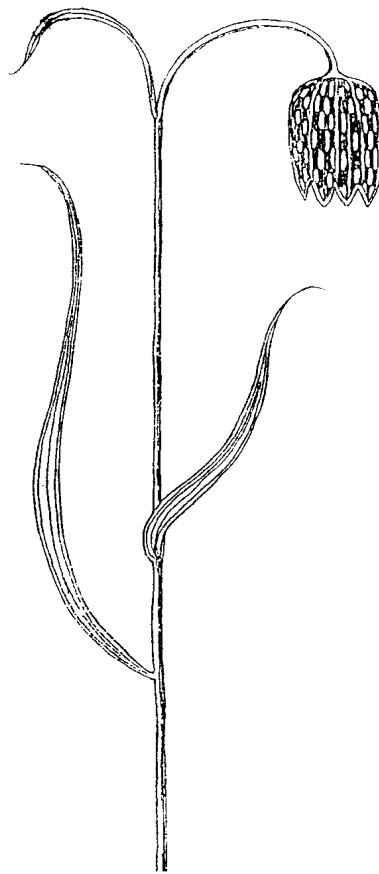


# WILTSHIRE BOTANY



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## EDITORIAL AND INTRODUCTION TO SUPPLEMENT A

### Contents of this issue.

Most of this issue is devoted to a special supplement providing further analyses of the plant records examined in the previous issue. This is followed by two separate articles, one on the flora of an ancient woodland by Pat Woodruffe, the other on spontaneously reproducing introduced conifers by Jack Oliver. Finally, we include a selection of the society's records for 2005.

### Recording for the 1993 Flora and after

The previous issue of this journal (No. 8, 2006) was devoted to a presentation and analysis of the most important plant records since recording for the 1993 *Wiltshire Flora* ceased at the end of 1991 and up to and including those received in 2003. *The Wiltshire Flora* (Gillam, Green and Hutchison 1993) was written on the basis of the *Wiltshire Flora Mapping Project*, begun in 1983. Plants were recorded for their occurrence in each tetrad (group of 4 adjacent kilometre squares on the National Grid). The records were entered into a database and distribution maps were made from it. The Flora was prepared from this data. Members of *Wiltshire Botanical Society* continued to record plants and maintain a database of these records.

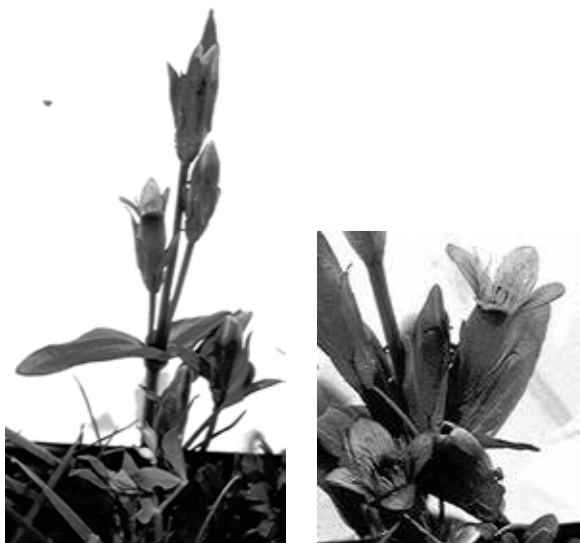
### The Record List

The records for analysis in the previous issue were presented in the *Record List*, which consists of selected taxa. A *taxon* (plural *taxa*) is a general concept encompassing the *genus* (plural *genera*), *species*, *subspecies* and *variety*. Full details of the compilation of the list and the ways of using it are in the introduction to the previous issue (Wiltshire Botanical Society 2006b). A brief account is given here. Firstly, to be entered in the *Record List*, a taxon had to have been recorded in 3% or less of the 1km squares in the County in the *Wiltshire Flora Mapping Project* and as noted in the 1993 Flora. For each taxon included, all the tetrads in which it had been newly recorded since the Flora mapping were entered. The taxa were listed in alphabetical order by their scientific names. Common names can be found in the 1993 Wiltshire Flora, in any of the floras by Stace (1993, 1997 or 1999) or, for alien species, in Clement and Foster (1994). The data are presented as tetrad labels, each tetrad being identified by its southwest component 1km square.

The form of the *Record List* is shown in the illustrative sample in the box. The following key shows what the various entries mean:

- \* - the taxon is not native to Wiltshire, though it may be native to Britain;
- A page number on its own** - there is a

Early Gentian (*Gentianella anglica*)



distribution map by tetrads in the 1993 Flora on the page given;

- **slo followed by a page number** - the Flora mentions some specific localities on that page, but without identifying the tetrads;
- **nrif followed by a page number** - the Flora refers to the taxon, but mentions no specific localities;
- **nif** - the taxon is not in the 1993 Flora, nor in Grose's 1957 Flora, nor in Stearn's 1975 supplement;
- **nifg** - the taxon is not in the 1993 Flora, but included in Grose's 1957 Flora;
- **nifs** - the taxon is not in the 1993 Flora, nor in Grose's 1957 Flora, but included in Stearn's 1975 supplement.
- [ ] - there is no distribution map in the Flora, but the taxon was recorded in the tetrads in the brackets during the Wiltshire Flora Mapping Project for the 1993 Flora;
- **Tetrad references not in brackets** - these are new tetrads in which the taxon has been recorded since the Flora Mapping and up to the end of 2003 inclusive;
- **vc followed by 7, 8 or 78** - these are the vice-counties in which there is a record for a taxon either during or after the Flora Mapping for the 1993 Flora or both.

To use the list for a particular taxon, it is first necessary to look at either the distribution map in the 1993 Flora or the list of tetrads in square brackets. These show the tetrads in which the taxon was recorded during the Flora Mapping. Then look at the unbracketed tetrads to see which tetrads have been added since the Flora Mapping.

### Analysing the data

The analyses here are numbered as though in the same publication as the items in issue No. 8, and thus begin with article No. 7. They relate to particular groups of plants. We begin with *Rubus* species (the brambles), since new data can now be provided for this complex group which was omitted completely from the previous issue. Data have been selected and presented in a way comparable to the *Record List* and the new data analysed. Two following articles cover plants of particular habitats - arable weeds and ancient woodland indicators. Then there is an analysis of refound taxa - those not recorded during the Flora Mapping but known from an earlier period and found again after the Flora Mapping. Finally, the data for a selection of plants with a special relationship with Wiltshire are embedded in detailed portraits of those plants.

It needs to be emphasised again here that the scope of the analyses is limited by the facts that the

### Illustrative sample from the Record List

*Abies cephalonica* \* nif SU 0638, vc8  
*Abutilon theophrasti* \* nrif [ST 8068, SU 3880], vc7  
*Acer platanoides* \* p226, vc78  
*Aceras anthropophorum* slo p362 [SU 0418] ST 9052, vc8  
*Aconitum napellus* ssp. *napellus* p136 SU 0478, 9434, vc78  
*Acorus calamus* \* slo p307 [ST 97, 9860] ST 8042, vc78  
*Adiantum capillus-veneris* slo p124 [SU 0858], vc78  
*Adonis annua* \* p139 SU 1422, 1434, vc78  
*Aesculus carnea* \* nrif [SU 1670, 1680] SU 2662, vc78  
*Agrimonia procera* slo p195 [ST 8868, 9054, 9426, 9426, SU 1222, 1266, 1454, 1456, 1458, 1462, 1464, 1652, 1844, 1846, 1848, 1852, 1856, 2026, 2030, 2044, 2046, 2060, 2068, 2226, 2228, 2286, 2420, 2422, 2428, 2458, 2466, 2622, 2664, 2664, 2818] SU 1022, 1222, 2066, 2238, 2264, 2266, 2420, 2470, 2618, 2862, vc78  
*Agrostemma githago* \* slo p156 [ST 8650] ST 8260, 8656, SU 1284, vc78  
*Allium triquetrum* \* nifs SU 2428, vc8  
*Ambrosia artemisiifolia*\* nifg ST 8650, SU 0638, 1430, 2872, vc78

information represents only recorded additions to the distribution of each taxon covered; and that it is based on individual interests and targeted surveys, rather than on a systematic study of the flora as a whole. Sometimes, the data are meaningful only when taken in conjunction with information from other sources. General sources used for this purpose are Gillam, Green and Hutchison (1993), Mabey (1996), Marren (1999), Preston, Pearman and Dines (2002), Stewart, Pearman and Preston (1994), and the *BSBI Atlas Update Project* provided on-line by the *Botanical Society of the British Isles (BSBI)*. One consistent feature of the analyses is that issues are constantly raised which are in need of further thought or investigation.

