BSBI Recorder

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Newsletter for BSBI County Recorders
April 2003

Mary Fuller

Epipogium aphyllum, Ghost Orchid: a TPDB species.
Records needed, please, and seed for the Millennium Seed Bank.

BSBI

Introduction

David Pearman

Annual Report

We were really overjoyed by the response – over 80 VCRs have responded to this first trial, with a mass of (mainly) positive reports and suggestions. Alex has very kindly summarised many of the comments, and we will learn from them, and try even harder to strike the balance between support and over-officiousness...

The ancillary desire to make collection of records was less successful, but still quite impressive, and we need to learn from this trial. But very many thanks for the effort and comments – it was very encouraging.

NBN Developments

We now have a draft agreement for use with Local Records Centres (LRCs). It is a draft and we are trialling it, but we strongly advise those of you dealing with LRCs to at least look at it – and any comments you have would be very welcome. Please get in touch with me if you would like a copy.

A major theme emerging from the development of the NBN is the apparent omission of the scientific societies such as BSBI, BBS etc., from the developing strategy. A generous interpretation would be that it was assumed we will continue to provide a useful service as we always have done, but in reality the whole superstructure that has been built up over the last few years will rely on us more than anyone imagined. The demand on the time of our volunteers and experts and limited numbers of staff is unsustainable. We are continuing to lobby for a better deal for the scientific societies, not only because we need it but also because it is becoming apparent that the NBN cannot function well without it.

BSBI support staff

Plans are well advanced for an Executive post (to be based in Edinburgh, with the aid of a 50% SNH grant, still to be finalised) with a further half post to support field work in Scotland.

We have met all the Country Agencies about continuation and refocusing of the Threatened Plants Database, linked to our perceived needs for better support for our VCRs, and jam tomorrow (well, in 2004) seems probable. I would like to thank Alex and Pete for all their work and help over the last year.

First dates of alien plants in the wild; and altitudinal limits

There is a note about both of these in the April *News.* You are the ideal audience – please send £2 for either of these booklets (or £3 for both) to me at Frome St. Quintin.

BSBI Local Change

Pete Selby

Recorders' Expenses

For BSBI Local Change it will be possible to pay the reasonable expenses of VC recorders for administering the recording in their vice county. This budget is to meet out of pocket expenses such as stamps, stationery, photocopying, ink, backup storage media etc.

In order to make for the simplest administration possible, VC recorders are asked to submit, during November 2003, an itemised and signed claim for reimbursement, up to a maximum value of £25. Please send to BSBI Hon Treasurer, Michael Braithwaite, 19 Buccleuch Street, Hawick, Roxburghshire TD9 0HL.

A similar budget has been allocated for the 2004 season and can be claimed in the same way in November 2004.

Puzzle Picture

For those of you who noticed that the two relative frequency charts in BSBI News April 2003, page 7 were without species captions, the one on the left, 'Scarce away from upland areas' was for *Calluna vulgaris* and the other, 'A species nowhere near as universally common as one might think' was for *Lathyrus pratensis*. As no-one sought to enquire as to the identity of the taxa the prize remains unclaimed and will be awarded to the first person who points out an error in this publication.

Threatened Plants Database

Alex Lockton

The TPDB now stands at over 230,000 records, being a summary of the estimated 18 million that you have sent in over the last 5 years. Thank you very much to everyone who has contributed. I hope you all find it a useful resource – I make a point of responding to enquiries quickly and fully, especially for those who have made a contribution themselves. To save me a lot of time, and make it more easily accessible to everyone else, a sample of the database is available on the internet, at www.tpdb.org. At present this includes all the available data on about 80 species, and I'm currently working on producing accounts for them. These species accounts are intended to give suggestions for research projects and information on the latest findings. They are also available for viewing on the BSBI web site under the Research Committee's page.

Please have a browse of both the BSBI and the TPDB web sites and let me have feedback if you feel like it. Hearing from you is what it is all about: there is hardly a page without a feedback form or an email address for your comments. I hope the overall effect is that people feel they are being involved in botanical research. Thank you all for your help, and please keep it coming…

I am very happy for the **Arable Weeds Survey** to continue for a few more years. Remember, the essentials are to make a full species list for the best three fields in each county. It's as simple as that. Other ongoing work includes information about reintroductions of rarities and surveys of specific species, which I usually mention in *News*.

Two rare English species

David Pearman

Despite the break-up of NCC in 1990, all the Rare and Scarce plants in GB are still evaluated on a national scale, though for all I know, EN, CCW and SNH have lists of plants significant to their countries. I think this GB approach is a good thing. There are far too many designations of both sites and species, and I am convinced that this diminishes the effect of protection. A site can carry designations SPA, NNR, SSSI, Ramsar, and now IPA and for all I know IBA – as well as SNCI or SINC or whatever. Likewise, Local Record Centres and others produce lists of plants that are RDB (or, more likely Endangered etc), Scarce, BAP, SoCC etc – all slightly different, all copied from changing lists and criteria and all only confusing. I feel that the BSBI should continue to stick to the British Isles wherever possible!

But there is one gap, the position of plants that have extensive remaining upland populations, yet are now really rare in the lowlands. How does one give weight to these? In 2002 there was discovered in Devon and Dorset new sites for *Drosera anglica* and *Carex limosa*, which are both extremely rare and have rapidly declined in lowland Britain.

Drosera anglica

The New Atlas shows 355 10km squares in GB post 1987. Of these only 14 occur in England away from the uplands of Cumbria and Northumberland (and a further 3 in Wales). It also shows 4 squares 1970-1986, and 87 pre 1970. The counties with post 1970 records are listed below.

Counties with recent records of *Drosera anglica*

VC	VC	Hectad	Details
West Cornwall	1	SW75	Last seen in 1975
South Devon	3	ST10	1 site near Honiton, extant
North Somerset	6	ST44	1970 (if at all)
Dorset	9	SY88	2 extant sites
		SY98	4 extant sites
		SY99	Last seen 1977 (error in the Atlas)
		SZ08	1 extant site
South Hampshire	11	SZ19	Last seen 1981
		SZ29	2 extant sites
		SU10	1 extant site
		SU20	3 extant sites
		SU30	1970+ dot in the Atlas, but no details
East Norfolk	27	TG01	1 extant site (according to the Flora)
		TG03	1 extant site (according to the Flora)
		TG14	1 extant site (according to the Flora)
West Norfolk	28	TF62	1 extant site (according to the Flora)
		TF91	1 extant site (according to the Flora)
Shropshire	40	SJ43	Last seen 1998 (now probably gone)

In August 2002 Dr Bob Hodgson found a new site on Dartmoor in SX67 with over 100 plants. There is a pre-1970 dot for that square, but no details are known. Also in August Bryan Edwards, an all-round naturalist surveying for EN in Dorset on sites for Large Marsh

Grasshopper, found a new 10km record (SY89 – the Atlas pre-1970 record is an error) and, with myself, 3 new sites in SZ08. Both sites are NNRs (and SACs, SSSIs, etc!!)

Carex limosa

Here the New Atlas shows 260 10km squares in GB post 1987, with only 7 in England away from Cumbria and Northumberland. Three squares have records from 1970-1986, and another 23 pre-1970. The counties with post 1970 records are listed below.

