere in Britain. Why, in these days of super-clean seed, that should be so, I do not know.

Most startling is the abundance of *Bromus secalinus* in the High Legh area and on Frodsham Marshes where it is joined by *Bromus commutatus* and sometimes by *Anisantha diandra*, and *Alopecurus myosuroides* which also seems to be on the increase. *B. commutatus* is generally more delicate than *secalinus* and when young, can be distinguished by having softly downy lower leaf sheaths where those of *secalinus* are much less hairy or glabrous. In fruit, the rachis of *secalinus* is revealed in the spikelets which look more open and are the colour of wholemeal bread and whose heavy heads can be seen above the crop. The rachis is hidden in *commutatus* whose more closed spikelets are a paler shade closed to shortbread!

Anisantha sterilis has a one-sided inflorescence whereas *A. diandra* is more evenly spread and has markedly hairy inflorescence branches as well as generally bigger dimensions. It seems to vary in stature greatly, sometimes small and almost prostrate but often towering over the crop.

Another recent discovery is *Conyza bilbaoana* which is big and densely hairy (except fore the capitula) and greyer green than *C. canadensis*. Hairy capitula mean *sumatrensis* which has appeared in the same location, or *bonariensis*. *Bilbaoana* has 5-lobed disc florets (not 4). See *BSBI News* No. 73, 47-9 (1996). It seems to have arrived by long-distance lorry! Mine was determined by Eric Clement who forbad me to send him any more, they are that difficult!! He says that Sell's account may work in Cambridge, but not elsewhere, so be warned. Eric also thinks that *bilbaoana* germinates earlier and out-competes *canadensis* and is set to replace it.

The illustrations with this exhibit show how useful the internet is when you need to see what a plant really looks like. It is loaded with photos and line drawings that help resolve many a problem. *Conyza bilbaoana* drew a blank, however!

GRAEME M. KAY, 4 Geneva Road, Bramhall, Stockport, Cheshire SK7 3HT

A RARE HYBRID FERN FROM CAERNARFONSHIRE: A herbarium specimen of a fragment of *Asplenium* x *alternifolium* (*Asplenium trochomanes* x *septentrionale*) collected for determination.

WENDY MCCARTHY, 5 Tyn-y-Coed, Great Orme, Llandudno, Conwy LL30 2QA

NICANDRA PHYSALODES (APPLE-OF-PERU): Posing the question: Has it been recorded previously as originating from bird-seed?

RAY WOODS, c/o CCW, Eden House, Ithon Road, Llandrindod Wells, Powys LD1 6AS

WELSH FERNS IN THEIR HABITAT: A collection of coloured photographs of ferns in Wales in their natural habitats.

RAY WOODS, c/o CCW, Eden House, Ithon Road, Llandrindod Wells, Powys LD1 6AS

WELSH FERNS 19th CENTURY STYLE: A selection of herbarium sheets of ferns collected in Wales during the time of the Victorian "fern craze".

GORONWY WYNNE, Gwylfa, Lixwm, Holywell, Clwyd CH8 8NQ

Other exhibitor: SUMMERFIELD BOOKS.

LONG-STALKED BROOMRAPE IN CARMARTHENSHIRE

Orobanche minor (Common Broomrape) is a very variable species and currently four varieties are recognised (Rumsey & Jury, 1991). One of these, var. *maritima*, may have pedicellate lower flowers (Stace, 1997) and I have always looked out for this character, always without success.

However, in 2005, a dozen or so spikes of an *Orobanche* were found in waste ground at Machynys, Llanelli, all with noticeably long pedicels, up to 30mm, in fact. It was late in the season and flowering was long over, also it was not possible to discern any host.

Dr Fred Rumsey of the Natural History Museum in London tells me that the character is not restricted to var. *maritima*, or to the plant of the dunes which is, in his opinion, often wrongly identified as that taxon, although it does occur more frequently in these situations. He adds, 'long-pedicellate flowers are rare and of considerable interest as they may hint as to the primative state in *Orobanche*.' In other words, a throw-back!

It is advisable therefore not to collect specimens for identification but to photograph the plant in the first instance and to note any likely hosts.