### Corrections for Wiltshire Botany 8

Some of the data in the Record List have been found to be incorrect. This can be due to misidentification, mistakes in entering data into the records, or mistakes in transferring data from the records to the record list or while updating the list. Only a few have implications for analyses in the last issue, and it would be tiresome to list the rest here. Given below are those likely to evoke serious attention. A full list on a single A4 sheet is available from the editor on receipt of an SAE.

**RECORD LIST** - With a few exceptions, the complete revised entry for each corrected taxon is given, with the changes stated in bold.

*Aceras anthropomorphum* **should be *Aceras anthropophorum*.**

*Anagallis arvensis* ssp. *caerulea* slo p185 [ST 8070, SU 2060], vc7. **5 new tetrads deleted.**

*Aubrieta deltoidea* **should be *Aubrieta deltoidea*.**

*Cardamine impatiens*. **Deleted - record in error.**

*Epipactis purpurata* var. *chlorotica* slo p354 [SU 0478], vc7. **11 tetrads deleted.**

*Torilis arvensis* slo p237 [ST 9052, SU1026] SU 1222, vc8. **ST9026 deleted.**

*Vicia hybrida*. **Deleted - names confused.**

**OTHER CORRECTIONS** - The correct version is given, with/or changes indicated by bold type.

**P 22 table.**

No. of tetrads	0	1	2-3	4-9	10-19	20+
No. of taxa	<b>43</b>	<b>38</b>	<b>79</b>	<b>100</b>	13	4

**P 23, line 7** - There are approximately **81** taxa ---

**P 23, para 2, line 8** - *Carex panicea* **added**

**P 23, col 2, para 4, line 11** - *Carex panicea* **added**

**P 24, 1<sup>st</sup> subheading** - **Taxa in 10 tetrads or more**

**P 25, para 2, lines 5-6** - --- subsequent records to 2003 add only **5 new tetrads**

**P 25, para 2, line 10** - Apart from tetrad **SU2268**,

**P 27, para 2, line 4** - (approximately **578**),

**P 27, table.**

No. of tetrads	0	1	2-4	5-9	10-19	20+
No. of taxa	<b>290</b>	<b>125</b>	<b>122</b>	<b>33</b>	5	3

**P 27, para 5, line 8** - *Aceras anthropophorum*

**P 29, para 2, line 6** - *Anagallis arvensis* ssp. *caerulea* **deleted.**

**P 32, para 1, line 2** - --- approximately **173** taxa ---

**P 32, table.**

Number of tetrads	1	2	3	4	5-9	10+
Number of taxa	<b>133</b>	<b>28</b>	<b>5</b>	2	4	1

**P 33, column 2, para 2. line 14** - *Cardamine impatiens* **deleted.**

**P 38, para 4** - various corrections from line 6:

*Anagallis arvensis* ssp. *foemina* and *Cardamine impatiens* **deleted.**

**Line 5** - --- for **26** of these.

**Lines 7-12** - --- *Epipactis phyllanthes*, and *Phyteuma orbicularis* have 5 each, *Orchis ustulata* has **4**, *Carex humilis* and *Fumaria parviflora* have 3 each, and *Aconitum napellus* ssp. *napellus*, *Leucojum aestivum*, and *Tephrosieris integrifolia*, 2 each. Single additional tetrads have been noted for

*Aceras anthropophorum* (spelling), *Briza minor*, --  
- *Minuartia hybrida*, *Ornithogalum pyrenaicum*,  
*Rosa agrestis*, *Thesium humifusum*, *Torilis arvensis* and *Vicia bithynica*. **Highlighted taxa (except *Aceras*) moved position because of corrected numbers of tetrads.**

**Acknowledgements**

The data used here derive from the work of many Wiltshire Botanical Society members and others. The author should, therefore, be cited as *Wiltshire Botanical Society* for both issues. Particular individuals have, however, contributed to the writing. These have included Pat Woodruffe, who wrote and supplied photos for the article on woodland indicators, Jack Oliver (on *Lamium*, *Narcissus* and *Quercus*) and Jeremy Wood (*Oreopteris*), for information for that article, and Rob Randall, who provided most of the information from which the article on brambles was composed. Jack Oliver, Dave Green, Richard Aisbitt, Sharon Pilkington and Eric Clement have made helpful comments. Many thanks to them and to all others whose work has contributed to the overall result.

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#### The next issue

The next issue will continue analyses of the records since the 1993 Flora. Analyses for willows and poplars, for conifers and for ferns and their allies are already prepared. Articles are invited, either on the same theme or on other topics. It is hoped at some point in the future to have one or more articles focusing on spontaneous plant aberrations in wild and cultivated plants in Wiltshire, but not planted horticultural forms. Contributions or information on this theme would be particularly welcome. Articles should be submitted to John Presland, 175c Ashley Lane, Winsley, Bradford-on-Avon, Wiltshire BA15 2HR. He will also be pleased to discuss proposed articles informally (Tel: 01225 865125). A leaflet is available offering guidance to authors on the most helpful form in which to submit articles.

## AFTER THE WILTSHIRE FLORA - SUPPLEMENT A

### 7. BRAMBLES (*RUBUS SPECIES*)

#### Introduction

The last issue of this journal presented a collation and analysis of selected records since the 1993 Wiltshire Flora (Wiltshire Botanical Society 2006a) and up to the end of 2003. *Rubus* taxa were omitted completely from that publication. This was because the records available within the Society at that time did not provide a useful guide to the distribution of *Rubus* taxa in Wiltshire for the period covered. There were very many records which had not yet found their way into these sources. This situation has now been rectified, and allows the exploration of the Wiltshire records of *Rubus* taxa presented below.

#### A list of *Rubus* records

The list presented here is comparable to the 2006 *Record List* (Wiltshire Botanical Society 2006c), but is specifically for *Rubus* taxa. It is known as the *Rubus List*. It contains all relevant taxa now in the records held by Wiltshire Botanical Society, recently updated by comprehensive lists provided by Rob Randall (2005; 2006). Accordingly, all *Rubus* species and hybrids reliably recorded in Wiltshire are included, except *R. idaeus* and *R. caesius*, which do not meet the *Record List* criteria. Some, particularly older, records were left out because of doubts about their correctness. As in the *Record List*, post-2003 records are not included.

In the process of assembling the *Rubus List*, the names for some of the taxa in Wiltshire Botanical Society records have been updated. *R. milesii* is now *R. asperidens*, *R. procerus* is now *R. armeniacus*, while *R. badius* is now referred to as *R. badius sensu WGR Watson in Grose (1948)* to distinguish it from *R. badius Focke (1877)*. *R. davisi* is retained, though sometimes included in *R. villicauliformis*.

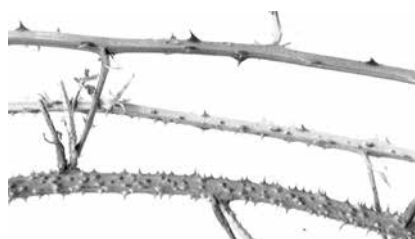
The collection of records on which the *Rubus List* is based has several confusing elements:

- The geographical county boundaries and botanical vice-county boundaries do not always correspond. for recording purposes, Wiltshire consists of vc7 and vc8, but a record can sometimes be in vc 7 or vc 8 but not in Wiltshire, or in Wiltshire but not in vc7 or vc8. All these records are included in the list. Where a record is not in Wiltshire (or is in Wiltshire but not in vc7 or vc8), its vice-county is indicated in the list. For counties, the county or possible counties of occurrence are indicated by their initial capital letters. W = Wiltshire, H = Hampshire, D = Dorset, S = Somerset, B = Berkshire, G = Gloucestershire, and O = Oxfordshire.

#### Basal leaflets stalked v. more or less unstalked



#### Different prickle patterns



- For some records near boundaries, it was not clear what geographical county or vice-county they occupied. These are included as best guesses and the uncertainty is indicated by an exclamation mark (!).
- There remained some records which were not in geographical Wiltshire nor in vc7 or vc8, but in a wider “Wiltshire” defined by Grose (1957). These were omitted from the list here.

As in the *Record List*, the records are presented as tetrads. The grouping of tetrads for each taxon, is designed to be comparable to that in the original list, but is not exactly the same. There are 3 groupings used, presented in the order below:

- {...} = tetrads recorded before 1983. This was not done for other groups in the *Record List* because the data were not available. Rob Randall’s recent lists have provided it for *Rubus* taxa, and they are the sole sources for this grouping. However, many of the map references have been estimated using the gazetteer at the back of Grose’s (1957) flora. For some records, only the hectad is known, which explains the 2-figure grid references.
- [...] = tetrads recorded from 1983 to 1991 inclusive. These are from the Wiltshire Flora Mapping Project (WFMP) database on which the 1993 Flora was based and from Randall’s lists.
- No brackets = new tetrads recorded from 1992 to 2003 inclusive. These are relevant records from the Wiltshire Botanical Society’s post-WFMP database, as updated by Rob Randall’s lists, which are not in the WFMP database nor in the additional 1983-91 records included here. It is, therefore, a record of taxa which are new since the recording period for the 1993 Flora. Some of them, however, will also have been recorded before that period, ie before 1983.

