Botanical Society of the British Isles

Welsh Bulletin

No. 87
Jan 2011

Editors : Richard Pryce, Katherine Slade & Sally Whyman

Front Cover Photo : *Ophrys insectifera* (Fly Orchid) spotted by Peter L.Thomas in Coed Abergele on a Denbighshire Group Recording Day (see page 15) © Roy Beacham
1 : Possible *Epipactis phyllanthes* (Green-flowered Hellebore) from Alyn Waters Country Park, v.c. 50 (see page 15). © Roy Beacham
2 : *Melittis melissophyllum* (Bastard Balm) monitoring in Carmarthenshire (see article on page 23) © R.D.Pryce

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Most back issues are still available on request (originals or photocopies) @ £2 per issue, please contact Sally Whyman or Katherine Slade. Cheques are payable to BSBI Wales. The last issue was no.86 released in May 2010.

Back issues over one year old are currently being uploaded to the website. www.watsonia.org.uk/html/welsh_bulletin.html

All articles, news, photos, guest editorials and other items for inclusion in the Jan 2011 issue should be sent to an editor by **10th June 2011.**

Please send any plants records to your Vice County Recorder (see BSBI Yearbook).

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Guest Editorial

TREVOR G. EVANS, *County Recorder for Monmouthshire (v.c.35)*

Personal examples drive me to the conclusion that NO grazing, particularly by sheep, should be considered from the beginning of May to mid-September if you wish to retain the flower-rich meadows of yester-year. This is important not just for our spiritual wellbeing but for all the animals that live there and form part of the food chain; we can already see the effects on insectivorous mammals and birds, whose numbers are dropping alarmingly.

The exception to this is if a field has been neglected and has become overgrown with vigorous invasive species, particularly woody plants. Here, cutting and/or grazing animals are necessary until the unwanted invaders have been brought under control.

My observations of *Vicia orobus* (Wood Bitter-vetch) show an example of how grazing regimes can detrimentally affect plant populations. On 12th July 2009, Colin Titcombe and I searched seven of the twelve known sites for *V. orobus*. Four sites revealed no plants but one site had over 100 beautifully grown plants. Its associates were *Sanguisorba officinalis* (Greater Burnet), *Lathyrus linifolius* (Bitter-vetch) and a *Rubus* (bramble) previously known only from the Wye Valley. This site was reported to the NCC in 1991 as it was the best in Monmouthshire (vc 35) for *V. orobus*. Recently however, a survey revealed it to be fenced off and home to several horses. Only a single damaged plant bearing a single flower was found. Elsewhere in the county, only a roadside bank north of Mynyddislwyn and the St Sannans churchyard had flourishing populations.

On 19th July 2010, Colin, Chris Hatch and I visited Ty'r-hen-forwyn meadows (a SSSI and the 2nd best site in vc 35 in 1991). It is now a large field grazed by horses with numerous plants of *V. orobus* but hardly any of them bearing flowers. In the south-west of this field a smaller area had been further fenced off and many plants were in full flower. However as it was completely ungrazed, it was becoming overgrown with shrubs and small trees causing grave concern as to its future.

Set against this dismal picture Dr Peter Sturgess and Claire Pooley have reported to me that the eastern verge of the A467 between Nantyglo and Blaina has over 200 plants of *Vicia orobus*. Only five plants occurred on the west side at the top of a wooded slope away from the road. At the same time they reported three longish floriferous verges along the A4046 containing scarce and local vice county plants in large numbers. The plants included *Scabiosa columbaria* (Small Scabious),

Anthyllis vulneraria (Kidney Vetch) (scattered along 0.5 km), *Centaurea scabiosa* (Greater Knapweed), *Knautia arvensis* (Field Scabious), *Poterium sanguisorba* (Salad Burnet) and smaller quantities of *Erigeron acer* (Blue Fleabane), *Torilis nodosa* (Knotted Hedge-parsley), *Poa compressa* (Flattened Meadow-grass), *Geranium pratense* (Meadow Crane's-bill), *Inula conyza* (Ploughman's Spikenard) and *Clinopodium vulgare* (Wild Basil). I am convinced the plants had arrived with human assistance. However, in looking for a parking place I found a fourth site on the eastern verge with a plant of *Vicia orobus*!

Between Caldicot Pill and Rogiet Rifle Range is a most interesting estuary shore site for a range of plants at home in brackish and saline conditions. I have visited this long strip in May or June and then in August or September for a number of years. The May and June visits show the promise of the site but the August and September visits usually offer only extreme disappointment as all the vegetation is so grazed that it is difficult to identify anything. Even *Ononis spinosa* (Spiny Restharrow) is eaten almost to the earth. In one year only, I saw all the clovers, the hundreds of thousands of *Alopecurus bulbosus* (Bulbous Foxtail), *Apium graveolens* (Wild Celery), *Althaea officinalis* (Marsh Mallow), *Ranunculus baudotii* (Brackish Water-crowfoot), *Medicago arabica* (Spotted Medick), *Oenanthe lachenalii* (Parsley Water-dropwort), *Torilis nodosa*, *Lathyrus nissolia* (Grass Vetchling), *Carex extensa*, etc, all in flower - a year there was no grazing.

Brockwell Meadows over Carboniferous Limestone was purchased by Gwent Wildlife Trust and made a SSSI some years ago. This was because of its large display of *Orchis morio* (Green-winged Orchid), *Spiranthes spiralis* (Autumn Lady's-tresses) and a wide range of grasses and plants typical of unimproved calcareous grassland. Meadows so rich that Derek Wells had to be prised out of them at the end of a day's fieldwork. They are also home of the Large Robber Fly (*Asilus crabroniformis*). When I visited the site two years ago I found it heavily grazed by cattle, still accessible to a small herd through open gates, and found very few orchids or any of the flowers that kept Derek so engrossed. When I reported my findings to the Wildlife Trust the reply was there were plenty of Green-winged Orchids at Newgrove meadows and it was managing the Brockwell site to benefit the Robber Fly. Firstly, Ivamectin, a cow drench, is a threat to Robber Flies as the poison sterilizes the droppings so that cow pats remain on the surface, not able to be decomposed by a single living thing, including the fly's larvae. Secondly, the flies have been recorded at many comparatively local fields and as far away as Castle Fields, Abergavenny.

Conservation using grazing on a site is possible if it is a nature reserve but if it is a part of a working farm there are problems which, living in South-east Monmouthshire, brings me to another problem: the growth of the human population with its millions of dog and cat pets. We no longer seem to be able to house our existing population, provide all with food or clean drinking water, health care or energy at prices all can afford. We cannot produce energy in ways that does not damage the balance between living things and their environment, or leave it without a deadly residue that will last indefinitely. Fossil fuels and oil are finite resources and water is beginning to loom-large as an issue due to increasing demand. With so much land being swallowed up by housing estates and all the services that go with them, pressure on the remaining land continues to increase. During my 86 years farmers and land owners have changed so many delightful, wild places largely into monocultures needing maintenance with herbicides, pesticides and fertilizers. They will need to continue with this management to maintain it in future, quite apart from coming under pressure to convert more unimproved land.