References

Rumsey, F.J. (1991). Pedicellate flowers in *Orobanche* and the status of *O. maritima*. *BSBI News* No. 57: 8-9.
Rumsey, F.J. & Jury, S.L. (1991). An account of *Orobanche* L. in Britain and Ireland. *Watsonia*: **18** 257-295.
Stace, C.A. (1997). *New Flora of the British Isles*. 2nd edn. Cambridge University Press.

TONY LEWIS (posth.)
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YUCCA SEEDLINGS

Yucca recurvifolia and Y. gloriosa (Spanish-daggers) are natives of the east coast of the United States of America where, as in South Wales, they grow on sand dunes. They are much cultivated in Britain and are often cast out to become established, at least for a while. One reason for their eviction could be their unreliable flowering, especially in the case of *Y. gloriosa* which is more susceptible to winter wet and snow. Also the flower spikes develop late in the season and then may fail to open. Another good reason is no doubt the stiff, viciously-sharp leaves which the unwary discover when approaching too closely.

Y. recurvifolia's spiky leaves, as the name tells us, are recurved and therefore more approachable. This asset, together with its earlier and more regular flowering, makes it popular with gardeners and, in my experience, is less often encountered in the wild. This species has long been known from Tywyn Burrows and both species occur at Pembrey Burrows, both in Carmarthenshire.

When Yuccas are found in sand dunes in situations where they are unlikely to be garden escapes, the theory has been put forward that they may be the result of American seeds or vegetative fragments drifting across the North Atlantic, presumably aided by Gulf Stream currents. The hypothesis has few supporters and it is worth noting that Yuccas do not feature on the list of drift aliens in Clement & Foster (1994), but other explanations are hard to find.

A new *Yucca* puzzle is the recent discovery of six small plants on the grassy verge of a country lane about half a mile from the village of Pen-y-banc near Llandeilo, Carmarthenshire. So far as I am aware there are no records of self-sown plants in Britain but these can only be seedlings. While young plants are not easily identifiable, *Y. gloriosa* leaves differ from *Y. recurvifolia* in their serrated margins, clearly visible in the accompanying photograph. There are no gardens nearby, the lane is bounded by farmland, so how did they get there? The site is about half-way between the nearest houses and an old quarry used as a dump for garden rubbish, among other things. So my theory is that seeds shed from a trailer en route to the tip landed on the verge and in due course germinated.

References:

Clement & Foster. (1994). Alien Plants of the British Isles, BSBI London.
Irish, Mary & Garry. (2000). Agaves, Yuccas & Related Plants. Timber Press, Portland, Oregon.

TONY LEWIS (posth.)
12 Cannisland Park, Parkmill, Swansea SA3 2ED.

SENECIO VISCOSUS L.

A reminder to request in BSBI NEWS, Sep 2006, No. 103, p.40

In order to carry out a study in relation to *Senecio viscosus* (Sticky Groundsel), the seeds (achenes) are required. However, achenes are sought from three areas/localities.
Initially, collection will be of general *S. viscosus* from any population: 1-2 seed heads per plant, each separately labelled, though it can be 1-5 plants from a population and these would be from UK, (England, Wales, Scotland, Ireland). [British Isles, not UK as Ireland not all UK]
Secondly, in a paper by Akeroyd et al., (1978) dwarf variants from shingle were studied. The grid references are repeated here and it is hoped that any one living close to or visiting the area (or from shingle anywhere else) could collect from any of these populations. The areas are: Suffolk, between Thorpeness and Aldeburgh, TM468580; Suffolk, TM366424; Sussex, Pagham Harbour, SZ875954; and Surrey, Esher Station, TQ147658.
The third area is the most difficult. Achenes are sought from Europe. If anyone is going to Europe, lives there, or has any contacts there, I would be grateful for any material throughout the range. Collecting is simple, I use a ¼ piece of A4 for each collection folded into the style of a little envelope and then the mature head with achenes is twirled into the envelope thus separating the seeds with their pappus from the receptacle, the packet is labelled appropriately.
The project depends on getting material from Europe so any suggestions are welcome. Postage refunded if required. Contact me if you need any further information.