The tetrads are followed by the vice-counties in which the taxon was recorded in the period 1983-2003 inclusive. Pre-1983 records are not taken into account, thus maintaining comparability with the main record list. Where it is unclear whether or not there is a record for a particular vice-county, that vice-county is omitted.

### The *Rubus* List

- R. acclivatum*** nif {SU 2274} [No record] SU 2066, vc7  
***R. adamsii*** nif {SU 26, 2652} [SU 26, 2652, 2654, 35(WH)] ST 8644, SU 2650, 2852, vc78  
***R. adenoleucus*** nif {ST 9464, 9466} [No record] ST 8288, 8648, 8650, 8672, 9074, 9266, 9276, 9280, 9464, 9466, 9468, 9480, 9666, 9668, SU 1864, 2066, 2068, 2264, 2266, vc78

- R. adscitus*** nif {SU 2018, 26} [ST 73, SU 22(WH!)] SU 0434, 0632, 2664, vc78  
***R. albanis*** nrif {ST 7432 (vc6), 9226, 9274, 9426, SU 0030} [ST 9274, SU 02 (WH!), 22(WH!)] ST 7432, 8624, 8824, 9074, 9276, 9280, 9480, SU 0034, 0234, 2622, vc78  
***R. amplificatus*** nif {SU 0488, 22(!), 2466, 35(!)} [No record] ST 8054, 8442, 8642, 9074, 9076, 9278, SU 0234, 2066, 2266, 2466, vc78  
***R. angusticuspis*** nif {No record} [No record] SU 0234, vc8  
***R. armeniacus*** nrif {ST 8060, 9024, SU 1460, 1682, 2270} [ST 7862, 8470, SU 07, 1460, 21(!),36(WBH!)] ST 8054, 8066, 8428, 8442, 8642, 8644, 8654, 8656, 8672, 8856, 8864, 8872, 8874, 9040, 9064, 9072, 9074, 9076, 9264, 9266, 9274, 9276, 9638, SU 0236, 0682, 0830, 1428, 1466, 1628, 1668, 1826, 1868, 2020, 2022, 2066, 2068, 2432, 2452, 2650, vc78  
***R. arnipotens*** nrif {SU 2050, 2458, 2466, 3066} [SU 1460, 2264, 2464, 2664] ST 8054, SU 1830, 1866, 2028, 2066, 2068, 2218, 2226, 2228, 2230, 2232, 2266, 2432, 2466, vc78  
***R. arrhenii*** - nif {ST 8042} [ST 8654] ST 8042, 8240, 8242, 8442, 8642, vc8  
***R. arrheniiformis*** nif {ST 7432(vc6)} [No record]  
***R. asperidens*** nrif {ST 9226, 9274, SU 1460 2422} [ST 73(WD), 9274, 9278, 9280, 9468, SU 1460, 21(WH!), 2464, 35(WH)] ST 8488, 8878, 8880, 8882, 8884, 9074, 9076, 9084, 9276, 9480, SU 0088, 0434, 0484, 1830, 2026, 2028, 2228, 2230, 2420, 2664, vc78  
***R. badius sensu WGR Watson in Grose (1948)*** nrif {SU 1460, 1856, 2262, 2466, 26} [SU 1460, 2264, 2464] vc78  
***R. bercheriensis*** nrif {ST 8442, 8842, SU 0484, 2466} [ST 92, SU 2264, 2464, 35(WH)] ST 8442, 8624, 8642, 9466, 9468, SU 0484, 2064, 2066, 2266, 2466, vc78  
***R. bertramii*** nif {ST 7434 (vc6), 7632(vc6WS), 7634, SU 21(H) SU} [No record] 2816, vc8  
***R. biloensis*** nif {ST 7632(vc6)} [No record]  
***R. bloxamii*** nrif {ST 7432(vc6WS), 7434, 7630, 7630(vc6WS), SU 0228, 1028, 1820, 1826, 1828} [ST 7434, SU 1466, 2264, 2416, 2616] ST 7434, 8652, 8830, 8856, 9030, 9666, SU 2020, 2022, 2026, 2066, 2068, 2228, 2230, 2420, vc78  
***R. boudiccaae*** nif {SU 1662, 21(H!)} [No record] SU 1866, 2066, 2420, vc78  
***R. britannicus*** nif {SU 2654} [No record] SU 2652, vc8  
***R. bucknallii*** nif {No record} [No record] ST 8288, vc7  
***R. caesius x R. ulmifolius*** nif {ST 8240, 9668, SU 0284, 0286, 0456, 2090} [SU 0286] vc7  
***R. calvatus*** nrif {ST 8042, 9466, SU 0286} [ST 9468] ST 8240, 8242, 8442, 8642, 9466, 9666, SU 2066, vc78  
***R. cantianus*** nrif {SU 26, 2652} [SU 1460, 24(WH), 35(WH)] SU 1866, 2066, 2068, 2650,

2652, vc78

**R. cardiophyllus** nrif {ST 8038, 8054, 8246, 8626, 8830, 9276, 9426, 9466, 9626, 9668, 9886, SU 0030, 0088, 0090, 0286, 1460, 1820, 1826, 2262, 2264, 26} [ST 73(WDS), 8280, 8654, 9274, 9278, 9280, SU 0286, 0678, 21(WH!), 2264, 2664, 35(WH), 36(WBH!)] ST 8054, 8430, 8442, 8642, 8644, 8652, 8672, 8674, 8856, 8874, 8882, 8884, 9072, 9074, 9076, 9084, 9236, 9266, 9436, 9466, 9468, 9478, 9480, 9666, SU 0086, 0088, 0236, 0284, 0288, 0484, 0832, 2020, 2026, 2066, 2068, 2220, 2228, 2266, 2420, 2464, vc78

**R. cinerosiformis** nif {No record} [No record] ST 7434, vc8

**R. cinerosus** nif {ST 8842} [No record]

**R. cissburiensis** nif {SU 2074, 2272} [ST 8654, SU 35(WH)] ST 8066, 9072, SU 2066, vc78

**R. confertiflorus** nrif {No record} [SU 2816] vc8

**R. conjungens** nif {ST 8054, 8642, 8842, 9242, 9452, 9464, 9474, 9626, 9634, 9888, SU 0088, 0286, 0656, 0658, 1034, 1428, 1466, 1662, 1868, 2068, 2082, 2282, 2482, 2654, 3066} [SU 1006, 16, 22(WH!), 25, 86, 93] ST 8054, 8644, 8654, 8872, 8878, 8880, 8882, 8884, 9084, 9274, 9284, 9436, 9636, SU 0830, 0832, 0484, vc78

**R. conspersus** nif {SU 1028} [SU 22] vc8

**R. criniger** nif {No record} [SU 22(!)] SU 2068, 2268, vc7

**R. curvispinosus** nif {ST 7432(vc6), 7632(vc6)} [SU 21(H!)]

**R. dasyphyllus** nrif {ST 7434(vc6), 7632(vc6), 7636(vc6), 8054, 8240, 8442, 8446, 8626, 8654, 8830, 9272, 9466, 9626, 9886, SU , 0030, 0076, 0228, 1682, 2068, 2270, 2470, 26, 2676, 3070} [ST 7860, 8062, 8654, 8656, 9468, SU 0286, 21(WH!), 24(WH), 2464, 35(WH)] ST 8054, 8240, 8242, 8430, 8442, 8624, 8630, 8642, 8644, 8652, 8672, 8674, 8824, 8826, 8830, 8836, 8838, 8842, 8844, 8856, 8878, 8880, 9026, 9030, 9034, 9036, 9072, 9084, 9236, 9266, 9434, 9466, 9480, 9634, 9636, 9666, SU 0034, 0086, 0234, 0236, 0434, 0484, 0632, 0684, 0830, 1830, 1864, 2066, 2228, 2230, 2232, 2266, 2466, 2644, 2652, 2664, vc78

**R. davisii** (also called **R. villicauliformis**) nif {No record}[No record] SU 2816, vc8

**R. decussatus** nif {No record} [No record] ST 8876, 9274, vc7

**R. dentatifolius** nrif {ST 7432(vc6), 7434(vc6), 7630(WS), 7634, SU 1662} [SU 21(WH!), 22, 2264, 2464] ST 7434, 8242, 8624, 8630, 8830, 9434, vc78