Also, look at the increasing numbers of animals and plants becoming extinct every year.

How do we deal with the population crisis? It can't be changed overnight but allowances for only the first two children would be a start reducing to one in time; IVF for a first child only. Provide free condoms or other birth control methods. I repeat we live in a finite world, we have already dangerously increased the proportion of carbon dioxide in the atmosphere since the start of the industrial revolution and particularly in the last hundred years. Unless the world faces the problems now it will destroy itself long before the next millennium. I liked the world as it was 6 decades ago. Sorry!

BSBI Wales Annual General Meeting 2011

49th Welsh AGM & 29th Exhibition Meeting

Friday 12th – Sunday 14th August 2011
Dale Fort Field Centre, Pembrokeshire

Field leaders: Stephen Evans, Jane Warr, Fiona Gomersall and Cath Shellswell.

The AGM will be based in the far west of Pembrokeshire (v.c.45) in the Dale peninsula. The Field Studies Council Centre at Dale Fort dates back to 1856 when it was built to protect the Royal Navy Pembroke Dockyard from the French. It

became a FSC centre in 1947.

Visits will be made to coastal and arable habitats of the peninsula over the 3 days. The intention is to have an optional walk on the coast path or into Dale village on the Friday afternoon and to visit the small inlet of the Gann Estuary on Saturday morning before the AGM. On Sunday the plan is to explore arable fields, view Skomer island from the deer park and if tides and time permit examine a colony of *Rumex rupestris*.

Accommodation at Dale Fort is simple but comfortable, mostly in a mixture of twin and shared bedrooms. Most bedrooms have wash hand basins, with toilet and shower facilities close by. There are a few en suite family rooms. The cost including full board accommodation, use of meetings rooms and the centre's facilities would be about £100. Lunch is a packed lunch which you make yourselves in the morning.

For those who wish to make their own arrangements there are guest houses, B. & B. accommodation, as well as camping and self-catering facilities in the Marloes and Dale areas not too distant from Dale Fort. Because the AGM is being held in August early booking of this alternative accommodation would be essential.

Bookings for the AGM field meetings and for accommodation at Dale Fort should be made to Sarah Stille, The Quillet, Berwyn Street, Llandrillo, Corwen, Denbighshire, LL21 0TH (with SAE please), telephone: 01490 440418 or e-mail: sarah.stille@virgin.net no later than the end of July 2011. Those wishing to stay at Dale Fort will need to indicate whether they are willing to stay in dormitory style rooms.

All details and booking procedures will be circulated later by separate flyer.

BSBI Field Meetings Wales – 2011

Full details and procedure for booking are also available in the BSBI Year Book for 2011.

Saturday 21st May: Carmel Woods, Carmarthenshire, v.c.44
Leader: Jamie Bevan. Situated on a ridge of Carboniferous limestone, Carmel Woods supports a rich ash woodland flora, including populations of *Daphne mezereum*, *Convallaria majalis* and *Paris quadrifolia*. If time allows, there will also be a chance to visit some nearby areas of heathland and raised bog. Meet at Glangwenlais Quarry car park (SN6054.1644) at 10.30 am. Please send bookings (before 30th April) enclosing SAE to:

Jamie Bevan, Countryside Council for Wales, Llys Tawe, Kings Road, Swansea, SA1 8PG. j.bevan@ccw.gov.uk Numbers limited to 15.

Saturday 11th June: Wrexham Industrial Site, Denbighshire, v.c.50. Leader: Delyth Williams. This is an interesting area of flat land around the Afon Clywedog comprising both new and old industrial buildings in a variety of habitats with a variety of natives, archaeophytes and introductions. The gound is uneven, so bring sturdy shoes. Meet at 10.30am and park in front of the 'Calypso' factory at SJ380.492, best approached from Cross Lanes, half way between Marchwiel and Bangor-is-y-Coed on the A525. Turn NE off the A525 and take 1st left back towards Wrexham. Continue until road forks and turn right. At 2nd roundabout, turn right onto road adjacent to factories. 'Calypso' is at the end. There are no public conveniences, but there is a pub nearby. Bookings (with SAE please) to: Mrs D.Williams, Bryn Siriol, Graig Fechan, Ruthin, Denbighshire, LL15 2HA. delyth@siriol.myzen.co.uk

Saturday 25th June: Aberbargoed, v.c.35 (joint meeting with the British Plant Gall Society). Leader Paul Smith. A joint meeting with the British Plant Gall Society to explore two sites near Aberbargoed in the Rhymney Valley. In the morning we will visit Aberbargoed Fields SSSI which is a series of wet meadows with interesting local species such as *Cirsium dissectum* and *Genista anglica* and is also a site for the Marsh Fritillary butterfly. In the afternoon we will go up the side of the valley to Bedwellty churchyard, an extensive graveyard. *Vicia orobus* occurs nearby, and we will try to refind it in the churchyard itself. Waterproof footwear recommended. Meet at 10.30am at the road end in the Bowen Industrial Estate, ST161.991. To book, contact Paul Smith, pa.smith@mypostoffice.co.uk or (with SAE please) 128 Llancayo Street, Bargoed, Mid Glamorgan, CF81 8TP.

Saturday 2nd July: Buttington Wharf, Welshpool, Montgomeryshire, v.c.47 Leader: Kate Thorne. Meet at 10.30am in the small car park by canal with plenty of parking on the side of the nearby road. Turn off the first roundabout (going westwards) at Welshpool, labelled Buttington Cross. SJ24150805, don't cross the canal. We will start at Buttington Wharf on the edge of Welshpool (plenty of parking) to see some stands of *Luronium natans* then move northwards to look at *Hydrocharis morsus-ranae* and pondweeds at Arddleen, and Pondweeds (including *P.compressus* and *friesii*) at the Vrynwy aqueduct. If there is time and interest we could finish at Melverley SJ336181 to look at a willow bed (includes *Salix purpurea, Salix triandra* and some hybrids that need updating). Waterproof footwear recommended. Bookings (with SAE please) to: Dr.A.K.Thorne, Churton House, Church Pulverbatch,

Shropshire, SY5 8BZ
k.thorne@btinternet.com

Saturday 9th – Saturday 16th July: Glynhir recording week, Carmarthenshire, vc 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 Mansion 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 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* although one large tree was lost in a summer gale last year. 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 evening identification and discussion sessions. The cost of the week from lunchtime on 9th to breakfast on 16th, including full board and packed lunches, will be around £450.00. Resident participants will be limited to about 15. 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 July: Foel y Mwnt, Cardiganshire (v.c. 46) Leader: Andy Jones (Countryside Council for Wales) Meet at 10.30 am in the car park by Mwnt Church SN195520. "The many coastal variants, often of an Atlantic distribution, that are found along the cliff slopes make this general habitat one of the most interesting in the county from the point of view of genetic variation and conservation" (A.O. Chater, *Flora of Cardiganshire*). Foel y Mwnt is "the outstanding site" for these variants and this is an opportunity to see many of them and perhaps make further discoveries. If suitable, the nearby arable fields may provide further attractions in the afternoon. Stout footwear advised. Please send bookings to a.jones@ccw.gov.uk or (with SAE please) to R.A. Jones, Countryside Council for Wales, WAG Building, Rhodfa Padarn, Aberystwyth, Ceredigion, SY23 3UR

Friday 12th – Sunday 14th August: Welsh AGM and Exhibition Meeting with associated field meetings. Dale Fort Field Centre, Pembrokeshire. [See Outline Programme, page 6].