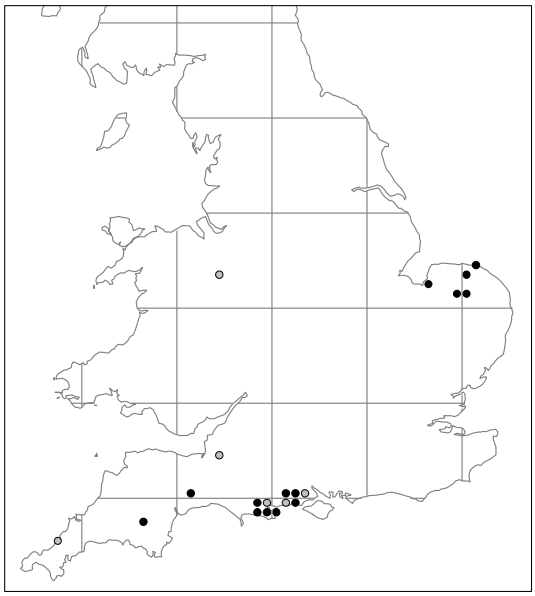
Counties with recent records of *Carex limosa*

VC	VC	Hectad	Details
Dorset	9	SY98	2 extant sites
		SY99	Last seen in the 1970s
		SU00	1 very small site
South Hampshire	11	SZ29	1 extant site
		SU10	1 extant site
		SU20	2 extant sites
East Norfolk	27	TR23	Last seen in 1963 (error in Atlas)
Shropshire	40	SJ43	Last seen 1976 (possibly 1982)
Cheshire	58	SJ65	1 extant site
NE Yorkshire	62	SE89	1 extant site (but upland – not mapped)

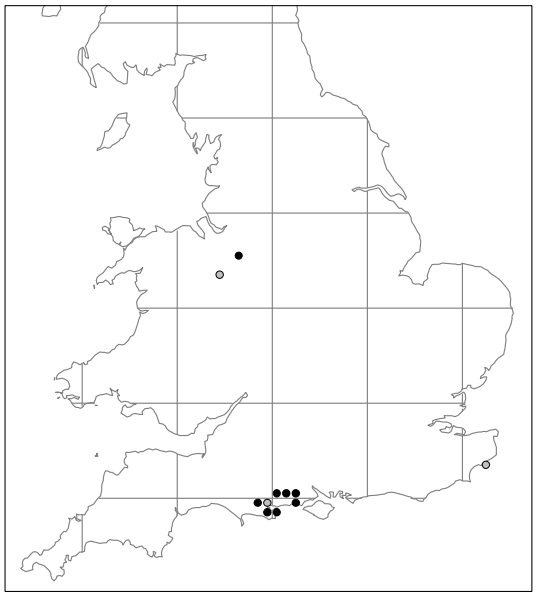
In August 2002 Bryan Edwards found two new sites in two new 10km squares in Dorset (in SY89 and SZ08), again both on NNRs.

The current distribution maps for these two species are therefore as follows, with grey dots representing populations we believe have been lost recently. It seems clear, then, that there is a case to be made for giving special attention to certain species in lowland England that are common in the uplands, although this is hopefully more an ecological than a political distinction.

Drosera anglica in lowland England



Carex limosa in lowland England



Ajuga chamaepitys

David Pearman & Alex Lockton

This species was recorded in 20 hectads in *Scarce Plants* but just 12 in the *New Atlas*. This gives the species a change ratio of -0.62, but it is interesting to see exactly what that means when we look at the precise records. The "lost" hectads are as follows.

TQ04. The site is a cornfield on the south-facing slopes of the Hackhurst Downs, where the plant has been recorded since at least 1902. It is still abundant in TQ14, but in 1981 it was recorded 200m to the west, in TQ04, thus creating a new dot on the map. It has never been seen there again, so this is technically a "loss," whilst actually being mainly an artefact of recording by grid squares.

TQ57. In contrast to the above, this is a definite loss. *Ajuga chamaepitys* was once widespread and abundant along the north of Kent. Nicholas Culpeper, in 1652, described it as growing "more plentifully in Kent than in any other county of this land," from Dartford to Chatham and Rochester. This area is now largely urbanised, and although *Ajuga* is still abundant in a few places further south, it has completely vanished from its former sites immediately south of the Thames. The last record was in 1976, from a field near Darenth Wood.

TQ85. We have only one good record for this square, by Rev. H.E. Fox, who found it at Lenham in 1911 (**BIRM**). There is also a dot in Eric Philp's 1982 *Flora*. A Mrs Dodds reported it from this square without any accurate location, and Philp has never been able to find it again. This could be a genuine loss, but if so it is hardly evidence of a devastating decline.

Hectad	Site	VC	Last seen
TQ04	Hackhurst Downs	17	1981
TQ57	Darenth Wood	16	1976
TQ85	Lenham	15	1911
TL02	Barton Hills	30	1997
TL23	Morden Grange Plantation	29	1996
TL24	Morden Grange Plantation	29	-
TL33	Morden Grange Plantation	29	-
TL77	West Stow	26	1985

TL02. The site in this square where *A. chamaepitys* was last seen, Barton Hills, lies on the junction of four hectads – TL02, 03, 12 & 13. If people fail to make accurate grid references, the default is always the most south-westerly one (TL02) – a convention established by Frank Perring and Max Walters during the first Atlas project. However you look at it, though, the *Ajuga* has been declining here for decades. It was first recorded here in 1841 and the last record was in 1997, although that was from just over the grid line in TL03. So it is a real loss, made worse by the fact that there use to be another site for it in TL02, at Warden Hill, but that one was lost in 1911.

TL23. Morden Grange Plantation is another site on the crosshairs between four hectads. *Ajuga chamaepitys* was known for many years about a kilometre SW of there, at Highley Hill on the border between Hertfordshire and Cambridgeshire (but entirely within TL23). The new site on the edge of Morden Grange Plantation was discovered by Joseph Little in 1912 and, as far as we can tell, there has always been a very small population there over a very restricted

area. It seems that honest mistakes by field recorders multiplied the number of hectads by three, which in turn led to an apparent decline when subsequent surveyors got the grid reference right. Sadly, though, both the populations in TL23 do seem to have disappeared now – the Highley Hill plants were last seen in 1966 and the Morden Grange ones in 1996. A few years without a record is too soon to declare it entirely lost, however, so it should indeed have had a "current" dot in the Atlas.

TL77. The site at West Stow was discovered as late as 1939 by W.H. Mills, and there was at one point several thousand plants of *A. chamaepitys* in two fields in this area. The last record was in 1985, however, when the population had declined to a tiny number. Later searches have been unsuccessful. This, then, is a true loss, albeit for a population that may well have been introduced quite recently.

It seems from this analysis that counting the hectads might have exaggerated somewhat the decline of this species over the last thirty years. If we had used site-based recording and had access to the most up-to-date records, then would have been just three sites lost, not eight. On the other hand we have not considered what has happened elsewhere – an exaggerated decline is reported when the sites happen to fall on the corners of the hectads, but huge declines could be hidden for clusters of sites in the centre of grid squares.

In *Scarce Plants* we also took the step of mapping *Ajuga* by tetrad, in what was then an experimental technique for national distribution mapping. Tetrads are more likely than hectads to correspond to individual sites, so it could be useful to repeat that exercise as well. It turns out, astonishingly, that the number of tetrads that it was recorded in during the period 1970-1986 is now 23 (three more then we knew about when writing *Scarce Plants*) but that the corresponding number for the period 1987-1999 is 27 (even excluding two introduction sites).

These results are slightly worrying, in that a species that has apparently increased slightly in distribution has been recorded as decreasing, as an artefact of recording techniques and our reliance on counting hectads. Hopefully this is an aberration, caused by the strange coincidence of several sites occurring on the boundaries of grid squares, but for rare plant recording in particular it may be important to look at new techniques for monitoring and assessing their status.