**R. divaricatus** nif {SU 2618} [SU 2816] vc8

**R. diversus** nrif {SU 0228} [No record] SU 2420, vc8

**R. dumnoniensis** nif {SU 1662}[No record]

**R. durotrigum** nif {ST 7434} [No record] ST 7434, SU 2420, vc8

**R. eboracensis** nif {No record} [No record] ST 8086, 9074, SU 0286, vc7

**R. echinatoides** nif {SU 1662, 2066, 2074, 2274, 2276, 26, 2674} [No record] SU 1866, 2064, 2066, 2264, 2266, vc7

**R. echinatus** nrif {ST 7632, 7660, 7662, 8054, 8246, 84, 8446, 8448, 8642, 8830, 8842, 9072, 94, 9454, 9466, 9668, 9686, 9888, SU , 0030, 0088, 0282, 0886, 1028, 1036, 1078, 1466, 1662, 1664, 1668, 1826, 1828, 1856, 1868, 2068, 2262, 2270, 2430, 25, 26, 2674} [ST 8654, 8656, 9274, 9278, 9280, 9466, 9696, 9892, SU 0678, 1460, 2264, 2460, 2464, 25, 2664, 35, 36(WBH!)] ST 8054, 8086, 8288, 8488, 8642, 8644, 8674, 8836, 8838, 8842, 8844, 8882, 8884, 9028, 9034, 9036, 9038, 9072, 9074, 9084, 9236, 9276, 9278, 9280, 9434, 9466, 9636, 9666, 9668, SU 0034, 0086, 0088, 0234, 0286, 0434, 0484, 0632, 1466, 1828, 1830, 1866, 2026, 2028, 2066, 2068, 2266, 2230, 2420, 2450, 2452, 2464, 2466, 2652, vc78

**R. euryanthemus** nif {No record} [SU 21(H!), 22(H!)] SU 2616, vc8

**R. fissus** nif {ST 9226} [SU 21] vc8

**R. flexuosus** nrif {ST 7432(vc6), 7434(vc6), 7634(vc6), 8042, 8248, 8842, 9466, SU 1238, 2466} [SU 2464, 35(WH)] ST 7434, 8242, 8442, 8642, 8830, 9030, SU 0434, 0484, 1830, 2066, 2230, 2264, 2420, 2466, 2616, vc78

**R. fuscicaulis** nrif {SU 2066, 2074, 2464} [SU 2264, 2266] SU 1864, 1866, 2066, 2068, 2464, 2466, 2664, 2852, vc7

**R. glareosus** nif {ST 7432, 7434, 7840, 8042, 8242, 8442, SU 2426, 2868} [SU 21(WH!), 24(WH) 35(WH)] ST 7434, 8240, 8242, 8442, 8642, 8654, 8856, SU 0034, 0234, 0434, 1830, 1866, 2064, 2266, 2420, 2652, vc78

**R. gratus** nif {ST 7632(vc6)} [No record]

**R. halsteadensis** nif {No record} [No record] ST 9634, vc8

**R. heterobelus** nif {SU 1856} [ST 73(WSD), SU 16] vc78

**R. hylocharis** nrif {No record} [ST 9274] ST 9274, SU 2066, 2664, vc7

**R. hylophilus** nif {No record} [No record] SU 2066, vc7

**R. idaeus f.anomalus** nif {No record} [No record] ST 8624 vc8

**R. imbricatus** nif {No record} [No record] ST 8066, SU 0286, vc7

**R. insectifolius** nrif {No record} [ST 9280, SU 21(H!), 22(H!)] ST 8642, SU 2066, 2652, vc78

**R. laciniatus** nrif {ST 9024} [SU 13, 1868] ST 9478, vc78

**R. lanaticaulis** nrif {ST 8054, 9652} [ST 9468, 95] ST 8054, 8442, 8642, 8842, vc78

**R. largificus** nif {No record} [No record] ST 8242, vc8

**R. lasiodermis** nif {No record} [SU 73] vc8

**R. leightonii** nrif {SU 0428, 1820, 1826, 2020, 2240, 2418, 2430, 2618} [SU 2416] ST 8872, 9072, SU 1830, 2020, 2220, 2230, 2420, vc78



- R. leucandriformis*** nrif {SU 1032, 1868} [SU 2416, 26] SU 1830, 2026, 2220, 2228, 2230, 2420, vc8
- R. leucostachys*** nrif {SU 2426} [21(H!)] SU 2220, 2420, vc8
- R. leyanus*** nif {ST 8642, 8842} [No record] ST 8240, 8242, 8442, 8642, 8836, 8842, vc8
- R. lindleianus*** nrif {ST 76, 8042, 8240, 8442, 8630, 8642, 9226, 9426, 9466, 9626, 9668, SU 0088, 0228, 1460, 1466, 1686, 1820, 1826, 1864, 2026, 22, 2262, 2274, 2276, 2420, 26} [ST 8654, 9274, 9278, 9468, SU 21(WH!), 2464, SU 1460, 2264, 2464, 35(WH)] ST 8054, 8242, 8288, 8442, 8444, 8488, 8624, 8630, 8642, 8644, 8652, 8672, 8674, 8836, 9466, SU 0284, 0286, 0484, 2026, 2066, 2466, vc78
- R. loganobaccus*** nif {No record} [No record] SU 0830, vc8
- R. longus*** nif {ST 7434, 8874, SU 2026} [No record] ST 8442, 8642, 9074, 9466, vc78
- R. macrophyllus*** nif {ST 7432(vc6)} [No record]
- R. melanodermis*** nif {No record} [SU 21(H)] SU 0632, vc8
- R. micans*** nif {ST 8630, 8642, 8830, 9626, SU 1460, 1826} [SU 21(WH!)] ST 8442, 8630, 8642, 8830, 9028, 9036, 9234, 9236, 9434, 9466, 9636, 9638, 9668, SU 0228, 0434, 2268, vc78
- R. moylei*** nrif {SU 2426, 26} [16] ST 8054, 8630, SU 1830, 1866, 2228, 2230, 2420, vc8
- R. mucronatiformis*** nrif {ST 7630, 7840, 8042, 8240, 8626, 8830, 8842, 9226, 9426, 9626, SU 0030, 0228, 1820, 1828, 2020, 2026, 26, 2618} [02(WHD!), 2616] ST 8240, 8242, 8442, 8444, 8624, 8630, 8642, 8644, 8824, 8830, 9026, 9028, 9030, 9036, 9434, SU 0034, 0234, 2020, 2266, 2420, 2652, vc78
- R. murrayi*** nif {No record} [No record] SU 1830, vc8
- R. nemoralis*** nif {ST 7632(vc6), 8246, 9226, 9276, 9466, 9626, SU 2020, 2672} [ST 8654] ST 8240, 8242, 8442, 8630, 8642, 8652, 9074, SU 2266, 2466, vc78
- R. nemorosus*** nrif {No record} [SU 1230, 21(WH!)], vc8
- R. nessensis*** nrif {ST 7432(vc6WS), 7434(vc6)} [ST 9274, SU 36(B!)] ST 7434, 8630, 8642, 8842, 9034, 9468, vc78
- R. norvicensis*** nrif {26}[SU 22(H!), 2264] SU 2622, vc78
- R. oxyanchus*** nif {SU 0030(WH)} [No record] SU 0286, 0484, 23(WH), vc78
- R. pallidus*** nif {SU 2464, 2466} [SU 21(H!)] SU 2066, vc7
- R. pedemontanus*** nif {No record} [No record] ST 9468, SU 2652, vc78
- R. percrispus*** nif {No record} [No record] SU 2026, 2230, 2420, vc8
- R. phaeocarpus*** nrif {SU 1868, 2868} [SU 21(H!), 2264, 2664, 36(WBH!)] SU 1830, 2066, 2266, 2464, 2466, vc78
- R. pistoris*** nif {No record} [SU 21(H)] vc8
- R. platyacanthus*** nif {ST 7432(vc6), SU 2618} [SU 2616] SU 2418, 36(WBH!), vc8
- R. plicatus*** nif {ST 7432(vc6), 7434(vc6), 8242, 9226} [No record] ST 8442, SU 2616, 2816, vc8
- R. polyanthemus*** nrif {ST 7430(vc6), 7434(vc6), 7632(WS), 7840, 8042, 8240, 8246, 8442, 8842, 9466, 9668, SU 1662, 2066, 2262, 2466, 26, 2672, 35(WH), 36(BH!)} [ST 8654, 92, 9468, 9668, 98, SU 07, 21(WH!), 35(WH), 36(WBH!), 2264] ST 8054, 8240, 8242, 8442, 8642, 8830, 8842, 8878, 9036, 9234, 9236, 9278, 9434, 9466, 9434, 9468, SU 0286, 0484, 1434, 2064, 2066, 2266, 2464, 2466, 2664, vc78
- R. prolongatus*** nrif {ST 9466} [ST 9468, SU 21(H!)] ST 8624, 8654, 9266, 9466, 9666, 9668, vc78
- R. pruinosis*** nrif {ST 7632, 8644, 8826, 9242, 9438, 9626, SU 0030, 1230, 1236, 1238, 1460, 1664, 1682, 1856, 1864, 2050, 2070, 2262, 26, 2654, 2680} [ST 7870, 8070, 8272, 8654, 95, SU 0478, 06(W) 1460, 1466, 2616, 36(WBH!), 37(WB)] ST 8066, 8430, 8630, 8874, 9038, 9072, 9074, 9076, 9236, 9274, 9276, 9278, 9280, 9436, 9468, 9478, 9480, 9636, 9638, SU , 0086, 0088, 0234, 0236, 0284, 0286, 0288, 0484, 0832, 1826, 1866, 2066, 2452, 2652, vc78
- R. x pseudoidaeus (R. idaeus x R. caesius)*** nif {No record} [No record] ST 8826, vc8
- R. pyramidalis*** nrif {ST 8042, 8240, 8842, 9074, 9226, 93, SU 1828, 2026, 2466, 26} [ST 95, SU 2464] ST 8242, 8442, 8642, 8842, 8876, 9030, 9034, 9036, 9074, 9234, 9236, 9434, SU 0484, 2652, vc78
- R. questieri*** nif {ST 7630(WS)} [SU 21(WH!)]
- R. radula*** nif {SU 2274, 26} [No record] SU 2064, 2464, 2652, 2852, vc78
- R. raduloides*** nrif {ST 8842, 9236, SU 1662} [SU 2464] ST 8836, 8838, 9038, 9234, 9236, 9434, 9468, vc78
- R. rhombifolius*** nif {ST 8042, 8642, 8842, 9236, SU 26} [SU 16, 21(H!), 25(probW)] SU 0484, 2616, vc78
- R. rossensis*** nrif {No record} [No record] ST 8624, 8824, SU 2020, 2218, 2418, vc8
- R. rubritinctus*** nrif {ST 7860, SU 2064, 2074, 26} [08, 21(H!)] ST 8624, 8642, 8654, 8824, 8826, 8830, 9074, 9026, 9028, SU 2068, 2220, vc78
- R. rudis*** nrif {26} [ST 8280, SU 2264, 2266, 23(Clarendon Forest area), 37(WB)] ST 8066, SU 0632, 0832, 1868, 2066, 2652, vc78
- R. rufescens*** nrif {ST 8042, 9226, 9888, SU 0088, 0264, 2274, 26, 2674, 3226, 3270} [ST 7862, 8062, 9278, 9280, 9892, SU 0286, 0478, 2266, 24(WH), 2464] ST 8288, 8442, 8630, 8642, 8878, 9084, SU 0086, 0088, 0284, 0288, 0484, 2230, vc78
- R. scaber*** nif {No record} [No record] ST 7434, vc8
- R. sciocharis*** nif {ST 8042} [No record] ST 7434, 8242, SU 2066, 2266, vc78