Saturday 20th August: Crigyll Estuary and the Tywyn Trewan dunes, near Rhosneigr, Anglesey, v.c.52. Leaders: I. & J. Rees. Meet at 11am in the lay-by on the bend in the road just west of the Golf Club at SH324739. It is also possible to drive down a rough track to nearer the edge of the estuary and park at about SH323742 if there is not sufficient room in the layby. If people want to come by train, Rhosneigr Station is only about 600 m from the track down to the estuary. However, only some of the trains on this line stop by request. The aim of the meeting will be to look at the maritime flora of the sandy saltmarshes, including several *Limonium* taxa and *Frankenia laevis*. In the dune slacks there should be *Gentianella* of differing colours and *Spiranthes spiralis*. It is normally easy walking. Please send bookings (with SAE please) to: Mr. I.Rees, Carreg y Gad, Llanfairpwll, Anglesey, LL61 5JH. ivorerees@hotmail.com

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Abstracts of Exhibits shown at the 28th BSBI Welsh Exhibition Meeting, Anglesey 2010

Anglesey's Sandy Shores: 1. Sand Dunes 2. Sandy Beaches

ANGLESEY COUNTY COUNCIL
Isle of Anglesey County Council, Council Offices, Llangefni, Anglesey, LL77 7TW.
and
THE COUNTRYSIDE COUNCIL FOR WALES
Maes-y-Ffynnon, Penrhosgarnedd, Bangor, Gwynedd, LL57 2DW.

An exhibit of posters including postcards, identification guide, etc.

Starved Wood-sedge (*Carex depauperata*): Time for a comeback?

RICHARD BIRCH & KATHRYN BIRCH, 102 Nant-y-felin, Pentraeth, Anglesey, LL75 8YA.
k.birch@ccw.gov.uk
and
IAN BONNER, Cae Trefor, Tyn y Gongl, Anglesey, LL74 8SD.
bonnerx2@btinternet.com

Anglesey Rare Plant Register Summary Tables

IAN BONNER, Cae Trefor, Tyn y Gongl, Anglesey, LL74 8SD.

bonnerx2@btinternet.com

These tables, updated from the 2006 published Register, listed taxa in the International, National and Locally Rare & Scarce categories, also those taxa considered Extinct or Possibly/ Probably Extinct.

Horsetail hybrid at Llyn Penrhyn: *Equisetum* x *trachyodon* or *E.* x *meridionale*?

IAN BONNER, Cae Trefor, Tyn y Gongl, Anglesey, LL74 8SD.
bonnerx2@btinternet.com

A living plant of the hybrid horsetail was accompanied by an extract from Welsh Plant Records from *BSBI Welsh Bulletin* **70**: Summer 2002: *Equisetum* x *trachyodon* (*E. hyemale* x *E. variegatum*) Mackay's Horsetail. Several hundred stems on the road verge near Llyn Penrhyn, SH313.765, N.Brown, det. CN Page & A Paul, 2000. 1st record for Anglesey and Wales.

Also an extract from the *New Flora of the British Isles* (Third Edition) by Clive Stace: *Equisetum* x *meridionale* (*E. ramosossimum* x *E. variegatum*) identified from plants found in 2000 on Anglesey and first determined as *E.* x *trachydon*. 1st record for Britain.

Accompanying notes from Pat Acock and Fred Rumsey gave further information about its re-determination by Marcus Lubienski and publication in *Nova Hedwigia* **90**:321-341.

Juncus capitatus (Dwarf Rush) Corfrwynen: a summary of Anglesey records

IAN BONNER, Cae Trefor, Tyn y Gongl, Anglesey, LL74 8SD.
bonnerx2@btinternet.com

Alongside a specimen of this diminutive plant (headed in case you missed it – here it is!) was a chronological list of records from 1918 (its first discovery) to date and extracts from various notes showing how much had been written about such a small plant.

The 'Waitrose Broomrape' (*Orobanche hederae?*)

JOHN BRATTON

A single broomrape spike from a small patch of grass beside the Menai Bridge supermarket carpark, SH55487182. There was no obvious host to aid its identification. As it was found snapped shortly before the AGM, the specimen was displayed for identification. The opinions given were all *O. hederae.* Ivy grows nearby.

Landoltia punctata (Lemnaceae) takes another step

JOHN BRATTON

An exhibit of live *Landoltia* (= *Spirodela*) *punctata*, plus text from *BSBI News* **113**, January 2010.

Ranunculus circinatus and *Elodea nutallii* in flower

JOHN BRATTON

Collected during the AGM weekend from a nearby un-named lake at SH303764.

Carex digitata (Fingered Sedge)

PAM HILL, Gwynfryn, Colley Way, Reigate, Surrey, RH2 9JH.

Derek Alfred Wheeler Hill BSc, PhD, CChem, FRCS, FLS 4th February 1925 – 22nd December 2009

PAM HILL, Gwynfryn, Colley Way, Reigate, Surrey, RH2 9JH.

Obituary notice from *Field Bryology* **101**: May 2010.

Mentha raquienii (Corsican Mint) in VC50 Denbighshire

JEAN GREEN, 3 Karen Court, Denbigh, LL16 4RB. J.green456@btinternet.com

Plantago major subsp. *intermedia* (Greater Plantain) in VC50 Denbighshire

JEAN GREEN, 3 Karen Court, Denbigh, LL16 4RB. J.green456@btinternet.com

Sample pages from the forthcoming Cardiganshire Flora

ARTHUR CHATER, Windover, Penyrangor, Aberystwyth, Ceredigion, SY23 1BJ. aochater@nildram.co.uk

An exhibit of sample pages from this monumental work, the product of the author's lifetime's experience, research into, and intimate knowledge of the Cardiganshire flora, which was subsequently published in July 2010.

COFNOD: the North Wales Local Biological Record Centre

COFNOD, Intec, Ffordd y Parc, Parc Menai, Bangor, Gwynedd. LL57 4FG.