Reference

Akeroyd, J.R., Warwick, S.I. & Briggs, D. (1978). Variation in four populations of *Senecio viscosus* L. as revealed by a cultivation experiment. *New Phytologist* **81**: 391-400.

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

Danthonia decumbens, Heath-grass, formerly known as *Sieglingia decumbens* or *Triodia decumbens*, is usually cleistogamous, i.e. the florets remain closed and fertilisation takes place within the floret; the anthers are minute and never emerge and become entangled in the stigmas, and the panicle branches and spikelets remain appressed to the inflorescence axis, giving the plant its very characteristic jizz.

Chasmogamous plants, in which the florets open and the much larger anthers emerge so that cross-fertilisation can take place, occasionally occur; their panicle branches spread widely, so that these plants look very different from the usual cleistogamous ones.

Few local Floras mention the occurrence of chasmogamous plants, and a rare exception is Benoit & Richards (1963), who say that they are regular in the dune slacks on Morfa Harlech and in Arthog Bog in Merioneth. I had never seen them in Cardiganshire until 2006, when I found a small colony on a dry trackside on the MoD Site at Aber-porth, SN247524 (see cover illustration), and another in damp, sedge-rich pasture on the Rhos Pil-bach WTSWW Reserve, SN366528. Hubbard (1984) says that "Normal flowering has been observed on several occasions, usually on plants in wet soils", but nothing in general seems to be known of the distribution of chasmogamous plants in Britain. In the two populations I saw, most of the florets seemed to be chasmogamous, but to what extent particular plants produce uniform or mixed types of flower, or the same type each year, seems unrecorded. It would seem worth noting chasmogamous plants whenever they are seen, and recording whether they persist from year to year.

D. decumbens has other features of interest. In addition to the normal terminal inflorescences, about half the plants one examines (at least in Cardiganshire) have specialised cleistogamous florets in the axils of the basal sheaths of the culm. This seems unique in British grasses, but they are known in a number of other grasses throughout the world. Chase (1908, 1918), Weatherwax (1928) and Dobrenz & Beetle (1966) among others have described their structure and occurrence in American species of *Danthonia* and in related genera. These basal florets, known as cleistogenes, appear as bony, completely sealed, ovoid, pointed structures with two scabrid keels (Figs. 1 & 2), but in fact consist of closely overlapping scales enclosing the pistil and stamens. The outermost 2-keeled scale, which has two vascular bundles, was interpreted as an indurated prophyll by Chase (1918) and Weatherwax (1928). Both Chase and Arber (1934) said that the cleistogenes lack glumes, but between this prophyll and the lemma there is usually in *D. decumbens*, and in the species studied by Weatherwax, a smaller scale which, from its position in relation to the lemma, the latter interpreted as the upper glume; the lower glume seems always to be missing (Fig. 4). A rachilla is usually observable between this smaller scale and the lemma, indicating that the cleistogene is a specialised spikelet rather than just a floret. The cleistogenes are remarkably variable, as Chase (1908) remarked. In *D. decumbens* a second, very reduced floret is occasionally present, and very occasionally elaiosomes are present on the palea (see below and Fig. 5). Cleistogenes presumably act as a fail-safe reproductive measure in case the terminal inflorescences are grazed off (Clay 1983). Their occurrence and germination in American species of *Danthonia* are reviewed in detail by Dobrenz & Beetle (1966).

D. decumbens is one of the very few British grasses to possess elaiosomes, oil bodies on the disseminules that are attractive to ants and therefore encourage dispersal (*Melica* also has them, but of a very different kind). In *D. decumbens* they are paired, sac-like swollen structures at the base of the palea; this in itself is surprising, as the palea is in most grasses a featureless scale, in contrast to the often highly modified lemma. They are present in both the

cleistogamous and the chasmogamous florets in the terminal inflorescences, but are usually, though not always, absent in the cleistogenes. Ant-dispersed plants with elaiosomes often have oblique or prostrate stems like *D. decumbens*. *Carex pilulifera* with its slender stems that usually flop on the ground when in fruit, and a white, waxy elaiosome at the base of the utricle, is another example. *D. decumbens* elaiosomes were nicely illustrated by Dore (1971), although he did not know what they were. Sernander (1906) discussed them in some detail in his extensive survey of myrmecochory [state of being dispersed by means of ants].