**R. scissus** nif {ST 7432(vc6), 7634(vc6), 8842} [No record]

**R. silvaticus** nrif {ST 7430(vc6WS), 7632(vc6WS), 8676, SU 0286} [SU 0286] ST 8240, 8242, 8442, 8642, 8876, SU 0086, 0284, 0288, 0484, 0684, 2066, vc78

**R. sprengelii** nif {ST 7432, 7632, 8042, 8242} [SU 21(WH!), 36(WBH!)] ST 7434, 8442, vc8

**R. stenopetalus** nif {SU 1856, 2050} [ST 9636, SU 2652] ST 8654, 8856, 9234, 9236, SU 0034, 0234, 0236, 0632, 1830, 2420, 2652, 2850, vc8

**R. subinermoides** nrif {SU 1460, 1664, 26, 3070} [ST 98, SU 1460, 21(H!), 2264] ST 8288, 8488, SU 0286, 2020, 2022, 2026, 2220, 2228, 2420, vc78

**R. subinermoides x R. ulmifolius** nrif {No record} [No record] SU 2020, vc8

**R. subintegribasis** nrif {No record} [SU 2616, 2816] ST 8642, vc8

**R. sulcatus** nif {No record} [No record] ST 8876, 92, vc78

**R. surrejanus** nif {No record} [SU 22(WH!)] ST 7434, SU 1866, 2066, 2652, 2664, vc78

**R. thysigeriformis** nif {No record} [No record] ST 8066, 8086, 9278, 9280, vc7

**R. trichodes** nif {SU 2652} [No record] SU 1864, 2064, 2066, 2266, 2652, vc78

**R. tuberculatus** nrif {SU 0090, 26} [ST 7862, 95, 96, 98, SU 0286, 05, 15, 16] ST 8066, 8242, 8442, 8644, 8672, 8856, 8872, 8874, 8876, 9074, 9274, SU 0088, 0484, 0684, 1628, 1830, 2020, 2028, 2420, 2650, vc78

**R. ulmifolius** nrif {ST 9272, SU 0636, 1078, 1430, 1692, 1878, 2068, 2426, 26 - but Grose said it was our commonest species and almost universally distributed, so, presumably, most people just didn't bother to record it} [ST 73(WSD), 7862, 8062, 8280, 8654, 8656, 9090, 9268, 9278, 9280, 9468, 9892, 9894, 73, 93, 94, 95, 91(WD), SU 0086, 01(WHD!), 0286, 04, 0478, 05, 06, 0626, 09, 11(WHD), 14, 1460, 15, 18, 2068, 21(WH), 2262, 24(WH), 2464, 25, 27, 28(WBH), 35(WH), 36(WBH), 37(WB), 29(WGO)] ST 8054, 8066, 8086, 8228, 8428, 8430, 8442, 8444, 8488, 8624, 8630, 8642, 8644, 8672, 8674, 8824, 8826, 8830, 8836, 8842, 8844, 8856, 8870, 8872, 8874, 8876, 8878, 8880, 8882, 8884, 9026, 9028, 9038, 9040, 9064, 9072, 9074, 9076, 9084, 9240, 9242, 9264, 9266, 9274, 9276, 9284, 9436, 9464, 9466, 9478, 9480, 9628, 9638, 9664, 9666, 9668, 9886, SU 0034, 0086, 0088, 0234, 0236, 0284, 0434, 0484, 0682, 0684, 0830, 0832, 1428, 1466, 1468, 1628, 1668, 1826, 1830, 1868, 1880, 2020, 2024, 2026, 2028, 2066, 2220, 2226, 2228, 2230, 2232, 2252, 2266, 2420, 2450, 2452, 2466, 2650, 2850, vc78

**R. ulmifolius x R. vestitus** {No record} [SU 0286] ST 8488, vc7

**R. vestitus** nrif {ST 7430(vc6WS), 7630, 7662, 7840, 7860, 8038, 8042, 8240, 8242, 8270, 8442, 8446, 8470, 8474, 93, 9626, 9634, 9888, SU 0088, 0090, 0286, 0488, 05, 0682, 07, 1028, 1430, 1820,

1826, 1854, 2050, 2074, 2262, 2274, 2426, 2450, 26, 2652, 2654, 2672, 2680} [ST 7862, 7870, 8062, 8070, 8272, 8280, 8654, 9090, 9278, 9280, 9468, 9696, 9892, SU 0286, 05, 07, 1460, 2068, 2264, 2464, 2664] ST 78, 8066, 8086, 8228, 8240, 8242, 8288, 8428, 8430, 8442, 8444, 8446, 8488, 8624, 8630, 8642, 8644, 8652, 8672, 88, 8824, 8830, 8842, 8844, 8856, 8872, 8878, 8880, 8882, 9028, 9030, 9034, 9036, 9040, 9084, 9234, 9236, 9276, 9434, 9478, 9480, 9634, 9636, 9886, SU 0034, 0086, 0088, 0234, 0236, 0284, 0288, 0432, 0434, 0484, 0632, 0684, 0830, 0832, 1830, 1864, 1866, 2064, 2066, 2228, 2230, 2232, 2266, 2452, 2466, 2650, 2652, 2850, 2852, vc78

**R. vigorosus** nif {No record} [No record] ST 8442, vc8

**R. winteri** nrif {No record} [ST 93, 9468, SU 24(WH)] ST 9434, 9436, SU 1830, 2028, 2228, 2230, 2232, vc78

### Analysing the data

The following analyses of the records in the *Rubus List* here are on a similar basis to those carried out on the *Record List*, though with departures. It contains three groups of data - before 1983, 1983-1991 and 1992-2003. It is possible to make comparisons between any two of these groups, but there are factors which indicate a need for care in doing so:

- The genus *Rubus* causes particular problems for identification and recording, because the entity *Rubus fruticosus* commonly used for those purposes, is more appropriately regarded as a collection of many hundreds of distinct species, of which more than 500 probably occur in Britain. This is mainly a consequence of processes like hybridisation and chromosome doubling making sexual reproduction difficult, so that seed production now occurs without cross-fertilisation (apomixis), and vegetative reproduction is also frequent. The resulting reduction in opportunities for genes of different plants to interact means that each new variant usually reproduces only copies of itself and can thus be regarded as a separate species. Where cross-fertilisation does occur, further variants are produced, which again do not normally reproduce by sexual means. Because of the large number of species which results and the fine differences between these species, the genus has long been treated as one for specialist study, and avoided by most observers and recorders. For interest, some of the features used to distinguish between taxa are shown in the photographs at the beginning and end of this article.
- The records differ in their degree of precision. Most are tetrad records, but some are just for hectads. In the analyses below, a hectad record

is counted simply as a tetrad record, since it can be assumed that occurrence was in at least one tetrad within the hectad. It may have been in more than one tetrad, but we cannot know this, so cannot make counts which assume it.