An exhibit showing the services offered by the Local Record Centre (LRC). COFNOD forms part of the first national network of LRCs anywhere in the UK. Its task is to bring together all the individual biological records from North Wales into a centralised database. This allows us to

have better knowledge of the environment in which we live. Its objectives are to provide:

- high quality biodiversity and geodiversity information
- support for wildlife recorders and environmental professionals
- mechanisms to help make better environmental decisions

Found in VC50 Denbighshire: *Ophrys insectifera* (Fly Orchid)

DELYTH WILLIAMS, Bryn Siriol, Graig Fechan, Ruthin, Denbighshire, LL15 2HA.
delyth@siriol.myzen.co.uk

An exhibit describing the finding of *Ophrys insectifera* in Denbighshire.
See full article on page 14 of this bulletin.

Baldellia ranunculoides subsp. *repens* (Lesser Water-plantain) in Wales

ANDY JONES, Countryside Council for Wales, Welsh Assembly Building, Rhodfa Padarn, Llanbadarn Fawr, Aberystwyth, Ceredigion, SY23 3UR.
A.Jones@ccw.gov.uk

Specimens of the widespread *B. ranunculoides* subsp. *ranunculoides* and apparently rare subsp. *repens* (newly recognised in Stace edn. 3) were accompanied by a plant of *Luronium natans*, for comparison. A table of key characters and copies of the recent papers by Jones (Creeping Water-plantain (Dyfr lyriad ymlusgawl), *Baldellia ranunculoides* subsp. *repens* (Lam.) A. Love & D. Love in Wales. in Botanical Links in the Atlantic Arc, BSBI Conference Report no.24 (2006): 311-319 and Kozlowski et al (Biological Flora of Central Europe: *Baldellia ranunculoides* (Alismataceae) Perspectives in Plant Ecology, Evolution and Systematics (2008) **10**: 109–142) were also available, with directions where to find the rare subspecies – so far only known from NW Anglesey and southern Ireland – and its hybrid with subsp. *ranunculoides*, in north Pembrokeshire.

Monitoring *Melittis melissophyllum* (Bastard Balm) in VC44 Carmarthenshire

KATH & RICHARD PRYCE, Trevethin, School Road, Pwll, Llanelli, Carmarthenshire, SA15 4AL.
PryceEco@aol.com

See full article on page 23 of this bulletin.

Yellow crucifers

JOHN HUGHES

BSBI Prospectus and Annual Review 2009

Dr KEVIN WALKER, BSBI Director of Research and Development

Brackish/salt-water plants, including *Zostera* and *Ruppia*

IVOR REES

Natur Cymru

JAMES ROBERTSON, Natur Cymru Ltd, Maes y ffynnon, Penrhosgarnedd, Bangor, Gwynedd, LL57 2DW.

A display and back numbers of the bilingual Welsh wildlife conservation magazine

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EXHIBIT ARTICLE

With a little help from my friends.....

DELYTH WILLIAMS, *Vice-county recorder vc50 Denbighshire.*
delyth@siriol.myzen.co.uk

It was the recent re-discovery of the Ghost Orchid that started all this. Not recorded in Britain since 1986, it was thought to be extinct (and there is current discussion about the accurate usage of this word, some suggesting alternative 'states of extinction').

This seems to have prompted my local CCW Officer, Dr. John Osley, to suggest that 'we ought to be looking for *Ophrys insectifera* (Fly Orchid), thought to have been last seen in Coed Abergele in 2001. The only other records for vc50 Denbighshire are for 'N. Denbighshire' in c.1900, in Llanddulas in 1938 and of a single plant in Bryngwenallt, Abergele in May 1966. That site is now a housing estate.

Both logic and evidence suggest strength in numbers when it comes to searching and recording, so 6th June 2010 was set as the day for the Denbighshire Group to re-visit the site of an unconfirmed record of *Ophrys insectifera* in Coed Abergele.

I consider myself both fortunate and privileged to have inherited the Group from my predecessor, Jean Green. There is now a contact list of about fifty enthusiasts. Fortunately, not all turn up at once! They range from beginners to experts and comprise amateurs and professionals from near and far. We are continuing with Jean's annual programme of monthly walks throughout the season, on Sundays at 2pm. Anyone and everyone is welcome. All they need is to be interested in plants. Experts help learners and they all help me add to my records. Some contributors are professionals seeking to improve their plant identification skills, many are keen and enthusiastic members of the

BSBI, the Wildlife Trust or the U3A.

I am indebted to their contributions, without them, there is no way in which I could collect such a quantity of records in an afternoon. But it is not only for the purpose of quantity that the Group is so valuable. On the day in question we searched the site of the previous record to no avail. However, continuing to record elsewhere in the wood, about 500m away a single specimen of *Ophrys insectifera* was spotted by Peter L. Thomas (see image on front cover). Small, slender, under hazel and hawthorn, and even though it was at the edge of a small pathway, it could so easily have been overlooked. Much jubilation all round and congratulations to Peter! We were also able to confirm old records of *Symphytum tuberosum* (Tuberous Comfrey), *Platanthera chlorantha* (Greater Butterfly-orchid and *Lithospermum officinale* (Common Gromwell).

There is another example of the success of the Group: in July 2009, a national BSBI field meeting was recording in the Alyn Waters Country Park. Two local enthusiasts, Kipper Davies and John Lawton Roberts had previously suspected that an atypical stand of *Epipactis helleborine* (Broad-leaved Helleborine), could possibly be *Epipactis phyllanthes* (Green-flowered Hellebore) (see image 1 on inside front cover). Much discussion ensued at the time, but the matter was unresolved that season.

Meanwhile, with the Denbighshire Group in August 2010 in Marford Quarry, we came across more of these unusual-looking orchids. Originally spotted by Peter Williams and fellow members of the local Wildlife Trust, more discussion ensued. I decided to resolve the matter and sent photographs and the appropriate parts of plants from both sites to the BSBI Referee. Prof. John Richards confirmed immediately that both sites contain two varieties of Green-flowered Helleborine, namely *Epipactis phyllanthes var. degenera* and *Epipactis phyllanthes var. phyllanthes*. These are first records for vc50 and we all felt pretty special ones at that! On that day we also recorded *Paeonia officinalis* (Garden Peony) as a first record for the vice-county, as well as *Myriophyllum aquaticum* (Parrot's-feathers), *Tellima grandiflora* (Fringecups), *Crassula helmsii* (New Zealand Pigmyweed) and *Carex divulsa subsp. leersii* respectively as 3rd records for the vice-county.

So this article is really to pay tribute to the volunteer enthusiasts whose contributions are so valued. A heartfelt thank you to you all and please come back next year; the Programme will be coming out soon!

If anyone reading this would like to take part in or find out more about the Denbighshire Group and our programme, please get in touch.