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Figure 1.

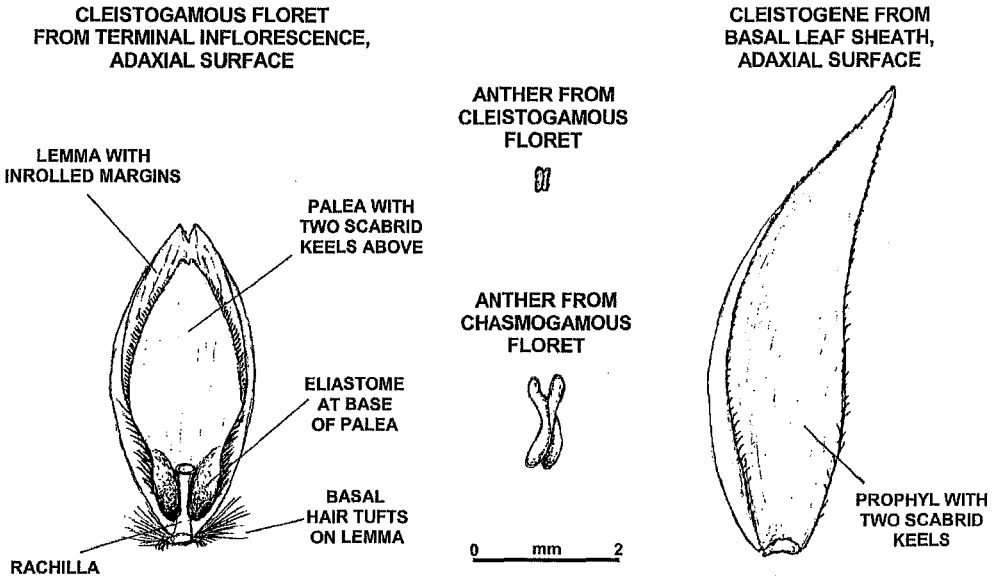


Figure 2
BASE OF PLANT SHOWING CLEISTOGENE
AND LATERAL BUD
(SHEATHS PARTLY REMOVED)