The only way to be absolutely sure whether a plant is increasing or decreasing is to look at its individual sites and the numbers of plants there. For some species, such as woodland orchids, an annual count of flowers might tell you very little about the true health of a population, depending on the coppicing cycle, but for an annual weed of cornfields it is probably a fairly accurate measure. Plantlife have a contract with English Nature to count the plants at each site every year, and Andy Byfield kindly supplied their recent data.
The table below shows all the recent sites for *A. chamaepitys* in Britain, excluding dubious records and probable introductions, and gives the date of the most recent record on the TPDB plus the most recent population count (or zero, if that was the result). The outcome is illuminating – the total population has crashed in recent years. Several of these sites had thousands of plants in them ten or twenty years ago. At most sites it is now on the brink of extinction. We do not know how long buried seed can remain viable but, although that may certainly be many years, it is certainly not a promising sign for any annual not to come up for years at a time. Many of the remaining sites are now nature reserves, and under-management is probably to blame for the continuing decline. We do not have good population counts from the 1970s, but at a guess it would seem likely that the true decline in this species since *Scarce Plants* is around 98%.

Ajuga chamaepitys population sizes in Britain

Site	VC	Monad	Last record	No. of plants
Augurs Hill Copse	12	SU3843	1999	0
Freefolk Wood	12	SU5043	2002	4
Micheldever Station	12	SU5043	1972	0
Wouldham Common	15	TQ7263	2002	4
Burham Down	16	TQ7362	2002	2
Chelsfield	16	TQ4763	1988	0
Church Wood, Fawkham	16	TQ5968	2002	5
Cuxton Fields	16	TQ6968	2002	0
Cuxton Warren	16	TQ6965	2001	16
Darenth Wood	16	TQ5773	1977	0
Detling	16	TQ7858	1999	0
Eynsford	16	TQ5462	1972	0
Farningham	16	TQ5665	1972	0
Lad's Farm	16	TQ6832	2002	120
Trottiscliffe Country Park	16	TQ6259	2002	40
Blatchford Downs	17	TQ1148	1991	0
Buckland Hills	17	TQ2252	2002	0
Colley Hill	17	TQ2452	2002	0
Pebble Coombe	17	TQ2152	2002	0
Fame's Rough	17	TQ2657	2002	1
Great Hurst Wood	17	TQ2155	1984	0
Hackhurst Downs	17	TQ1048	2002	50
Headley Warren	17	TQ1954	2002	0
Juniper Bottom	17	TQ1752	2002	0
Juniper Hill	17	TQ1753	2002	0
Little Bookham	17	TQ1254	1976	0
Mickleham Downs	17	TQ1753	2002	0
Pickett's Hole	17	TQ1249	2002	0
Ranmore Chalk Pit	17	TQ1349	2002	0
White Downs	17	TQ1249	2002	0
Wisley	17	TQ0658	1985	0
Tingley Wood	20	TL1331	1992	0
Rampart Field	26	TL7971	1986	0
Wagstaff Field	26	TL7971	1985	0
Morden Grange Plantation	29	TL2929	1996	0
Barton Hills	30	TL0930	2000	0
Knocking Hoe	30	TL1330	2002	0
Pegsdon Common Farm	30	TL1331	2002	100
Total population				342

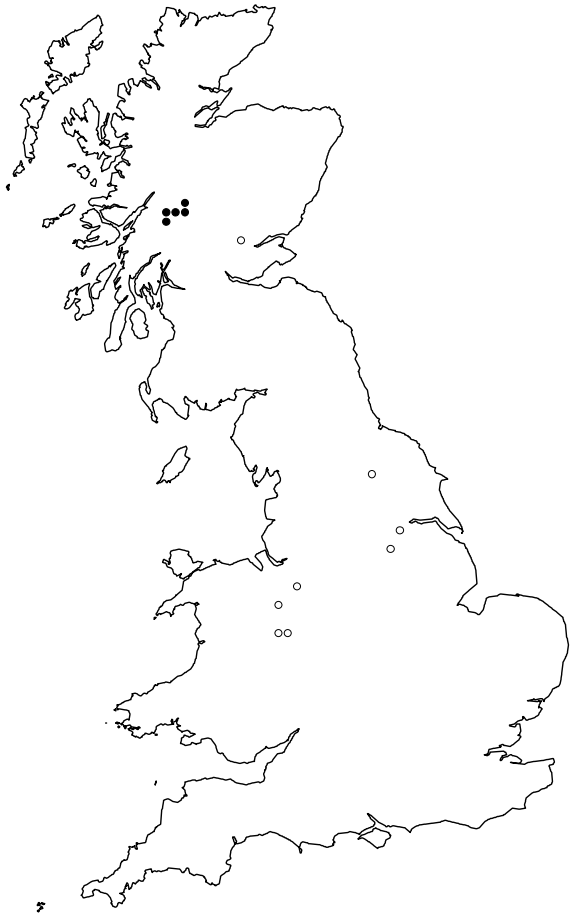
(Population counts by Plantlife; thanks to Andy Byfield)

Rannoch-rush, *Scheuchzeria palustris*

Alex Lockton

One of the most abundant plants in the world, Rannoch-rush, also happens to be a Red Data Book species in Britain. To be fair, it does not really meet the criteria: apart from the lowland sites from which it disappeared many years ago, there is no real evidence for a decline. The total population at Rannoch Moor in well into the hundreds of thousands, so its correct status is "Lower Risk - near Threatened." However, with climate change now an official reality, this species might really be in danger in future. We shall have to see. For now, however, it is the most common species over untold millions of square miles across North America and northern Eurasia.

Scheuchzeria palustris in Britain



The map above is modified slightly from the ones in the *New Atlas* and the *Red Data Book*. One difference is that I have removed what I suspect is a spurious dot to the south of Rannoch Moor. The grid references in this part of the country are a bit palindromic. It seems a simple typographic error moved one record to the top of a mountain called Meall Buidhe in the square NN44 rather than 10km north on Rannoch Moor.

The former lowland sites also seem to be a bit mis-represented in the literature. As far as we can ascertain, there were in fact nine lowland sites for it in England and Scotland, plus one more in Ireland.

Former sites for *Scheuchzeria palustris* in England & Scotland

Site	Vice county	Grid	First record	Last record
Bomere Pool	40	SJ4908	1824	1881
Clarepool Moss	40	SJ4334	1866	1866
Everton Carr	56	SK6992	1844	1844
Leckby Carr	65	SE4174	1787	1876
Methven Moss	88	NO0123	1833	1894
Shomere Pool	40	SJ5007	1841	1841
The Mere, Ellesmere	40	SJ4034	1884	1884
Thorne Moors	63	SE7215	1802	1870
Wybunbury Moss	58	SJ6950	1844	1896

One of the problems with recording *Scheuchzeria palustris* is actually defining where it grows. An excellent opportunity is now presented by the use of GPS to work out exactly where you are on Rannoch Moor. Many of the old records will have been inaccurately localised. Unfortunately, given extensive populations over treacherous terrain, it still is not a simple task to work out its precise extent – after all, you have to be standing on a plant for the GPS to give you an accurate reading. Still, whatever increase in accuracy can be achieved, it has got to be better than having the occasional spurious 10km square…

To actually monitor for any threat to Rannoch-rush, we will need techniques much more sensitive than just counting plants. The NVC community in which it grows is apparently the M3 *Eriophorum angustifolium* bog pool community, which is largely defined by its bryophyte assemblages rather than the vascular plants. I could not find any evidence that this ever occurred at Wybunbury Moss, however, even with the aid of some quite old bryophyte lists. It may be that an M2 *Sphagnum cuspidatum* bog pool will do just as well. As is common with rare plants, it might simply be impossible to find enough about its environmental and ecological limits by examining only the British populations, and that to predict its fate here we will need data from abroad.