The spread of *Rorippa islandica* (Northern Yellowcress) in Carmarthenshire.

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Rorippa islandica (Oeder ex Murray) Borbas, in the past, was included with *Rorippa palustris* (L.) Besser (Marsh Yellowcress) under one taxon "*Rorippa islandica*". This has caused, and still causes considerable confusion amongst field recorders, especially as both are known to occur together although rather rarely. *R. islandica* was first described as distinct from *R. palustris* in 1968 when Bengt Jonsell clarified the situation in his paper on the genus *Rorippa*. Both species are described in detail by Tim Rich in the *BSBI Crucifer Handbook* (Rich, 1991).

Both are 'yellow crucifers' having small flowers with petals about the same length as the sepals (although added confusion has been introduced by the statement in the *Handbook* that the petals are twice as long as the sepals, a typographical error which was subsequently corrected by the issue of a corrigenda slip). *R. islandica* plants are not usually more than 30cm tall (up to double this in *R. palustris*) and are often prostrate or decumbent although may be ascending with near horizontal branching, whereas *R. palustris* is usually more or less erect. At least as far as plants in West Wales are concerned, the characteristic 'jizz' feature is that the seed capsules are invariably secund, ie they are confined to one side of the stem and 'droop' downwards giving the whole a one-sided appearance (see image 5 on back cover). However, drawings of plants shown in the *Handbook* and many other descriptions do not show or mention this feature. The seed ornamentation provides the only definite diagnostic morphological feature, otherwise a chromosome count is necessary with *R. islandica* being 2n=16 and *R. palustris* 2n=32. A detailed description of the two taxa (as well as a wealth of ecological and distributional information) is given in Chater and Rich (1995) and illustrations of the seed ornamentation are given in the recently published *Flora of Cardiganshire* by Arthur Chater (Chater, 2010, p.481).

David Pearman in *The New Atlas of the British and Irish Flora* (Preston *et al*, 2002) states that *R. islandica* is an "annual or short-lived perennial herb found in open, muddy habitats such as lake, pond and pool margins, ditch banks, depressions in pasture, in turloughs and rarely on rocks by rivers. There are also records from waste ground and tips."

Rorippa islandica occurs in Greenland and Iceland as well as parts of north-west Europe, eastwards across Siberia, and records from the British Isles before about 1990 (since determined

from herbarium specimens) are limited to the Isle of Man, a few sites in Scotland and rather more in Ireland with a few sites in West Wales (see map on back cover). It was first collected in Cardiganshire from rocks by the Teifi at Cenarth (SN268415) by D.E. de Vere in 1958 but not determined until 1993 by Tim Rich. A second Cardiganshire site was recorded in 1979 when the species was found in a pool on the Teifi flood-plain at Abermachnog (SN37484026). Currently, in Cardiganshire, about a dozen sites are known along the Teifi and another four further north in the county.

Material collected from Carmarthenshire during the 1980s was also examined by Tim Rich in 1993 and three specimens proved to be *R. islandica*:

- From a shoal on the River Bran by Pont Rhyd Owen, north-east of Llandovery (SN 783 362) (R.D. Pryce, 11/9/1981);
- Pwll rubbish tip, Llanelli (SN486007) (I.K. Morgan, August 1982): Tim Rich's comment was 'probably this'; and
- Cwm Mynys Isaf, N.E. of Llanwrda (SN726340) (H.J. Killick, 4/8/1986).

Ian Morgan has recently let me have sight of his diary entry for 14th July 1983 which documents his discovery of *R. islandica* on the right bank of the River Tywi near Llanwrda Station (c.SN713306), this, of course making a fourth record for the 1980s. The species was again recorded here in September 2003 by Steve Chambers.

Until 2010, there were only two records from Pembrokeshire. The first, of about 20 plants growing (unusually) with *R. palustris* on the bed of the old canal east of Llechryd Bridge (SN223435), was made in 1993 when Tim Rich and Arthur Chater were researching their 1995 paper. The species was not seen again in the county until 2003 when Viv & Tony Lewis recorded it from a pond margin at St David's Airfield (SM781255), but 2010 has witnessed two additional sites: one plant in a bare, damp yard at Jordanston Mountain (SN089035) (Matt Sutton) and hundreds of plants found at the disused Grove Colliery at Stepaside (SN139071) by Julian Woodman.

In Glamorgan, the only substantiated 'early' record was made by Gwynn Ellis in 1981 from Garnswllt in the Loughor valley south of Ammanford, very close to the Carmarthenshire boundary (SN621101), again determined from material in NMW by Tim Rich in 1993. But there were no further Glamorgan records until Julian Woodman's from Cwm Risca, near Tondu (SS8784) in 1996, and then several more scattered over the south-eastern part of the county recorded by Julian Woodman since 2002 (Cardiff and Dinas Powis) and Barry Stewart since 2006 (mostly in the Swansea area).

In Breconshire, Mike Porter reports only three sites, all from trackways or waste-ground, although one is near the Afon Twrch, close to the Carmarthenshire boundary.

During the 1990s a further 15 records were made in Carmarthenshire and between 2000 and 2010 this increased by a further 86 making a total to date of 105 (see figures 1 - 3 on page 19). Similar to the first Cardiganshire record where the species was found growing on a rocky river bank, two of the four Carms. records from the 1980s were also from riparian habitats, albeit banks of river shingle; the other two were from ruderal and trackside habitats. During the 1990s, of the records for which habitats were recorded, only half (7 records) were from habitats associated with rivers, with the remainder from gravelly substrates in farmyards, quarries, etc. During the 2000 to 2010 decade, however, this proportion had dropped to only a quarter (21 records) with the majority of records now coming from gravelly farmyards, other gravelly and rocky substrates and ruderal sites, eg gravel-surfaced car-parks, builder's yards, quarry benches, etc, accounting for another 60. What is striking is the abundance of the species at several of these gravelly sites, in particular, in some limestone quarries such as at Pant-y-Castell, near Maesybont (SN572157), where several thousand plants were present on 23rd July 2008 when even Bengt Jonsell, whom we were privileged to have staying with us for a few days during the annual Carmarthenshire Glynhir Recording Week, was surprised by the sheer number and large size of the plants. A similar abundance was recorded in the farmyard of Maes Llydan House (SN776354) in the Bran valley north of Llandovery on 5th July 2004 (K.A. & R.D. Pryce).