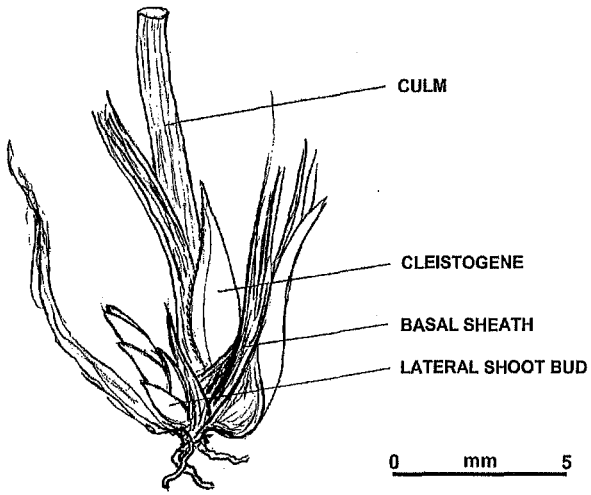


Figure 3
TRANSVERSE SECTION OF CLEISTOGAMOUS SPIKELET IN LOWER QUARTER OF A FLORET FROM TERMINAL INFLORESCENCE

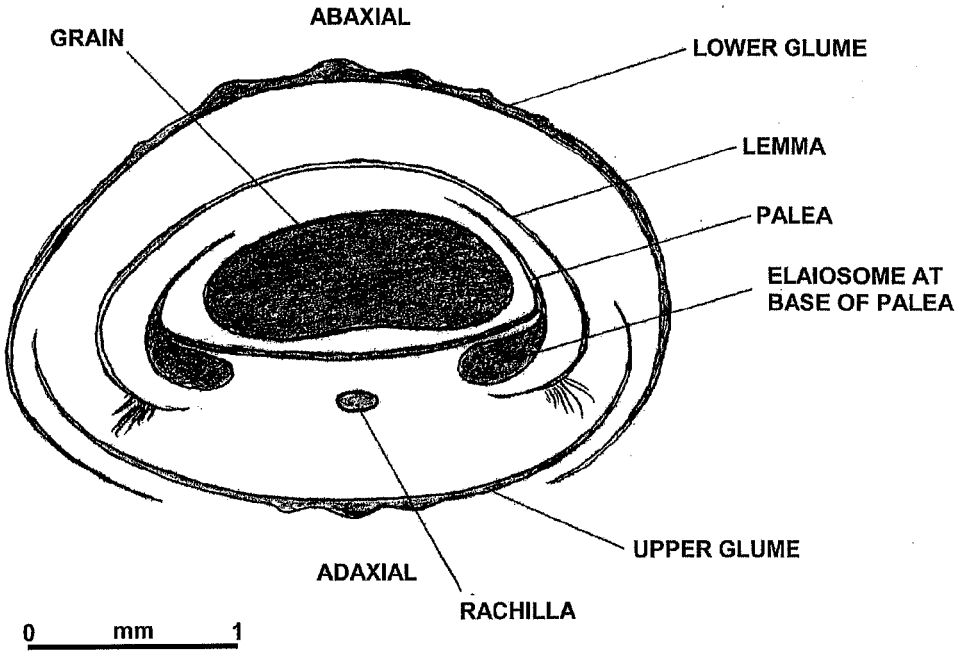
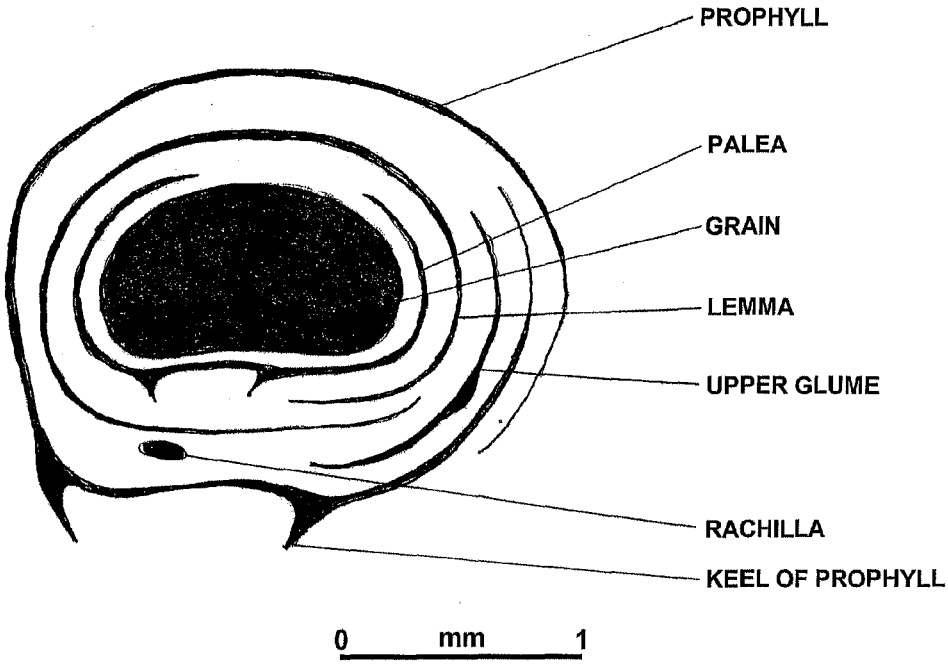


Figure 4
TRANSVERSE SECTION OF CLEISTOGENE IN LOWER QUARTER,
TYPICAL FORM FROM BASAL SHEATH



PLANTLIFE WALES
NEWSLETTER - 5

PLANTLIFE

Identifying Important Arable Plant Areas in Wales

With five arable species in the *Back from Brink* programme of species recovery in Wales, it's little surprise that so much time gets devoted to this important group of declining plants. As well as information booklets (*Farming for Arable Flowers*) and the annual display of arable species at the Royal Welsh Show, we are also involved with farm walks (often arranged by the Farming and Wildlife Advisory Group or Local Biodiversity Action Plan groups) and give advice for the management of sites where arable species grow.