County Roundup

Alex Lockton

England

In the **Scilly Isles**, where there are no resident BSBI members at all, Rosemary Parslow depends to large extent on getting survey contracts to meet the cost of getting out there and boating 'round to the smaller islands. It was fortuitous, then, that the Wildlife Trust commissioned a management plan in 2002 for all its holdings, which includes the entire coastline of most of the smaller islands. I think this sort of combination of consultancy work and being a v.c. recorder is definitely to be encouraged, especially when it allows you access onto private land.

Rosemary also mentioned that visiting botanists can also be a good source of records – but only if they remember to send them in after their holidays. If anyone reading this has made such records and would like to submit them, please bear in mind that it's never too late…

Cornwall is undoubtedly the most active county these days and (dare I say it?) the one most overpopulated with botanists. In 2002 they launched the Botanical Cornwall Group with Ian Bennallick as organiser. They have a busy schedule of meetings and even a web site (one of only four county groups so far to have one). The Cornish botanists are basking in the attention they receive and doing some excellent work. I receive the most beautiful detailed records from Rose Murphy, who seems to be able to turn her hand effortlessly to critical species, ecology and even conservation issues without any problem. If we had such an accolade as "best vice county recorder" it would surely go to Rose, but regrettably there isn't space here to show off her work. Perhaps members will see some examples at the Conference in May.

In **Devon** our two new recorders, Dr Hodgson and Dr Smith, are just starting to make an impact, and have turned up some interesting finds in recent years, including *Drosera anglica* in 2002 (see David Pearman's article on this species). As in **Somerset**, the presence of an LRC for many years seems to have done little to contribute to botanical recording. Here, the BSBI has depended largely on the exceptional efforts of Paul and Ian Green for the last decade or so, which has rewarded us with not only an astonishingly thorough County Atlas, but also a steady stream of fascinating records, including in 2001 *Rorippa islandica* as a rather unexpected find, new to England.

In **Dorset**, David Pearman has recently taken on the recordership under interesting circumstances. Humphry Bowen's Flora was published shortly before his death, and there is a large and well-established Records Centre, which would leave – you might imagine – little for a recorder to do. Actually, it is not as simple as that. There are large discrepancies between Humphry's data and the LRCs, and the first task is to try to reconcile them. It seems the LRC has been working on a GIS mapping program to assign species to sites which, although very useful for some purposes, completely negates the point of accurate grid references, as everything is assigned to an arbitrary site centroid. When their records are combined with Humphrey's, it seems as though there are many more localities for each rarity than there really are.

I suspect that this sort of thing is going to become an ever-greater problem: data sets do tend to diverge, and there is no automatic way to put them together again. It all depends on the purpose you have for the data.

Colin Pope on the **Isle of Wight** is planning to launch his Flora this year. The plan is for a high-quality (pricey!) book, and the pre-publication offer seems to one not to miss.

South Hampshire has been very fortunate in many respects in recent years. Paul Bowman was a recorder to rival Rose Murphy for detail, accuracy and hard work. The *Flora* was excellent, and now they have a computer wizard in Pete Selby to get all this data on the move. As if that wasn't enough, they even have what can fairly be described as the best LRC in Britain, with a survey team of competent botanists and a database of nearly half a million records.

Tony Mundell sent a long list of records as his report, so I guess that means they are concentrating on botany in **North Hampshire**. A record of *Fumaria vaillantii* caught my attention. Rumours are circulating that it has become very rare in recent years, so I have added it to the TPDB list. If anyone has any information or recent records, would they please get in touch?

The **Sussex** botanists had a good year recording, among other things, *Limonium binervosum* segregates. They embarked on a detailed recording program that I shall probably regret, seeing as I have to database all those records and adjust the maps. A new site for *Lythrum hyssopifolia* in the county is also a nice find.

Eric Philp, in **Kent**, has the joy of presiding over a county that has just received a huge Lottery grant to set up an LRC. I expect he will give them a run for their money. Meanwhile, in **Surrey** Ann Sankey has taken over the recordership from Barry Phillips. An interesting, and delicately-put, message from Ann in the local group newsletter was over the use of GPS for generating grid references. The spurious level of accuracy these things give means that you have to round down from ten to eight, or perhaps to six figures. Ann points out that you have to round down, not up as you would if you were calculating your tax. However, I have another challenge for you: if your GPS gives you latitude and longitude, what do you do then? I've given the answer at the end of this article.

Meanwhile, and also on the subject of duff grid references, I saw this one in the latest issue of *Watsonia* (Vol. 24, p.376): **OS105 601 518**. What on earth were the editors thinking of, letting this slip through the net? Again, the answer is at the end if you want to test your knowledge.

Trevor James mentioned a shortage of help and a lack of young botanists, which is rather worrying as it seems to buck the general trend. It is important to realise that voluntary groups are always small in size, if only because of human nature. Perhaps we're all chiefs and no Indians. On the other hand, it is possible that certain counties are suffering a genuine decline in botany, perhaps because of ageing populations or a lack of remaining wildlife habitat? Nevertheless, Trevor rediscovered some superb sites for species such as *Orchis morio*, *Equisetum sylvaticum* and *Myriophyllum alterniflorum*, some of which were last seen over a hundred years ago, so it isn't all doom and gloom in **Hertfordshire**.

Rodney Burton in **London** (oops, Middlesex!) mentioned some oft-recurring problems. There are would-be botanists at work in the capital recording fanciful species that just aren't there, and he warns us not to take any notice. Many v.c. recorders will have come across that particular problem. Some of these people have discovered that they can publish their rubbish on the internet, where no-one can stop them. London also has an LRC on the way. The botanical group is planning to do lots of work on Local Change and the Rare Plant Register in the coming year.

For those who aren't familiar with Mick Crawley's terse verse, I'll just quote from the report for **Berkshire**: "A Flora of Sandhurst has been prepared. A Flora of Berkshire is with the printers." Well, I can't complain about that.

In **Buckinghamshire** there have been two Local Records Centres: Milton Keynes and Buckinghamshire County. These are now to be merged again, apparently, but there is bound to be a lot of confusion. Another good reason for maintaining vice counties, I think, even though they are awkward in some places.

Gillian Beckett and Bob Ellis reported that **Norfolk's** new LRC is up and running. The local group seems to be very active, with new county records including such things as *Carex laevigata*, *Orobanche hederae*, and *Viola hirta.* I've just completed a report on *Limonium binervosum* agg. in Britain, and it looks as though Norfolk may have the biggest populations of all, so it would be good to have some more detailed recording there, too.

Following the untimely death of Derek Wells, **Cambridgeshire** is now run by Alan Leslie and Nick Millar. Nick works at the Wildlife Trust and used to support Derek with computerisation, so he has now taken over the database altogether. Gigi Crompton, however, continues to develop her amazing web database as well, and recently upgraded it to include non-native species. Records this year that caught my eye included *Herniaria glabra*, which is a great success story, as it is now turning up everywhere, and *Ceterach officinarum*, which is rare in this driest of British counties. *Mentha pulegium* turned up on the side of the A11, which they concluded must have been introduced from America.