Rorippa islandica has now spread to two-thirds of the hectads within the county (28 out of 42) which poses the question as to how it so efficiently disperses its seeds. Chater & Rich (1995) speculated that it first arrived in this country as seed transported by migrating White-fronted Geese from Greenland via Iceland. However, no plants were recorded from the Tywi in Carmarthenshire where the geese also wintered until the late 1970s. Geese must therefore be ruled-out as a vector for the spread of *R. islandica* in Carms. in the 1980s and 1990s, although other wildfowl could be a cause, especially with the increasing flocks of Canada Geese and Grey-lag Geese in the area. Matt Sutton, the recorder of one of the recent Pembrokeshire records, surmises that its arrival at his property in Pembs; must have been the result of transport on botanists' shoes! However, I tentatively conclude that the most likely cause of the remarkably rapid dispersal in Carmarthenshire must surely be on vehicle tyres, particularly farmers', with the *R. islandica* populations at the Carmarthen Mart site and Three

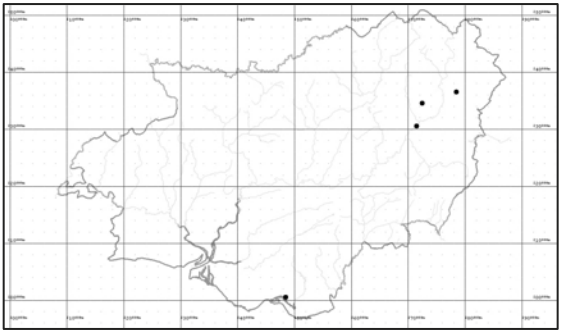

Figure 1. All Carmarthenshire records of *Rorippa islandica* from the first record in 1981 to 1990.

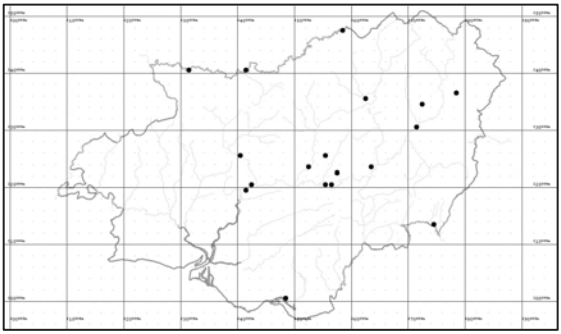

Figure 2. All Carmarthenshire records of *Rorippa islandica* from 1981 to 2000.

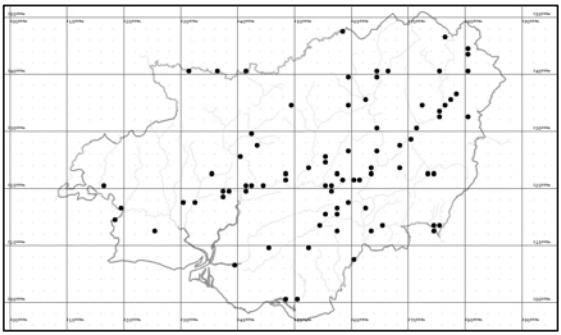

Figure 3. All Carmarthenshire records of *Rorippa islandica* from 1981 to 2010.

Counties Showground being the possible sources for widespread distribution.

There is evidence that its spread is starting to increase in neighbouring counties (this certainly seems to be the case in West Glamorgan) so will the recent rapid and widespread dispersal experienced throughout Carmarthenshire, be repeated elsewhere, ultimately extending much further afield? It is certainly worth noting the habitat of any newly discovered sites for the species as if the Carmarthenshire experience is repeated, it seems likely to increasingly become a ruderal plant.

I would like to thank Arthur Chater for helpful comments on the draft of this paper, to neighbouring Vice County Recorders, Arthur Chater, Stephen Evans, Mike Porter, Barry Stewart and

Julian Woodman for letting me have details of recent records, and to Ian Morgan for bringing his early Llanwrda record to my attention.

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Notes on Rare Plant Fluctuation and Management at Stanner Rocks NNR

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Measuring threat and rarity is much harder for plants than it is for animals, because of their great range of reproductive strategies, little-understood powers of dispersal and (especially) capacity for dormancy under unfavourable conditions. The discovery of Ghost Orchid (*Epipogium aphyllum*) in 2009 after a gap of 23 years shows the risks of announcing plant extinctions – and, also, the significance of local weather conditions. At Stanner Rocks National Nature Reserve in Radnorshire, v.c. 43, the populations of Perennial Knawel (*Scleranthus perennis* subsp. *perennis*) (see image 3 on inside back cover) and Upright Clover (*Trifolium strictum*) are both highly erratic and, at times, dwindle to near nothing or even disappear, only to resurface later (sometimes in excess of earlier abundance). The challenge, from a conservation standpoint, is to interpret these patterns and to assess the relative contributions of climate and management etc. After 20 years of careful measurement by Andrew Ferguson (NNR Warden), his predecessors and assistants, we now have comprehensive data on the distribution and abundance of both species, with information on associated environmental conditions, although these still await detailed analysis. There are, however, at least two preliminary conclusions.

The first observation is that *S. perennis*

and *T. strictum* – and several other annual and short-lived plants at Stanner, such as Upright Chickweed (*Moenchia erecta*), Shepherd's Cress (*Teesdalia nudicaulis*), and Hare's-foot Clover (*Teesdalia arvense*) – respond positively to moderate soil disturbance (creating c.10% bare ground) for germination and seedling establishment. This might seem fairly obvious but it takes a great deal of confidence to intervene in the life-cycles of such small populations of rare plants. When detailed monitoring began at Stanner the habitat was largely dominated by tussocky Sheep's Fescue (*Festuca ovina*), with *S. perennis* and *T. strictum* only found very erratically, in patches of thin, shallow soil. Andrew Ferguson started by turning over small areas of soil where the rare plants had previously occurred and cropping back grass tussocks around their core habitat (in true mid-Wales fashion he used a pair of sheep shears).

The initial results gave enough encouragement, with old localities for *T. strictum* regenerating in the first year and the appearance of *S. perennis* where it had not been seen before, that disturbance – soon to include sheep grazing – was extended to the whole site. It now seems clear that both species have long-term seed viability (10-20 years, plus) and, most likely, range-expansion in *S. perennis* is the result of dispersal into new habitat – though it is not possible to exclude regeneration of long-dormant seed.

But the other early finding is that even this restored habitat is too limited for practical management of rare plants. The site at Stanner is almost certainly a remnant of more extensive south-facing outcrops, lost to quarrying in the last century (historic photos would be invaluable) and the rare plant populations are now very isolated. There is just not enough habitat left to explore the effects of management (let alone climate change) here on seed dispersal, dormancy and population dynamics. Additionally, these very small and restricted populations remain highly vulnerable to accident and chance.

As a result, Andrew Ferguson has argued for the establishment of further *T. strictum* and *S. perennis* populations, ideally in patches of similar habitat near to their existing site. Given their relative isolation, however, this would need translocations (or assisted dispersal) and, in turn, a large supply of seed. To this end, small (c.1 cm) vegetative cuttings were collected from all the sufficiently large *S. perennis* plants in 2007, when the population had a relatively good year. These, in turn, produced 21 rooted plants and, over the next two years, at least 9,000 seeds. In addition to his other valuable contributions to the project, the Countryside Council for Wales has to acknowledge here the extraordinary horticultural skills of Andy Shaw of Builth Wells.