However, a significant part of the arable plant programme at the UK level is the identification of Important Arable Plant Areas. These are defined as those areas that support the richest and most diverse arable flora in the country. As well as being interesting in their own right, identification of such areas also helps more effective targeting payments in agri-environment schemes such as Tir Gofal. This will work to ensure that rare species and species-rich assemblages are conserved in there natural setting.

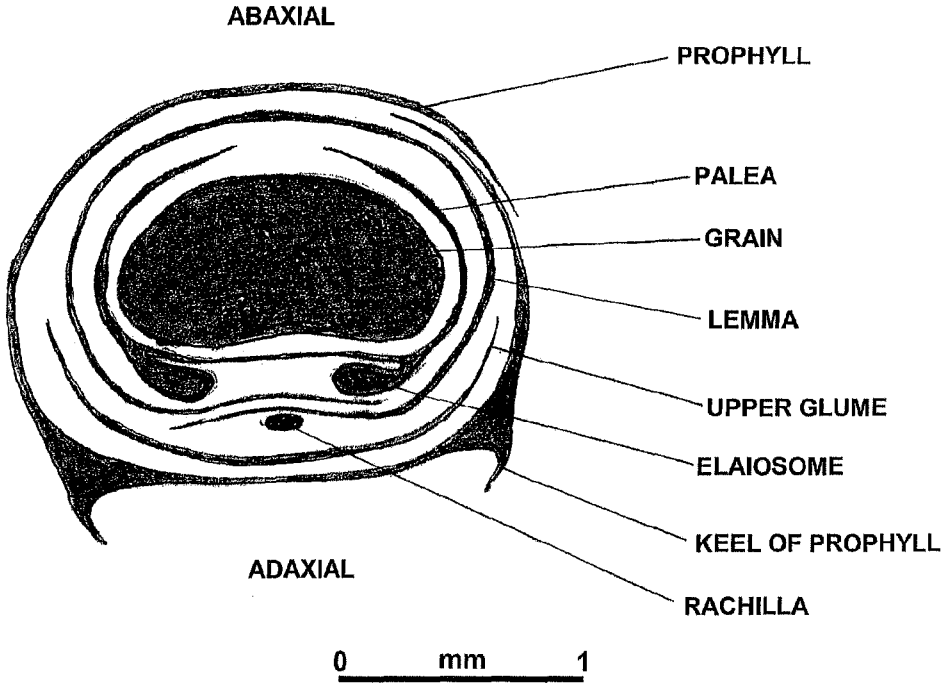
Although a number of studies have helped to identify the richest areas for arable plants in Britain, they are insufficiently detailed to target action to individual farms or even specific fields. A clear methodology that can be used to identify key sites has been developed by Andy Byfield and Phil Wilson. This relies on examining the arable flora of individual farms or fields and scoring the species present according to how threatened they are. The "importance" of a site depends upon the total score for threatened species adjusted for the type of soil on which the community grows. While a preliminary assessment of sites using this methodology was published last year (http://www.arableplants.org.uk/assets/IAPA/Important-Arable-Plant-%20Areas.pdf), sites in England are being actively identified and it is hoped that by bringing the methodology to the attention of Plantlife and BSBI members in Wales, more Welsh sites will be identified too.

Assessing sites - 5 easy steps!

1. Get permission to survey the fields in question. Since a vast proportion of arable land is private, it is *essential* that you get the landowners permission. Tell them what you are doing and why, and what the results will be used for. If you don't do this we'll not be able to use your records.

2. Select your site. We are obviously dealing with good arable habitats - sites that regularly produce good communities of arable species. The "site" is broadly defined and may be a particularly good individual field on a farm, a group of fields on a farm, a whole farm, or even several fields across several farms. As long as we get the information on where the plants actually are, we can use it.