Chris Boon, in **Bedfordshire**, has an admirable organisation going at the county museum, as well as doing a lot of work for the BSBI's committees. Some 20,000 field records were collected and computerised in 2002, which is a good score for any county. Important finds included *Torilis arvensis* in its only current site in the county, and *Mentha pulegium,* which sprang up mysteriously along the side of the A507. Chris has also been cataloguing the museum's herbarium, and producing some very nice scanned images of the oldest sheets with the intention of putting them on a web site eventually.

Northamptonshire has some fine arable weeds, including a large population of *Petroselinum segetum*. Gill Gent's report from that county was very positive, with plenty of recording meetings with both the county group and local natural history groups. Last summer Gill was kind enough to show me a site for *Mentha pulegium* which had literally hundreds of thousands of plants spread over several fields close to the River Nene. For some reason, it is not considered native there, but there is no real evidence one way or the other. Do visit it if you get the chance – the smell when you walk through is quite overpowering. Because *M. pulegium* is such a ruderal plant, there's every possibility that this amazing spectacle will disappear after a few years, and Gill has just told me that the local authority is now planning to dig it out and create some reedbeds! The site is a place called Weston Favell Mill in Northampton, SP791607, and is an LNR open to the public, with good parking nearby. On the map below, *M. pulegium* was the dominant species throughout the area encompassed by the black circle.

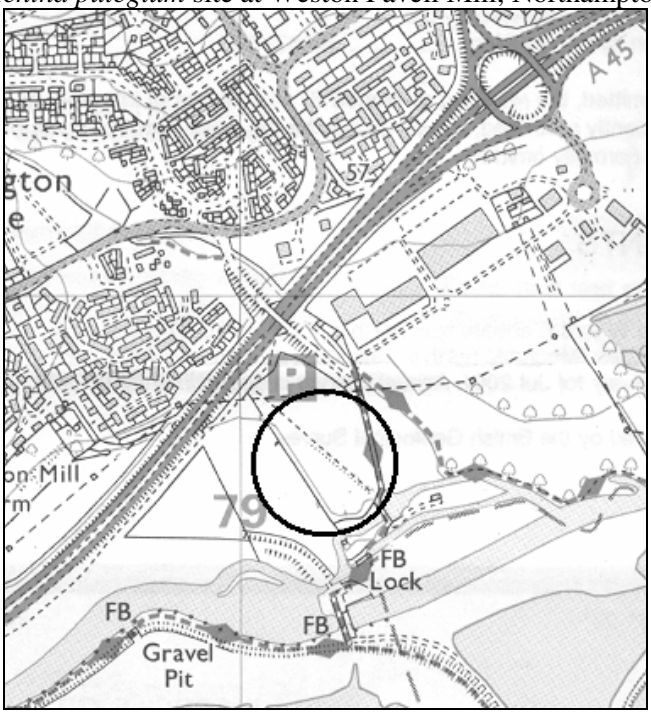
John Hawksford took over **Staffordshire** only recently, but has already established a tradition of publishing an annual Rare Plant Register that gives a complete up-to-date account of all the rarities. I particularly liked the *Clinopodium ascendens* on Tutbury Castle, where it was last seen in 1844. This is, of course, exactly what the Wildlife Trust and Records Centre (and I, for that matter) actually want and need, so it keeps everyone satisfied whilst leaving John free to do the real work. And Staffordshire needs it – although it was the very first county to adopt the tetrad system, it has lapsed somewhat since then and a new Flora is due.

One of the interesting rediscoveries in **Shropshire** last year was *Vaccinium x intermedium* on the Stiperstones. Surely this is a curiosity rather than an important plant? But in Cannock Chase, Staffordshire, the rangers are apparently growing it in polytunnels and planting it out, with the intention of fulfilling their LBAP. I don't think I would lose any sleep over this issue, but I find it inexplicable. Another rediscovery was *Dryopteris oreades* on the very edge of its

range. Charles Sinker found it on Titterstone Clee in 1962 and many people have recorded it since, but I've always had a sneaking suspicion that they were 'seeing' it because they knew it was there, rather than actually identifying it, if you see what I mean. When John Bingham refound it, his plant turned out to be nowhere near where it was reputed to be. We also had *Mentha pulegium*, which Sarah Whild found close to the old A5 Holyhead Road in Shrewsbury.

Also on the issue of dodgy recording, we've come to the conclusion that records of *Senecio cambrensis* and *Equisetum x font-queri* in Shropshire are probably errors. In fact *S. cambrensis* has not been reliably recorded in the wild in England at all – all the dots in the Atlas are of short-lived escapes from cultivation.

The *Mentha pulegium* site at Weston Favell Mill, Northamptonshire



Wales

Trevor Evans's report for **Monmouthshire** includes a detailed account of my failings as a computer expert (all true, I'm afraid) but he has in fact produced a rare plant register, which is a good thing as he happens to have no fewer than five Local Biodiversity Action Plans covering his small county, and the planners all need those botanical records immediately. A Flora is in the pipeline, but don't hold your breath because the computer issue still isn't quite sorted. Monmouthshire is actually an excellent county, botanically, with all types of habitat. Interesting records last year include new sites for *Euphorbia serrulata*, *Petroselinum segetum*, *Galium sterneri* and *Eleocharis quinqueflora*.

In **Breconshire** Mike Porter is very much involved with wildlife conservation. I'm not sure how many county recorders still are: there was a time when all were members of their local Wildlife Trust and other conservation bodies, but there may be a bit of a trend away from that. Perhaps it seems like enough work simply to provide the data and let them get on with it. A good discovery in the county last year was for a new site for *Pilularia globulifera*.

Richard Pryce, in **Carmarthenshire**, was very annoyed at the destruction of the county's only site for *Silene gallica*, but it seems to me that the real damage was done ages ago (see the map in the Atlas). The last site was an earth bank alongside a harbour – surely not a place

where a plant is ever going to be terribly secure. I suspect his annoyance was more from a sense of betrayal than from the actual loss of what must be a fairly unimportant population of plants. Richard, like many other county recorders, has gone to a lot of trouble to draw up lists of important species and their sites, and it must be very frustrating to realise that no-one ever really intended to act on it. Or perhaps that's just a bit cynical. Still, it's a point worth thinking about – nearly all the real work of biodiversity action plans is done in a voluntary capacity by expert amateur naturalists, who generally have plenty of other worthwhile things to do, and if their advice is ignored then the whole process just does more harm than good.

However, they have some pretty good native woodlands in the county which seem to produce more satisfactory botanising, including several (!) new sites for *Hymenophyllum tunbrigense* and *Dryopteris aemula*. If these were threatened it really would be worth getting annoyed.

Arthur Chater's report for **Cardiganshire** includes many instances of official consultations, on reserve management, farm extensification schemes, woodland plantings, local records centres, and even roadside verge management. Arthur works exceptionally hard as a v.c. recorder, and I suspect he enjoys every minute of it, but ordinary mortals might like to note that you don't have to do quite so much if you cannot spare the time. The most important role of a recorder is to supply the BSBI with data, so we can publish things like the New Atlas, which in turn are the very basis of most conservation plans. If you can just do that, and no more, you are doing your bit – everything else is optional, albeit often very praiseworthy. As always, of course, there are many fascinating and detailed new records for Cardiganshire and I'm secretly pleased to see that even Arthur sometimes has to withdraw one. It turns out that his *Chenopodium strictum* was really just *C. album*. It's a curious fact that the good botanists are far more likely to admit to mistakes than the bad ones are…

Geoff Battershall hailed the rediscovery of *Hieracium snowdoniense* by Tim Rich and colleagues from the National Museum of Wales as a significant event in **Caernarvonshire**. At the time it aroused considerable interest amongst the media. Since then Tim has found a specimen at **MANCH** dated 1967, so it's only a 25-year gap now. I wonder if there are any more recent ones yet to be discovered?