Following a delay for renewed licence-approval and for cutting back perennial vegetation, the *S. perennis* seed was introduced in August 2010, into two apparently suitable sites, at the far end of the quarry and on a disused quarry bench (see image 4 on inside back cover). It is too soon to report on the preferred habitat and general success rate etc. but there is already evidence of seedling establishment in parts of both trial sites. The two colonies – and the parent population – will be monitored regularly, with further publication of the results.

But perhaps the most interesting development at this stage is a new addition to the species list. It has already been observed that rare annual and short-lived plants at Stanner are highly localised in one remnant outcrop but it now seems that recent management and / or climatic conditions have revealed yet another denizen. When he brought over his containers of *S. perennis* seed for the introduction, Andy Shaw also took a look at the parent site … and discovered over 40 flowering plants of Toadflax-leaved St. John's-wort (*Hypericum linariifolium*) or its hybrid with Trailing St. John's-wort (*H. humifusum*), as subsequently determined by the BSBI Referee for Clusiaceae, Dr N.K. Robson. This is one of the most important recent finds at Stanner, not least because the *Scleranthus* outcrop (as we may call it) must be one of the most carefully-botanised places on Earth. There is a strong possibility that such a large population of *H. linariifolium* or its hybrid, would have been noticed at Stanner had it occurred previously almost any time in the past 30 years – and perhaps in the last half century. This likely absence and sudden appearance indicates substantial seed-dormancy and, most likely, a response to recent management.

But there could be other factors here too. The very even-aged population seems to reflect a particular seedling or germination event and their wide distribution across the site suggests something more than the history of local disturbance. This sudden flush of plants, especially outside areas of recent management, may well be a response to recent weather events – perhaps most notably the dry summer of 2009 and very cold winter of 2009-10. Certainly, the survival of some annuals like *T. strictum* can be mapped onto rainfall and temperature, and growth in biennial or short-lived perennial species such as (*Scleranthus perennis* and *H. linariifolium*) will almost certainly reflect longer-term weather patterns. Ray Woods (pers. comm.) has noted the likely significance of mollusc-grazing at Stanner and this could well be influenced by just such a sequence of dry summers and very cold winters. Ultimately, the factors affecting the survival of plants are perhaps just as numerous as the plant strategies themselves, but we can certainly learn

a lot from trying to disentangle them. In particular, the performance of rare plants in historic refuge-sites like Stanner Rocks (as well as Craig Breidden, Cwm Idwal, the north and south Wales coastal limestone, etc.) could tell us – with some understanding of their ecology – a great deal about climate change. There is a real need for more experimental management of these species and habitats, as in this work on *S. perennis* at Stanner … and also, perhaps, for more automatic weather-monitoring equipment, to help interpret these very complex patterns.

EXHIBIT ARTICLE

Monitoring *Melittis melissophyllum* (Bastard Balm) in Carmarthenshire

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(Summary of a poster exhibited at the BSBI Welsh AGM & Exhibition Meeting, Anglesey, June 2010)

In England, *Melittis melissophyllum* occurs in Sussex, the New Forest, Devon and Cornwall. The entry in the New Atlas reads:

> *A strong-smelling perennial herb of woodland, wood-borders, hedge banks and scrub on base-rich soils. In the New Forest (S. Hants.), it is a plant of ancient woodland. It favours light shade and can be abundant in cleared or coppiced woodland. It is intolerant of grazing. Lowland.*
>
> *Native (change -0.47). The distribution of* M. melissophyllum *in Devon and Cornwall is apparently stable. However, it has declined markedly in the New Forest and Dorset over the past twenty years as a result of overshading and pony grazing, although at some sites it has reappeared after scrub clearance and coppicing.*
>
> *European Temperate element.*
>
> *References: Atlas (246a), Brewis* et al. *(1996), Kay & John (1995), Meusel* et al. *(1978), Stewart* et al. *(1994).*
>
> *K. WALKER*

In Wales, the species is almost confined to Pembrokeshire where it occurs in thirteen Wells Sites, spread over nine 10km squares (Evans, S.B. (2009). *Pembrokeshire Rare Plant Register* (draft)). However, there is one extant site just over the border in Carmarthenshire, in Cwm Cych (SN23).

In Carmarthenshire there are four records of *Melittis* (see image 2 on inside front cover), all from the

extreme north-west of the county:

1. Gelli Gatti woods, SN24: D. James, 1947 (Hyde & Wade, 1957). [a search in summer 1990 by I.K. Morgan found none, road improvements having probably obliterated it].

2. "Shady road bank bordering Gelli Garth Wood near Newcastle Emlyn, SN24. D. James, 1948. Specimens in Kew and NMW" (Welsh Plant Records, Carms. In: BSBI Welsh Bull. No. 39 suppl., p. 12).
[1 & 2 may refer to the same site].

3. Below Bryn Blair, SN24. Mrs I. Murray, 1948 (Hyde & Wade, 1957).

4. "Shaded laneside bank, Cwm Cych" SN23. I.K.Morgan, 1993 (Welsh Plant Records, Carms. In: BSBI Welsh Bull. No. 61, p. 20).

Cwm Cych is the only extant site and was first reported by Ian Morgan in 1993.

The record of a visit to the site made in 2003 by Stephen Evans, BSBI Vice-County Recorder for Pembrokeshire, reads:

> Between Cwm and Cnwc, Glan Cych
> Grid Ref: 22/26388 38422
> Date: 12/6/2003
> *Melittis melissophyllum*: 4 flowering shoots from a single plant in a 30cm x 30cm patch on a cut-rock roadside bank under dense shade of oak and ash canopy. It was 1m up the 2m high vertical rock bank alongside the tarmac on the NW side of the minor road. The plant is 72 paces up the steep road from a plastic reflector post that marks the spot where a roadside gutter enters a roadside drain and 20 paces down from the bottom part of a pull-in/passing place on the opposite side of the road to the plant. It was interesting to see it growing out of such a solid rock bank.

Since this first detailed record, RDP and KAP have visited the site, in 2005, 2006 and 2010, when the population has consisted of

- two plants in 2005 (plants 1 & 3),
- the same two plants in 2006 and
- three plants in 2010, (plants 2, 3, and a new plant, 4).

Plants, when not in flower, are surprisingly difficult to pick out from the rest of the vegetation community so others may have been overlooked, although we're sure that Plant 1 was not missed in 2010.

Plant 1
Grid Ref: 22/26388 38422
Date: 30/4/2005
One plant of *Melittis melisophyllum*, 5 shoots, not yet in flower, on roadside vertical c2m high rock-cutting on N side of road on steep hill under light shade of *Crataegus, Quercus, Fraxinus* and *Corylus*.
This is the same plant described by S.B.Evans on 12th June 2003.