Figure 5
TRANSVERSE SECTION IN LOWER QUARTER,
VARIANT FORM, FROM BASAL SHEATH



3. Record the site details. We need the farm name, owners name and contact details, field name(s), grid reference, vice-county, your name and contact details, and the date. Please also record the soil type (e.g. limy, sandy, loam, clay), the current crop, past two years of crops, number of years arable or ley, the month it was ploughed and the most abundant non-crop species in the field(s). Please also give details of any agri-environment scheme the farm or fields are under, and what options are being undertaken. A sketch map of the site (with scale and north pointer) is also extremely helpful.

4. Next, record the presence and abundance of any of the species in the table at the end of the article. If a species is present, record it's score and whether it's dominant, abundant, frequent, occasional, or rare (just use D, A, F, O or R).

Note that arable sites cannot usually be assessed on the basis of a single visit in one year. With arable species, it is often the soil seed bank that needs to be conserved, not the plants. As long as plants appear above ground and set seed every few years, the seed bank will be replenished. It is important to visit sites several times over several years to build up a complete picture of the arable flora present. Therefore, where possible, score the species that have appeared at the site since 2000.

5. Calculate the total score for all species in your site and compare to the following chart. You'll need to know the soil type.

	Chalk and limestone-derived soils (excluding clays)	**Clays**	**Sands and freely draining acidic soils**
European importance	90+	70+	70+
National (UK) importance	45 - 89	30 - 69	35 - 69
Country importance	30 - 44	20 - 29	20 - 34

It must be stressed that the above scoring system is provisional and needs testing, which is why we need lots of examples! Please send your species lists and details (from 2 and 3 above) to Trevor Dines. Printed (A4) versions of a form designed to record all the above are available from Trevor on request.

Initial findings

A preliminary inventory of key sites in the UK has been drawn up using existing knowledge of selected areas and particular sites for arable plants. This identifies 133 sites as being of country or greater importance. Six sites of European importance have been identified and 99 are of national importance, although this latter figure will certainly increase as more sites are reassessed.

Of these sites, three are in Wales. Mwnt Fields SSSI in Ceredigion (v.c. 46, SN15) covers approximately 20 hectares in three blocks, primarily on glacial sands and clays overlooking Cardigan Bay. Many years of study have identified an exceptional flora of local and rare species, including *Scleranthus annuus* (Annual Knawel), *Silene gallica* (Small-flowered Catchfly), *Valerianella dentata* (Narrow-fruited Cornsalad), *Chrysanthemum segetum* (Corn Marigold) *and Misopates orontium* (Weasel's-snout), making this probably the single richest complex of arable fields for plants in Wales. This is the first Site of Special Scientific Interest noted solely for the arable flora and fauna in Wales.

The richness of the arable flora of one of the other sites, Hunt's Farm on Gower, Glamorgan (v.c. 41, SS5687), was only appreciated in 2001 when Julian Woodman discovered *Valerianella rimosa* (Broad-fruited Cornsalad) in the corner of a field. This is the only Welsh population of what is an exceptionally rare arable species. In neighbouring fields are *Valerianella dentata* (Narrow-fruited Cornsalad), *Chrysanthemum segetum* (Corn Marigold), and a large population of *Silene gallica* (Small-flowered Catchfly). Management of the site is carefully monitored by local CCW staff.

The final Welsh site is more of an area rather than a single site. Several farms and fields in the Vale of Glamorgan (v.c 41, SS96 & ST06) contain large populations of *Scandix pecten-veneris* (Shepherd's Needle) and *Petroselinum segetum* (Corn Parsley), while nearer St. Athan (ST07) are farms with *Ranunculus arvensis* (Corn Buttercup) and *Kickxia spuria* (Round-leaved Fluellen), a rare species in Wales.

The Mwnt site is considered to be important at a European level, while the other two are of country importance. It will be very interesting to see which other sites in Wales qualify, as there are certainly others. Pembrokeshire is an obvious candidate for some exceptionally rich arable fields, but other farms in the Vale of Glamorgan, parts of the Lleyn peninsula, Anglesey, Monmouthshire and Denbighshire will probably qualify.