- Recording of *Rubus* in Wiltshire has, historically, proceeded in fits and starts, depending on the specialised interests of botanists in particular parts of the county at particular times and the periodic visits of outside experts. Even botanists with county-wide activity, such as Flower and Preston in the second half of the 19<sup>th</sup> century, were cautious in presenting findings, because of the difficulty both in identification and in accurate determination of distribution (Randall 1999). There were few important bramble records between the start of the 1914-18 war and the earliest work of Grose in 1948 (Randall 2000). Grose compiled a systematic account of the group for his flora (Grose 1957), but there followed a long period in which few important additions were made. An attempt was made to include brambles in the recording period (1983-1991) for the 1993 Wiltshire Flora (Gillam, Green and Hutchison 1993), but most of it was done during a 2-day visit by several national experts (botanologists). The Flora simply lists the species found, with a statement that very little is known about their distribution. The list was incomplete, including only 38 of the 137 taxa listed here. Since then, the work of David Allen, Rob Randall and others (Randall 2001) has enabled more comprehensive description, together with distribution maps. The upshot is that comparisons between one period of time and another are comparisons between recording activities rather than between frequencies and distributions of the species - though there is plainly a relationship between the two. This is best exemplified in the fact that, for almost all species in the list, there are more new tetrads recorded for the 1992-2003 period than there were total numbers of tetrads for 1983-1991. Further, in 1983-91, there were only 9 taxa with 10 or more tetrads noted, and none with 20 or more. In 1992-2003, 25 taxa had 10 or more new tetrads, and 12 of these had 20 or more. These findings are plainly not due to all the taxa concerned becoming more widespread, but rather reflect greater effectiveness in finding them.
- Since some records were omitted from the list because they might not be correct, it is likely that the *Rubus* List lacks some taxa which have actually been present.
- Recording brambles is complicated by the existence of many rare local forms, mostly apomicts and often consisting of a single clump, which have not been properly named. One of these has been recorded in Wiltshire because it

was given a name at one point but then had it taken away because it belonged properly to a different taxon. This is the form now labeled for recording purposes as *R. badius* sensu WGR Watson in Grose (1948) to distinguish it from *R. badius* proper.

The analyses of Wiltshire Botanical Society records below are supplemented where appropriate by reference to the Wiltshire distribution reported by Randall (2001) and the national distribution as detailed by Newton and Randall (2004). The latter compares the distributions by hectads (10 km squares) known before 1988 (Edees and Newton 1988) with later findings up to 2000, though hybrids are not included.

### The most widespread taxa in Wiltshire

The 1992-2003 data do show that acquisition of new tetrads by some species is much more extensive than it is by others. *Rubus ulmifolius* was recorded in 97 new tetrads, *R. vestitus* in 73, *R. dasyphyllus* in 55 and *R. echinatus* in 53. This is in line with Randall's (2001) summaries of the first three being "common" in Wiltshire and the last "widespread and locally frequent". Randall's summaries for the Wiltshire distribution of the other 23 taxa with 10 or more new tetrads were as follows, with the number of new tetrads for each taxon in brackets:

- R. cardiophyllus* (40) - widespread and locally frequent
- R. armeniacus* (39) - frequent garden escape, increasing
- R. pruinosis* (33) - widespread
- R. polyanthemus* (25) - widespread and locally frequent
- R. mucronatifolius* (21) - rare in vc7, locally frequent in vc8
- R. lindleyanus* (21) - widespread
- R. asperidens* (20) - locally frequent
- R. tuberculatus* (20) - widespread
- R. adenoleucus* (19) - locally frequent in vc7, rare in vc8
- R. glareosus* (16) - rare in vc7, locally frequent in vc8
- R. conjungens* (16) - locally frequent in vc7, rare in vc8
- R. micans* (16) - rare in vc7, locally frequent in vc8
- R. flexuosus* (15) - rare in vc7, locally frequent in vc8
- R. armipotens* (14) - locally frequent
- R. pyramidalis* (14) - rare in vc7, locally frequent in vc8
- R. bloxamii* (14) - rare in vc7, locally frequent in vc8
- R. stenopetalus* (12) - locally frequent in vc8

*R. rufescens* (12) - locally frequent in vc7, rare in vc8

*R. rubritinctus* (11) - rare in vc7, locally frequent in vc8

*R. silvaticus* (11) - locally frequent

*R. albionis* (10) - rare in vc7, locally frequent in vc8

*R. amplificatus* (10) - rare

*R. bercheriensis* (10) - locally frequent

It is noteworthy that, as the number of new tetrads decreases, so words like "widespread", "common" and frequent become replaced by "locally frequent" and "rare". The only surprise is *R. amplificatus*, with more new tetrads than would be expected from a species thought of as rare in Wiltshire - though not nationally, where it is widespread. *R. albionis* has 4 new tetrads in vice-county 7, where it was thought of as rare, but otherwise, vice-county records conform to expectation.

Many of these taxa are characteristic of the bramble flora of a batologically distinctive area including the Midlands and Southeast and Mid-south England - or substantial parts of that area. One or two taxa are of particular interest in deviating from that pattern. *R. adenoleucus* was considered rare in Britain before 1988, but has since been recorded considerably more widely. Wiltshire has featured particularly strongly in this extension. *R. stenopetalus* is a French species which was not known in Britain in 1988, but has now been recorded in 35 tetrads in Mid-south England only. *R. glareosus* is found mainly in Sussex with new records appearing outside it, while *R. mucronatiformis* is likewise spreading beyond its New Forest stronghold. *R. silvaticus* has its main stronghold in Wiltshire, with a few outlying but nearby locations.

#### Least common taxa in Wiltshire

Another comparison already undertaken for taxa in the *Record List* in Issue No. 8 is the identification of taxa present in the 1983-91 period but in no new tetrads or 1 in 1992-2003. There were 19 taxa with no new tetrads in 1992-2003. With the greater number of records generally in that later period, the absence of any new tetrads might indicate extinction or near-extinction. Of these, 17 were recorded in no tetrads or 1 in 1983-91, so there was hardly any baseline from which a decline could be measured. They could well have been just as rare or absent in that period too. Plainly, there is little of significance in these figures. The numbers of tetrads before 1983 are much the same, the greatest number of tetrads being for *R. caesius* x *R. ulmifolius*, which had 6.

Of the 19 taxa, 7 were recorded before 1983 but not since. It is likely that these are extinct in Wiltshire or are at the least in danger of becoming so. Their

distribution in Britain does nothing to suggest otherwise, except in the case of *R. macrophyllus*. Apart from that one, which is widespread in Southern England, they are all rare nationally or localised in areas or habitats from which spread to Wiltshire is unlikely. *R. arrheniiformis* was recorded in only 36 hectads before 1988 and 9 since, while *R. cinerosus* was recorded in 24 before 1988 and 11 since. *R. biloensis* was not known in Britain before 1988, but is now widespread in South Wales, but rare elsewhere, while *R. dumnoniensis* is common in the western parts of Britain and only occasional elsewhere. *R. gratus* is found mainly only on heaths and other peaty soils and *R. scissus*, on upland heaths.

Of the 27 taxa with only one new tetrad since 1982, only 7 were recorded in the Flora Mapping, and looking at the data is not particularly rewarding. Six were included in the latest British atlas and are widely distributed either nationally or in specific areas near Wiltshire, so there is no obvious reason for their scarcity in the county. It may be significant that *R. euryanthemis* is on the edge of its range in Wiltshire, while *R. melanodermis* and *R. subintegribasis*, though occupying many hectads along the mid-south coast, did not venture far from the sea before 1988, but have spread inland since - the latter only to Wiltshire.