Plant 2
Grid Ref: 22/26397 38416

Date: 5/6/2010
Single non-flowering plant comprising of five shoots, c.15cm tall, about half-way up shady vegetated vertical rock cutting, clothed with dominant *Hedera helix* under *Corylus* and *Crataegus*: less shady than Plant 3. Located on N side of lane c.9m NW of Plant 2. This plant found only in 2010.

Plant 3
Grid Ref: 22/26405 38412
Date: 5/6/2010
One plant with two stems c.30cm tall, one of which had two flower buds. On shaded vertical vegetated rock cutting under *Crataegus, Corylus, Fraxinus* and *Prunus spinosa*. Located on N side of lane about half-way up cutting, 1.5m NW of Plant 4 and c.9m SE of Plant 2 (c.22 paces downhill from western gatepost of gateway in small layby on S side of lane). This plant was seen in both 2006 and 2010 but not in 2005; it had two shoots on both occasions and was flowering or about to flower.

Plant 4
Grid Ref: 22/26407 38411
Date: 5/6/2010
Single plant comprising of one non-flowering shoot c.20cm tall near foot of shady vegetated vertical rock cutting under *Crataegus, Corylus, Fraxinus* and *Prunus spinosa*. *Hedera helix* dominates vegetation cover of cutting above *Melittis* plant. Located on N side of lane about, 1.5m SE of Plant 3 and 22 paces downhill from western gatepost of gateway in small layby on S side of lane. This plant found only in 2010.

Associate Species
The list below is a collation of all species growing on the vegetated rock cutting within an approximate 2m quadrat centred on each of the four plants.

Acer pseudoplatanus
Alliaria petiolata
Arum maculatum
Asplenium adiantum-nigrum
A. trichomanes ssp. *quadrivalens*
A. trichomanes
Athyrium filix-femina
Corylus avellana
Crataegus monogyna
Deschampsia cespitosa
Digitalis purpurea
Dryopteris dilatata
D. filix-mas
Filipendula ulmaria
Fraxinus excelsior
Galium aparine
Geranium robertianum
Hedera helix
Hyacinthoides non-scripta
Ilex aquifolium
Lapsana communis
Lonicera periclymenum
Mercurialis perennis
Phyllitis scolopendrium
Poa trivialis
Potentilla sterilis
Prunus spinosa
Quercus robur
Ranunculus ficaria subsp. *ficaria*
Rosa arvensis
Rubus fruticosus agg.
Rumex sanguineus

Silene dioica
Stachys sylvatica
Stellaria holostea
Taraxacum aggregate
Teucrium scorodonia
Umbilicus rupestris

Although the site is in a lane cutting, the habitat can be considered as a narrow strip of woodland. *Fraxinus* is the dominant canopy tree with frequent *Corylus* and *Crataegus* in the shrub layer. The field layer includes calcicolous species such as *Mercurialis* and *Phyllitis* which would indicate that the best-fit NVC community is the W8 *Fraxinus excelsior - Acer campestre - Mercurialis perennis* woodland.

It is notable that on RDP's & KAP's first visit to the site on 30th April 2005, the *Melittis* plants were in tight bud indicating perhaps a further two weeks before flowers would be fully open. This compares with the visit on 5th June 2010 (following the coldest winter temperatures for many years) when the only plant apparently about to flower (Plant 3) was in a similar stage of growth. In contrast, two plants were in full flower and a few flowers were past their best on 11th June 2006.

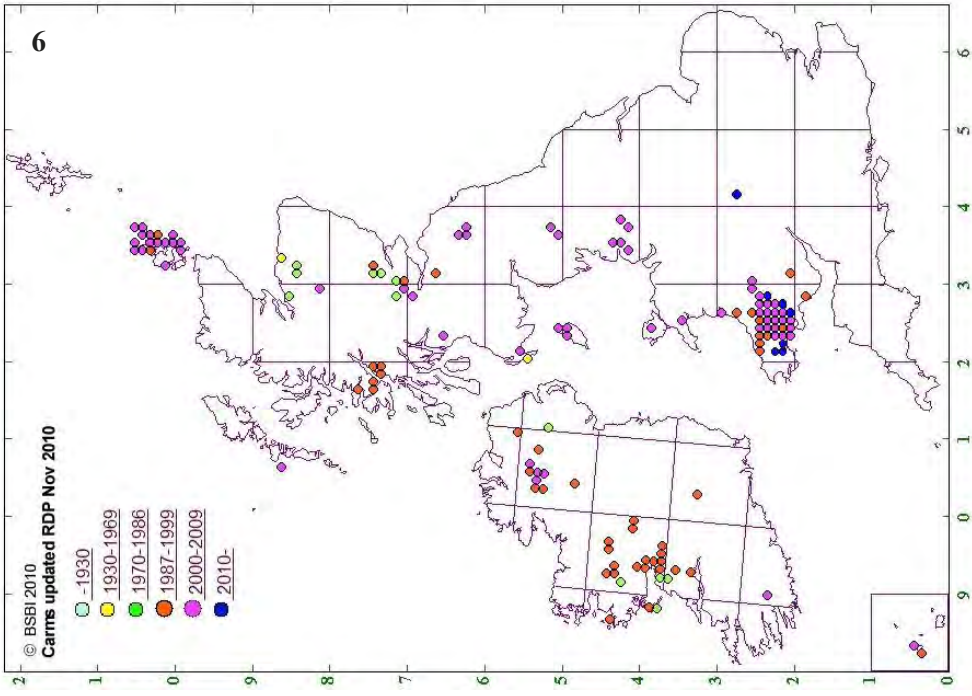
Images on opposite page :
3 : *Scleranthus perennis* subsp. *perennis* at Stanner Rocks NNR, v.c.43. (see page 20). © A.G.Shaw
4 : Andy Jones & Andrew Fergusson at the introduction site for *Scleranthus perennis* subsp. *perennis* at Stanner Rocks NNR, v.c.43. (see page 22). © A.G.Shaw

Back Cover images :
5 : Robust plant of *Rorippa islandica* (Oeder ex Murray) Borbas showing characteristic right-angled branching and secund siliquae "drooping" to one side of the stem. One of thousands of plants growing on the floor of Pant-y-Castell Quarry, Maesybont (SN572157), 23rd July 2008. (see page 16). © R.D. Pryce.
6 : Current national distribution of *Rorippa islandica* (Oeder ex Murray) Borbas from the BSBI Maps Scheme, showing early records in Scotland, Ireland and the Isle of Man (yellow and green dots); source: BSBI web site updated by RDP to include latest records in Carmarthenshire (see page 17).

3

4


5


6
© BSBI 2010
Carms updated RDP Nov 2010
-1930
1930-1969
1970-1986
1987-1999
2000-2009
2010-