Trevor Dines (Plantlife Wales Officer)
c/o Countryside Council for Wales, Maes y Ffynnon, Ffordd Penrhos, Bangor, Gwynedd LL57 2LQ

Latin name	Common name	Species Score	Score	DAFOR
Alopecurus myosuroides	Black-grass	2		
Anagallis arvensis subsp. foemina	Blue Pimpernel	5		
Anchusa arvensis	Bugloss	1		
Anthemis arvensis	Corn Chamomile	8		
Anthemis cotula	Stinking Chamomile	7		
Anthriscus caucalis	Bur Chervil	3		
Aphanes australis	Slender Parsley-piert	1		
Avena strigosa	Bristle Oat	5		
Bromus secalinus	Rye Brome	7		
Centaurea cyanus	Cornflower	8		
Chaenorhinum minus	Small Toadflax	1		
Chenopodium ficifolium	Fig-leaved Goosefoot	2		
Chenopodium hybridum	Maple-leaved Goosefoot	3		
Chenopodium murale	Nettle-leaved Goosefoot	7		
Chenopodium polyspermum	Many-seeded Goosefoot	2		
Chrysanthemum segetum	Corn Marigold	7		
Descurainia sophia	Flixweed	3		
Erodium cicutarium agg.	Common Stork's-bill	1		
Erodium moschatum	Musk Stork's-bill	3		
Erysimum cheiranthoides	Treacle-mustard	2		
Euphorbia exigua	Dwarf Spurge	6		
Filago vulgaris	Common Cudweed	6		
Fumaria bastardii	Tall Ramping-fumitory	2		
Fumaria capreolata	White Ramping-fumitory	3		
Fumaria purpurea	Purple Ramping-fumitory	4		

Galeopsis angustifolia	Red Hemp-nettle	9		
Galeopsis segetum	Downy Hemp-nettle	9		
Galeopsis speciosa	Large-flowered Hemp-nettle	7		
Geranium columbinum	Long-stalked Crane's-bill	2		
Geranium pusillum	Small-flowered Crane's-bill	2		
Hyoscyamus niger	Henbane	7		
Hypochaeris glabra	Smooth Cat's-ear	7		
Kickxia elatine	Sharp-leaved Fluellen	2		
Kickxia spuria	Round-leaved Fluellen	3		
Lamium amplexicaule	Henbit Dead-nettle	1		
Lepidium campestre	Field Pepperwort	3		
Lithospermum arvense	Field Gromwell	8		
Lolium temulentum	Darnel	9		
Mentha arvensis	Corn Mint	1		
Mercurialis annua	Annual Mercury	2		
Misopates orontium	Weasel's-snout	7		
Myosurus minimus	Mousetail	7		
Orobanche minor	Common Broomrape	2		
Papaver argemone	Prickly Poppy	7		
Papaver dubium subsp. lecoqii	Long-headed Poppy	2		
Papaver hybridum	Prickly Poppy	3		
Petroselinum segetum	Corn Parsley	3		
Polygonum rurivagum	Cornfield Knotgrass	3		
Ranunculus arvensis	Corn Buttercup	9		
Ranunculus parviflorus	Small-flowered Buttercup	3		
Ranunculus sardous	Hairy Buttercup	3		
Raphanus raphanistrum	Wild Radish	1		
Scandix pecten-veneris	Shepherd's-needle	9		
Scleranthus annuus	Annual Knawel	8		
Sherardia arvensis	Field Madder	1		
Silene gallica	Small-flowered Catchfly	8		
Silene noctiflora	Night-flowering Catchfly	7		
Sinapis alba	White Mustard	2		
Spergula arvensis	Corn Spurrey	7		
Stachys arvensis	Field Woundwort	6		
Torilis nodosa	Knotted Hedge-parsley	3		
Valerianella dentata	Narrow-fruited Cornsalad	8		
Valerianella rimosa	Broad-fruited Cornsalad	8		
Veronica agrestis	Green Field-speedwell	1		
Veronica polita	Grey Field-speedwell	2		
Vicia tetrasperma	Smooth Tare	2		
Viola tricolor subsp. *tricolor*	Wild Pansy	6		
	Total Score for all species			