Denbighshire continues to be a very active county, with monthly walks led by Jean Green that attract between 10 and 20 people a time.

Our representative to the Welsh-speaking world is Goronwy Wynne in **Flintshire**, who is now chairman of the Welsh Committee, and gave several radio and TV interviews, in Welsh, on the New Atlas. He also kindly sent a copy of *Y Naturiaethwr*, which I suspect is the only natural history magazine entirely in Welsh. We didn't receive anything in Scots Gaelic, Manx nor Norn, and only the title of the Cornish LRC's newsletter was actually in Cornish, but I can foresee the time when the BSBI coordinator is going to have to be a polyglot. French and Irish are already necessities. It won't be me, though, I can tell you.

Ian Bonner has been involved in the LBAP for **Anglesey,** and is producing a Rare Plant Register. One of the new species found last year was *Chamaemelum nobile*, which is described in the New Atlas as having declined considerably, but judging from the number of records I get for the TPDB, I'm not so sure that this is really true. It seems to be expanding its range northwards, through a steady expansion from its heartlands, and through scattered populations appearing further north. Those are mostly marked as introductions in the Atlas, but are they all deliberate garden plantings? Species are allowed to disperse without being labelled alien, surely? I wish I had the time to analyse this one more carefully, but it is so common that it would be an enormous task. As an interim measure, can I request that people continue to send me detailed records whenever they come across it?

Northern England

Alan Willmot reported on another very active year preparing for a new Flora of **Derbyshire**, and commented that he will "continue to watch the proliferation of different computer packages for plant recording with concern." Join the queue. The Wildlife Trust has been preparing a new Red Data Book for the county, which is quite unusual – most Wildlife Trusts now seem to have handed over biological recording either to the volunteers or to the LRCs, although a lot of them were much more involved in the past. Alan expressed concern about the multiplicity of organisations doing biological recording in the county, and even mentioned that he didn't have access to his own data at the time of writing the report, which was somewhat alarming. I would urge all v.c. recorders to make sure they have their own records in a usable form at all times, even if you do depend on an LRC or someone else to manage it. It's worth thinking about what could go wrong.

Graeme Kay, in **Cheshire**, reinforces this message with a computer tip: "always back up - trust your computer not!," to which there is probably a story, somewhere. He has prepared a county rare plant register which is almost finished, and held six or seven field meetings during the year. The majority of recorders actually reported holding meetings at which beginners could receive instruction. At a rough guess, I'd say at least 250 such meetings must have been held throughout the country, in addition to the ones advertised in the Yearbook. When you think about it, that's a very generous contribution by the recorders to society at large, and well worthy of some appreciation. "Good on you," as they say.

The big event in Lancashire in 2002 was the Local Flora conference, but Eric Greenwood in **West Lancashire** has also been working on a Rare Plant register and a paper on local historical botanists. Dave Earl reported steady progress with the Flora of **South Lancashire** project, based mostly on tetrad recording. Peter Cook, in **South-east Yorkshire**, has taken on a countryside column in his local newspaper, which is something I thought had gone out of fashion. In the past quite a few of our members had journalistic leanings, and it would be interesting to know how many still do. I liked Peter's list of current activities, which historical research into charophytes, botanical biography, a digital library of botanical slides, and plans to reintroduce *Sium latifolium*. By the way, can I have full details of that reintroduction attempt when it happens, please?

Geoffrey Wilmore, in **South-west Yorkshire**, is another recorder who works as an ecological consultant. He reports that he prefers Recorder 2000 to Mapmate, but so far is the only such person to have recommended that package. We remain open-minded, and will accept data in any format. Geoff has started recording for a Flora, planned in about five years' time.

Phyll Abbott's report for **Mid-west Yorkshire** includes some media coverage of *Senecio eboracensis*, which surprised most of us by the enthusiasm with which it was reported. Meanwhile, in **NW Yorks**, Deborah Millward wins the award for most meetings attended, which included no fewer than 49 meetings to discuss the Yorkshire Dales National Park. She then goes on to report "little work… on the plants of Yorkshire," which is no great surprise. However, she has clearly done a lot of Site Condition Monitoring and other surveys for government bodies, which is useful as it allows access onto land that is otherwise difficult to get to. This continues the theme of reconciling the differences between paid consultancy work and voluntary recordership. But look at it this way: if the Agencies are willing to hire our recorders to do survey work for them, surely that is better than if they try to replace our expert botanists with their own sometimes less skilled, and less motivated, staff – which is a complaint in many counties. Remember, also, that fashions and budgets change, and consultants can be dispensed with much more easily than full-time staff.

George Swan seems very happy with the arrival of Quentin Groom computerise the records for **Northumberland**. Quentin is something of a computer wizard, and has already created a

web database which produces maps of the distribution of species in that county (www.reticule.co.uk/flora/northumberland.) There is also a new supplement to the Flora, which was published in the Transactions of the local natural history society.

The **Isle of Man** is not part of England, but as it is on its own I'm not going to give it a separate heading. It is unusual in that environmental protection is provided by the Agriculture Department, and Larch Garrard seems very pleased with their work recently to designate some sites as nature reserves. The problems faced by recorders in different parts of the country are very diverse: one of Larch's complaints is that, after having to take a bus journey to the nearest post office, the chances are that they will have sold out of stamps. An important addition to our 'team' on Man is Rodger Sleight, who has taken on the job of computerising the data.

Scotland

Chris Miles, in **Dumfriesshire**, seems to be getting well organised, with a programme of field meetings and work on a Rare Plant Register under way. He has also written species accounts for an LBAP. David Hawker seems similarly efficient in **Kircudbrightshire**. Among the things tackled there in 2002 is the updating of the SNH Scottish Loch Survey, which was a fantastic undertaking, but leaves plenty of work still to be done. Each loch now has a species list (unfortunately only localised to a site centroid, sometimes identifying a spot where the water is 30m deep), but not all the lists are very thorough. A resurvey of promising sites for *Hydrilla verticillata* and *Luronium natans* is a high priority.

Peter Macpherson, in **Lanarkshire**, is busy researching historical data, and David McCosh, in **Peeblesshire**, reported that nothing significant happened in the county last year. Rod Corner, covering both **Selkirkshire** and **Roxburghshire**, sent some very interesting observations, including one on the apparent recovery of a population of *Juniperus communis* after grazing by goats was stopped.

I have an ongoing challenge from Michael Braithwaite to find out something about **Berwickshire** that he does not already know, and I haven't succeeded yet, although I did once find record of a plant just a few days after he did. The plan is for me, as co-ordinator, to gather records from a variety of sources and then farm them out again in a different order. I think that, in general, I now send out more records than I receive, but you do need to have a botanical hotspot that is visited by tourists for this to really work. Michael has become something of an expert on Mapmate and had most of his records computerised by the Local Records Centre, but it did take quite a lot of effort to get them to transfer from Recorder 2000 to Mapmate. One of the problems was the obscure way R2K stores the vice county number, which I suspect is a problem we shall encounter more and more often in the future.

Helen Jackson, in **East Lothian**, is secretary to the Scottish branch of the Wild Flower Society, and organisation not mentioned by many recorders. It would be quite interesting to know how much overlap there is nowadays between use and the WFS, and for that matter with other organisations such as Wildlife Trusts and the Botanical Society of Scotland. These reports are a good way of finding out such things. Personally, I find WFS members to be a great asset to the TPDB project. Helen wrote "no computer and no desire to use one," which I thought I would include to cheer up everyone else who struggles with them. Also, I think she gets the prize for the most interesting task, as a forensic botanist, solving crimes for the police. I won't add any more details in case she suddenly has to change her name and move to Australia.