Of particular interest is *R. arrhenii*, because, while it has been recorded in 5 new tetrads, they are all in a single hectad in the Longleat area. Before 1988, this was its only locality in Britain, and its recorded range has still not extended beyond two neighbouring hectads. This does, however, mean that it now belongs partly to Somerset.

#### New taxa

Perhaps the most interesting data are for taxa which were not recorded in 1983-91, but recorded since. There were 39 of these. The one with the most new tetrads was *R. adenoleucus* with 19. *R. amplificatus* was next with 10. Both these two and *R. leyanus* in 6 new tetrads were described as locally frequent in some parts of the county by Randall. *R. echinoides*, *R. trichodes*, and *R. rossensis* with 5, *R. longus*, *R. sciocharis*, *R. thyrigeriformis* and *R. radula* with 4 are described as rare. There were 5 more in 3 tetrads, 3 in 2 tetrads and the rest in one.

The arrival of *R. adenoleucus* and *R. trichodes* reflects national trends, with the former having 2 hectads before 1988 and 15 additions since, while the latter had 11 before 1988 and 18 new ones since. The ascent of *R. thyrigeriformis* has been even more dramatic. It is a French species, not recognised as a species before 1988 but recorded in 18 new hectads since. Until the mid-90s these were

in South Hampshire and the Bristol region only, but it has since jumped into North Wiltshire. *R. amplificatus* was widespread nationally even in 1988, and its arrival in Wiltshire is part of a general spread. The other taxa here are widespread in other areas, and there is no obvious reason why they were not known in Wiltshire during the Flora Mapping.

Most interesting of all are the 22 taxa that were, additionally, not recorded before 1983, so that the 1992-2003 records are the first ever. Most of these were noted in just one new tetrad, with many being described by Randall (2001) as occurring in only one site, which indicates that they have been rare throughout. They are: *R. angusticuspis*, *R. bucknallii*, *R. cinerosiformis*, *R. davisii*, *R. halsteadensis*, *R. hylophilus*, *R. idaeus forma anomalum*, *R. largificus*, *R. loganobaccus*, *R. murrayi*, *R. scaber*, *R. vigorosus*, *R. subinermoids x R. ulmifolius* and *R. x pseudoidaeus (R. idaeus x R. caesius)*. *R. loganobaccus* could be said not to be really a part of our flora. It is, in fact, the Loganberry, a cultivated taxon which escapes, but rarely.

Some, however, were recorded in several new tetrads, which might suggest a potential to be overlooked, so that they might be more common than has been thought. *R. rossensis* has been found in 5 new tetrads, *R. decussatus* and *R. thyrsoformis* in 4, *R. percrispus* and *R. eboracensis* in 3, and *R. imbricatus*, *R. pedemontanus* and *R. sulcatus* in 2. *R. percrispus*, however, had been described as a species only recently, and therefore has a different reason for not being recorded earlier.

Most of these totally new species are widespread nationally or in particular areas not far from Wiltshire, so their arrival is not particularly unexpected. *R. bucknallii* is perhaps more predictable than most, having spread from the Gloucestershire Cotswolds into North Wiltshire, while *R. hylophilus* and *R. murrayi* seem to have slipped over the border from Hampshire. Only *R. cinerifolius* and *R. eboracensis* have Wiltshire sites notably isolated from other areas where they occur.

### Refound taxa

Also interesting are those taxa recorded before 1983, not recorded in 1983-1991, but recorded in 1992-2003 - ie refinds of taxa that might have been thought to have become extinct. They are listed below, with the numbers of new tetrads and Randall's distribution descriptions.

- R. adenoleucus* (19) - locally frequent in vc7, rare in vc8
- R. amplificatus* (10) - rare
- R. leyanus* (6) - locally frequent in vc8
- R. echinatoides* (5) - rare

- R. trichodes* (5) - not mentioned
- R. radula* (4) - rare
- R. longus* (4) - rare
- R. sciocharis* (4) - rare
- R. boudiccaae* (3) - rare
- R. oxyanchus* (3) - rare
- R. plicatus* (3) - rare in vc8
- R. durotrigum* (2) - rare nif
- R. bertramii* (1) - rare in vc8
- R. acclivatum* (1) - locally frequent
- R. britannicus* (1) - rare
- R. diversus* (1) - one old vc6 record

We cannot know whether or not these taxa have been present but undetected during their "missing" years. The national distribution data shows that most of them occur in neighbouring areas from which they could have newly spread. *R. durotrigum* is particularly interesting in that it is endemic to the New Forest and one or two places not far from there. It is a rare species, recorded in only 6 hectads before 1988 and three more since. In contrast, *R. radula* is common and widespread nationally. The reappearance of *R. britannicus* may be part of its spread from mainly the Home Counties pre-1988 into a wider range of areas.

### Conclusions

This is comparatively new territory. The expertise existing at the moment is insufficient to map *Rubus* taxa accurately. This is unlikely to change while the only key normally available is that by Edees and Newton (1988), which is virtually unusable by beginners. However, the information available is slowly increasing, with new taxa continually being recorded. A number of species are already known to be widespread and/or common, and, since systematic coverage of all tetrads has not even been attempted as yet, are likely to be found more so. Taxa that look on the verge of extinction may yet be located in a significant number of tetrads and taxa currently unknown in the county could well be found. There is, alongside this optimism, a concern that some species may have become extinct and that others may do so in the future. Further recording could provide information helpful in forestalling these dangers.

**Leaf undersides green and hairless v. white- or grey-hairy**



**Stipules threadlike v. wider**



## AFTER THE WILTSHIRE FLORA - SUPPLEMENT A

### 8. ARABLE WEEDS

Shepherd's Needle (*Scandix pecten-veneris*)



### Introduction

The total land area in Wiltshire under agricultural use is approximately 270,000 hectares, of which around 142,000 hectares (53%) are devoted to arable production. Of this arable land, 57% is used for cereal, and the remainder for other crops, fallow land, set-aside and temporary grassland (Phillips 1998).

The national increases in intensification of agricultural practices have also affected Wiltshire. Although the county has escaped the levels seen in the south-east of England, increasing herbicide and pesticide use, cultivation of high-yielding crop varieties and changing rotational systems have all contributed to a decline in farmland biodiversity. The populations of once common arable plant species have reflected this decline (Wilson 1993). Despite this, Wiltshire still has a good diversity of species with some nationally significant sites, especially on the chalk in the south around Salisbury (Wilson 1993). It is nationally important for arable weeds which are *Nationally Rare* species (Wigginton 1999), defined as those found in 15 or fewer ten kilometre squares (hectads) in the British Isles or otherwise considered very rare or under threat of extinction (though such plants may be *locally* abundant) and *Nationally Scarce* species, defined as found in 16 to 100 hectads in Britain (Stewart, Pearman and Preston 1994).

The taxa for consideration here are selected on the following three criteria:

- The taxon (generic term for aggregate of species, species, subspecies, variety, or form) is noted in the 1993 Wiltshire Flora as present in 3% or less of the 1km squares in the County, or not recorded separately there.
- There is no record of the taxon in the 1993 Flora for the tetrad in which a particular post-Flora record was made. See the introduction to the previous issue of this journal for a fuller explanation (Wiltshire Botanical Society 2006b)
- The taxon is recognised as an arable weed in at least one of the publications on or including the topic (Banks 2002, Gillam, Green and Hutchison 1993, Gilmour and Waters 1969, Salisbury 1964, Wilson 1993)). Subspecies, varieties and hybrids are not included unless they have this status.

Of the taxa in the record list in the previous issue (Wiltshire Botanical Society 2006c), 67 met these criteria. The introduction to that issue (Wiltshire Botanical Society 2006b) gives instructions on how to use the Record List to compare 1993 Flora records with subsequent records. Here, an analysis of these data for arable weeds is presented.

### Analysis in terms of number of new tetrads

The table shows the number of taxa in this group with records in specified numbers of new tetrads since the 1993 Flora, up to and including 2003.

No. of tetrads	0	1	2-4	5-9	10-19
No. of taxa	18	9	23	14	3

Perhaps of most interest are the results for taxa where there is either a very small number of tetrads recorded since the Flora or a very large number. Below, therefore, we look at taxa with either no tetrads or one tetrad and those with 10 or more. To follow, any remaining taxa which are nationally rare or scarce or in danger of extinction in the wild are covered, and then a few remaining taxa identified as important by Banks (2002). To enhance the information, reference is made to a survey of 30 of the best Wiltshire arable weed sites in 1999 (Banks 2002), covering 23 important Wiltshire arable weeds.

### Taxa in no new tetrads or one

Occurrence in no tetrads or one is not surprising for any species in the list, since all occurred in 3% or less of 1km squares in the Flora Mapping. However, 3% can represent over 100 squares, and this, combined with the considerable attention given to this group in recent years, does make it likely that they would have been recorded subsequently in some new squares if they had appeared. It is, therefore, reasonable to assume that a 0 or 1 total means that, unless it has been overlooked in some way, the taxon has not appreciably increased its range. There are approximately 26 taxa in this category.