Douglas McKean reported that the main event in **Midlothian** was the publication of the Flora. Jackie Muscott, in **West Lothian**, reported the difficulties in preparing a Rare Plant Register

for a vice county that bears no relation to the modern administrative units. Under these circumstances, there often is no sensible answer. If we had CRPRs for each county, we could compare one with another, and produce maps of Britain; but they're less use to conservationists, who tend to use different units of countryside at least for their budgeting purposes. In my opinion, "conservation" still has to prove that it can actually do anything worthwhile to justify changing the way we work. In my county we have over 200 species on our RPR, but the chances that any conservationist will even look at most of them from one decade to another are pretty slim – let alone actually "conserve" them in any way. I still think it is best to separate science and conservation, and it is not for us to worry about budget centres and the like.

George Ballantyne reported that there had been some good survey work in **Fife & Kinross**, and in **East Perthshire** Martin Robinson has been concentrating on getting the backlog of records computerised onto Mapmate. Barbara Hogarth had a quiet but seemingly productive year in **Angus**, with a new site for *Hammarbya paludosa*, among other things. She seems disappointed in Aditsite and is now working on Mapmate. It is worth noting that almost anything can be done by almost any computer program, if only you know how to do it. But if you don't, the next best thing is to have neighbours who can help, which is a good reason for trying to standardise – and Mapmate certainly seems to be the main contender.

In **Banffshire**, Andy Amphlett has taken over from John Edelsten, and successfully transferred data from Biobase to Mapmate. Getting computer data from one package to another is always awkward, and Andy noticed that Biobase had sent records of *Carex x boenninghauseniana* to the BRC for the Atlas rather than *Agrostis vinealis*. So if anyone wondered why there is so much hybrid sedge in Banffshire, now you know. Andy, by the way, seems to be a computer wizz, so hopefully he will help friends and neighbours who need advice. Bear in mind that Pete Selby is also able and willing, for at least the next two years, to provide copious amounts of support, so do make use of him.

David Welch, covering **Kincardine** and **North Aberdeen**, reported on negotiations with the Local Records Centre. It is really worthwhile to strike a fair deal with LRCs, for various reasons, but most of all because unfair deals won't work in the long run. Ideally, LRCs should provide services such as computerisation of data and production of maps and newsletters, and give a copy of all data to the relevant v.c. recorder to keep. If I ran an LRC, I would offer a small contract to my v.c. recorder to check over data I received from other sources, too, as there's nothing worse for your credibility than having unchecked data. But to date I've not heard of an LRC that would actually pay a volunteer even their expenses (let me know if this is not so!), even though some make quite large profits. Meanwhile, there seems to be a lot of good training activities and recording in David's part of the country.

Ian Green records **Moray**, but admitted he hadn't done enough in the county in the last year. This doesn't seem to have prevented him finding quite a few good new species for the county, like *Alopecurus aequalis* and *Trifolium suffocatum*. Margaret Barron, in **Easterness & Nairn**, reported that the Inverness Botany Group had its usual programme of field meetings, and would welcome more recorders. She also advises on planning applications, etc.

In **Main Argyll** Gordon Rothero made a plea for fewer demands on v.c. recorders, as there are not enough hours in the day, and commented that he hasn't made a start on a Rare Plant Register. Happily, however, he also reports starting to use Mapmate, which will automatically generate an RPR once it has enough data. This is the Catch 22 with computers, though: they don't save you any time until you've put an awful lot of time into them.

Alison Rutherford's report for Dumbarton is a bit poignant: with no public transport and no other botanists in the area, she find it hard to record the county and is considering retiring in two or three years' time. She also mentioned that there is no forum to publish records; but she

has been involved in a Biodiversity Action Plan (which is a form of publishing!) and I'm sure the Scottish Newsletter will always welcome contributions, so there are some options.

Richard Gulliver, as ever, has half a dozen research projects ongoing in **South Ebudes**, including experiments on the restoration of sites for *Spiranthes romanzoffiana*. There is a useful tip in his failure to get OCR (Optical Character Recognition) software to recognise handwriting. These sorts of developments are slowly progressing, but perhaps they're not quite here yet.

Lynne Farrell's report on recording in the **Mid Ebudes** is, inevitably perhaps, dominated by considerations of transport and access. There is, however, a surprisingly large amount of activity in this part of the country, with John Bowler of the RSPB finding a new site for *Spiranthes romanzoffiana* on Tiree and Lynne finding *Hydrilla verticillata* in Dumfriesshire, about which she produced a poster at the Scottish AGM.

Catriona Murray's efforts in **North Ebudes** have been given a boost by the arrival of Stephen Bungard, who is taking responsibility for computerisation. Good finds include a second site for *Woodsia alpina* by Stephen, and *Dactylorhiza lapponica* by Rob Woodall. Pat Evans, in **West Sutherland**, commented on how useful it is to have visiting botanists, who need to be shown interesting sites. This apparently results in many new records and, although it is time-consuming, Pat recommends it as a worthwhile activity. I guess this is supported by Tim Rich's research, which shows that several pairs of eyes are considerably better than one. Pat didn't mention it, but the Flora of Assynt, complete with a web site (by Quentin Groom) are reasonable achievements for the year…

Ken Butler's report for **Caithness** includes mention of Plantlife's great success in finding a new site for *Saxifraga hirculus* on their Munsary reserve. This is several kilometres from the old site at Loch Ruard. One wonders how many more populations there are in Caithness? An even better find was *Fumaria purpurea*, the presence of which was *predicted* by John Crossley. It's very rare that anyone successfully predicts the presence of a rare plant. On that subject, can I make a plea, please, for specimens to accompany all records of *F. purpurea*, and for specimens to be sent to Tim Rich at Cardiff Museum. If you send them to Tim, they will be available for viewing by anyone who wants to see them. Ken has been trying Mapmate and thinks it is a very suitable program, but suggests very sensibly that we should try to standardise software. Well, we shall, and our firm recommendation is Mapmate. Give it a try if you can, and come to us for transferring data into it for you. However, if you are a complete stick-in-the-mud and don't want to change, then that is still OK.

Richard Pankhurst's report for the **Outer Hebrides** includes a small grumble about being sidelined over the Biodiversity Action Plan, which seems to be a fairly common experience, and plenty of good field recording taking place. Similarly, Elaine Bullard's comments about **Orkney** are generally botanical.

Channel Isles

One of the major developments in **Alderney** in the last year was the establishment of a Wildlife Trust – the first "off-shore" trust associated with the national network, apparently. It seems to have all the vigour and enthusiasm that characterises such a new venture. Our recorder, Brian Bonnard, is a director. Bridget Ozanne, in **Guernsey**, reports on the opening of a records centre there at the start of 2003. Roger Veall's report for **Sark** points out that he has spent most of his time helping me with TPDB records, which of course is the most praiseworthy activity. Unfortunately, I can't yet display either the Channel Isles or Ireland on the TPDB web site – but I'm sure we'll get there eventually.

Ireland

There was a lower level of response from Ireland generally than from Britain, but personally I hope that information technology will actually make it easier for the BSBI to operate. Alan Hill, recorder for **Co. Monaghan**, is one of the few people willing to fly to London twice a year to attend committee meetings. (Incidentally, the Science & Research Committee holds most of its meetings over the internet, and we have been seeking an Irish academic to join, but so far without success.) One of the developments Alan reported on is the proposed restoration of the Ulster Canal, which he plans to survey first.

Ian McNeill, in **Co. Tyrone**, reports that there are now three BSBI members in the county, which is a 50% increase on a year ago. Despite the small number of active members, he was still disappointed that Ireland wasn't included in the Local Change repeat of the Monitoring Scheme. Of course, it is always still worth surveying monitoring scheme squares, because there is every possibility that the data will eventually be analysed, even if we cannot do so during the current project. And if people can use Mapmate to collect data, we can analyse anything – it wouldn't cost any money, as it does to use records centres or the BRC. Ian also asked about discrepancies (errors and omissions) in the *New Atlas*. These are being compiled by David Pearman, so please send any you notice to him (at least for the rarities).

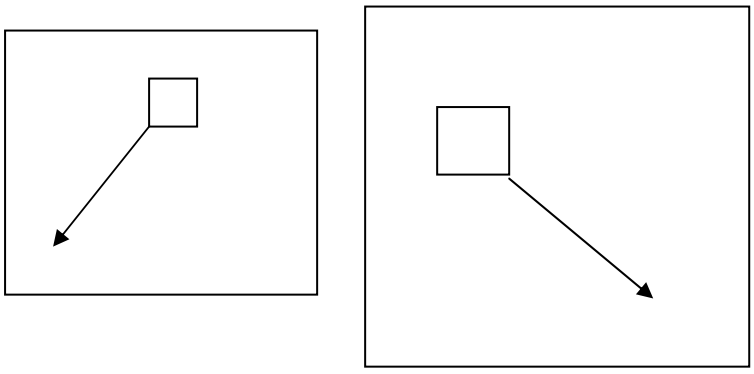
John Faulkner, in **Co. Armagh**, reports a steady rate of progress but nothing dramatic, and Graham Day, in **Co. Down**, is working on a County Rare Plant Register. He also commented that he hoped this annual report wasn't the "thin end of the wedge" in giving new duties to v.c. recorders. Well, that's entirely up to you. The response we've had suggests that it is quite a popular idea. The way to judge it, I suppose, is to see whether other people's contributions are interesting and useful; then it becomes something of a moral obligation to send in a report of your own.

Stan Beesley, **Co. Antrim**, reports a reasonable year recording, mainly, adventives, and working towards a CRPR, but due to illness has decided to retire as soon as a successor can be found.

Solutions

Latitude & longitude problem: this is something of a trick question. Longitude runs west from Greenwich, so if you round down, you're effectively moving the edge of your recording unit east, whereas if you round down grid references, you're moving it westwards. The only solution is to convert from latitude & longitude to grid references at the highest level of accuracy that you can, and then round down.

- Effect of rounding down on grid references (left) and latitude & longitude coordinates west of Greenwich (right).



Watsonia grid reference: OS105 601 518 is correctly written SE601518.

Millennium Seed Bank

Steve Alton, Royal Botanic Gardens, Kew

I am looking to make a big push and complete the coverage of UK native species held here in the Millennium Seed Bank. We currently have over 93% of native seed-bearing plants in the Bank, so the remaining list is relatively short (around 70 species, listed below). Obviously, many of these have problems that have prevented their collection in previous years, but some are relatively easy and most are quite interesting.

If anyone is interested in helping out with this project, or knows someone who could help, please let me know. I will assist with as much as I can with locations, access permissions, Schedule 8 licensing (if necessary), training, etc. I can also make a contribution to reasonable travel expenses, depending on demand. If you can help complete this landmark conservation project, please contact me *before* collecting any seed, so I can coordinate work and make sure that we do not collect too much.

Steve Alton, Millennium Seed Bank, Wakehurst Place, Selsfield Road, Ardingly, West Sussex RH17 6TN. Tel: 01444 894119, Fax: 01444 894110, s.alton @ rbgkew.org.uk.

Species still needed for the Seed Bank

Alchemilla glomerulans
A. subcrenata
A. wichurae
Allium oleraceum, Field Garlic
Alopecurus borealis, Alpine Foxtail
Arabis alpina, Alpine Rock-cress
Atriplex longipes, Long-stalked Orache
Calamagrostis stricta, Narrow Small-reed
Cardamine amara, Large Bitter-cress
Carex chordorrhiza, String Sedge
C. digitata, Fingered Sedge
C. disticha, Brown Sedge
C. montana, Soft-leaved Sedge
C. pilulifera, Pill Sedge
C. recta, Estuarine Sedge
Ceratophyllum submersum, Soft Hornwort
Chenopodium glaucum, Oak-leaved Goosefoot
C. murale, Nettle-leaved Goosefoot
Dactylorhiza majalis, Western Marsh-orchid
Elatine hydropiper, Eight-stamened Waterwort
Epilobium tetragonum, Square-stalked W'herb
Epipogium aphyllum, Ghost Orchid
Euphorbia cyparissias, Cypress Spurge
Euphrasia arctica
E. confusa
E. foulaensis
E. pseudokerneri
E. rotundifolia
E. scottica
Festuca lemanii, Confused Fescue
Fumaria densiflora, Dense-flowered Fumitory
F. vaillantii, Few-flowered Fumitory
Gagea lutea, Yellow Star-of-Bethlehem
Galium pumilum, Slender Bedstraw
Hieracium sect. *Cerinthoidea*
H. sect. *Hieracioides*
H. sect. *Hieracium*
Juncus alpinoarticulatus, Alpine Rush
Juncus capitatus, Dwarf Rush
J. triglumis, Three-flowered Rush
Leucojum aestivum, Summer Snowflake
Linnaea borealis, Twinflower
Liparis loeselii, Fen Orchid
Listera cordata, Lesser Twayblade
Luronium natans, Floating Water-plantain
Maianthemum bifolium, May Lily
Medicago sativa ssp. *falcata,* Sickle Medick
Milium vernale, Early Millet
Myosotis stolonifera, Pale Forget-me-not
Najas marina, Holly-leaved Naiad
Ornithogalum angustifolium, Star-of-Bethlehem
Orthilia secunda, Serrated Wintergreen
Persicaria vivipara, Alpine Bistort
Phleum alpinum, Alpine Cat's-tail
Phyllodoce caerulea, Blue Heath
Poa alpina, Alpine Meadow-grass
P. flexuosa, Wavy Meadow-grass
Polygala calcarea, Chalk Milkwort
Potamogeton compressus, Grasswrack Pondweed
Pulmonaria obscura, Unspotted Lungwort
Ranunculus fluitans, River Water-crowfoot
R. paludosus, Jersey Buttercup
R. reptans, Creeping Spearwort
Rosa obtusifolia, Round-leaved Dog-rose
Rubus saxatilis, Stone Bramble
Salicornia fragilis, Yellow Glasswort
S. nitens, Shiny Glasswort
Salix aurita, Eared Willow
S. herbacea, Dwarf Willow
Sorbus hibernica
S. leyana
Sparganium natans, Least Bur-reed
Stellaria palustris, Marsh Stitchwort
Symphytum tuberosum, Tuberous Comfrey
Taraxacum sect. *Obliqua,* Any microspecies
T. sect. *Palustria,* Any microspecies
Thalictrum alpinum, Alpine Meadow-rue
Trifolium subterraneum, Subterranean Clover
Utricularia australis, Bladderwort
U. stygia, Nordic Bladderwort
Vaccinium microcarpum, Small Cranberry
Viola kitaibeliana, Dwarf Pansy

<www.bsbi.org.uk>

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