Some taxa were exceedingly rare to start with, so it is not surprising that this is still the case. Of the 26 taxa with no tetrads or one since the 1993 Flora, 22 were recorded for less than 1% of the 1km squares in the county in the Flora Mapping. They are listed below. Some are plants listed as *nationally rare* or *nationally scarce*, and these are noted.

#### No tetrads:

*Anthemis arvensis*  
*Avena sativa*  
*Avena sterilis* ssp. *ludoviciana* (the most common subspecies)  
*Bupleurum rotundifolium* (nationally rare)  
*Chenopodium hybridum*  
*Chenopodium murale*  
*Consolida ajacis*  
*Fumaria muralis*  
*Galeopsis angustifolia* (nationally scarce)  
*Lamium hybridum*  
*Lathyrus aphaca* (nationally scarce)  
*Lolium temulentum* (nationally rare)  
*Melampyrum arvense* (nationally rare)  
*Silene gallica* (nationally scarce)

*Solanum sarachoides*  
*Torilis nodosa*  
*Valerianella ramosa* (nationally rare)

#### One tetrad:

*Arrhenatherum elatius* ssp. *bulbosum* (now known as var. *bulbosum*)  
*Bromus secalinus* (nationally scarce)  
*Fumaria bastardii*  
*Polygonum rurivagum*  
*Rumex pulcher*  
*Torilis arvensis*

We should be pleased that 5 of these have one new tetrad and are, therefore, not yet extinct in the county.

Of the other 4 taxa, *Geranium rotundifolium* was in 1% of 1km squares in the Flora, *Raphanus raphanistrum* was in 2%, while *Erodium cicutarium* and *Sinapis alba* were in 3%. The low number of new tetrads for these taxa does not necessarily mean that they are decreasing. *Geranium rotundifolium* was largely restricted to particular areas in the west, while *Erodium cicutarium* and *Raphanus raphanistrum* were largely restricted to sandy soil, which is relatively rare in the county. They have plainly not spread beyond these environments, but they are not necessarily decreasing within them.

It should be noted that some of the above taxa, though historically arable weeds, have not been recorded in Wiltshire arable situations during the Flora Mapping or since, so should perhaps no longer have arable weed status. They are:

*Bupleurum rotundifolium*, extinct in arable situations since the 1960s and now just a rare bird-seed casual. In Wiltshire it was noted only in a garden and probably from birdseed, so it may really have been the very similar *B. subovatum*.

*Geranium rotundifolium*, found on dry banks, road verges and bases of walls, and can be a garden weed.

*Lolium temulentum*, now just a casual in waste places, from grain, bird-seed and wool shoddy.

*Melampyrum arvense*, a hemiparasite of grass roots recorded only in two garden flower beds, now occurs mainly in grassland and field borders nationally.

*Rumex pulcher*, found only in grassland in Wiltshire, though it has occasionally been found in neglected arable fields elsewhere.

*Valerianella ramosa*, recorded only in a hedgerow in Wiltshire, but it is still found nationally in arable field margins that are not intensively managed.

### Taxa in more than 10 new tetrads

There are only three of these:

*Legousia hybrida* (14 new tetrads of which only 2 clearly represent spontaneous arable occurrence, 6 Banks sites);

*Papaver hybridum* (14 new tetrads of which only 2 clearly represent spontaneous arable occurrence, 4

Banks sites);

*Thlaspi arvensis* (10 new tetrads of which only one clearly represents spontaneous arable occurrence, not included in Banks).

Recording of arable weeds generally has been boosted recently by a range of dedicated surveys. Furthermore, increased awareness of conservation issues has led to reduced spraying with herbicides in some places, so that plants that were dying out have had some chance of recovery. Since the three species above are annuals, however, increased range does not necessarily suggest increased frequency of occurrence - they could have disappeared from more tetrads than have been added. The data here would not show that. The situation is complicated by the practice, among some conservation-minded people, of sowing seeds of these plants in suitable habitats. However, all three of these taxa were in an appreciable number of tetrads in the Flora Mapping (3% for *Legousia hybrida* and 2% for the other two), so there were a number of populations from which spread could have occurred. None of them are regarded as in danger of declining further nationally, and *Thlaspi arvensis* is a wide-spread plant.

#### Other nationally rare and nationally scarce plants

Nationally rare plants for which data has not been supplied above are:

*Adonis annua* - 13 tetrads in Flora, 2 new ones since with habitat not clear, one Banks site.

*Centaurea cyanus* - 11 in Flora, 4 since, 2 in locations where they were or quite likely were planted, 1 in a marsh and the other with habitat not clear, no sites in Banks survey.

Nationally scarce plants for which data has not been supplied above are:

*Anagallis arvensis ssp. caerulea* - 2 tetrads in Flora, no new ones since, not covered by Banks.

*Galeopsis angustifolia* - 11 tetrads in Flora, none new since, no Banks sites.

*Lathyrus aphaca* - 8 in Flora, none new since, no Banks sites.

*Silene gallica* - 1 in Flora, none new since, no Banks sites.

*Torilis arvensis* - 2 in Flora, 1 new since, habitat not clear, no Banks sites.

It is notable that none of these have clearly been recorded in arable situations, except for one that could well have been planted.

Some confusion is in danger of arising because taxa that were designated nationally scarce a few years ago are no longer so. Sometimes this may be because of improved recording rather than a change in frequency. It is important to remember, also, that the assignment to categories is based on records collected

over about 25 years, and does not indicate the frequency of occurrence at the present time.

#### Other taxa in danger

Another group of taxa are designated as in danger of extinction in the wild because their habitat is threatened or for other reasons, even though they don't meet the conventional standards to be called rare or scarce. The following fit this description:

*Chenopodium murale* - 2 tetrads in Flora, none new since, not covered by Banks.

*Scandix pecten-veneris* - 1 in the Flora, 5 new tetrads since, 4 of them in arable fields and the other in an unclear habitat, no Banks sites.

*Myosurus minimus* - 3 in Flora, 2 new since, one arable, 2 Banks sites.

*Papaver argemone* - 24 in Flora, 6 new since, 4 of them in arable situations, in one of which it could have been deliberately planted, 3 Banks sites.

*Ranunculus arvensis* - 5 in Flora, 3 new since, none of them noted as arable, no Banks sites.

*Silene noctiflora* - 16 in Flora, 5 new since, only 2 of them noted as in arable locations, in one of which it could have been deliberately planted, no Banks sites.

*Valerianella dentata* - 29 in Flora, 4 new since, none clearly in arable situations, 3 Banks sites.

#### Other taxa in Banks survey

*Chrysanthemum segetum* - 32 tetrads in Flora, 7 new tetrads since of which only one clearly indicates arable occurrence, 2 Banks sites.

*Euphorbia platyphyllos* - 4 in Flora, 8 new since of which 5 clearly indicate arable occurrence, 2 Banks sites.

*Fumaria densiflora* - 23 in Flora, 5 new since of which only 2 clearly indicate spontaneous arable occurrence, 6 Banks sites.

*Fumaria parviflora* - one in Flora, 3 new since of which none clearly indicate spontaneous arable occurrence, no Banks sites.

*Misopates orontium* - 8 in Flora, 3 new since of which none clearly indicate spontaneous arable occurrence, no Banks sites.

*Petroselinum segetum* - 20 in Flora, 4 since of which none clearly indicate spontaneous arable occurrence, one Banks site,

#### Conclusions

There are not many surprises in the new tetrads recorded since the Flora Mapping. We have known for some time that more awareness of conservation and threats to vulnerable species have led to some reduction in the risks to them, and this is shown by the modest spread of some taxa. However, in most cases, it is not clear how much of this spread has occurred spontaneously in arable situations. Some



may have been planted in these situations, while others have been found only in non-arable locations.

**Portrait of Shepherd's Needle**  
(*Scandix pecten-veneris*)

Shepherd's Needle is important because it is categorised by the criteria of the *World Conservation Union* (known as the *IUCN*, the initials for an earlier name) as *critically endangered*, which places it with the taxa which are most in danger of extinction in the wild. It is also in a list of species defined by the *UK Biodiversity Steering Group* as *Priority Species* needing to be subjects of *Species Action Plans* under the *Biodiversity Action Plan* to which the UK is committed internationally (Marren 2002). It is a winter annual of lowland arable land, particularly calcareous, but also found on waste ground, cliffs and in gardens. An introduction into Britain many hundreds of years ago (making it an *archaeophyte*), it was common throughout the corn-growing areas of Britain up to the 1950s. There was then a dramatic decline due to modern agricultural methods, particularly herbicides and stubble burning. It has been found in about one hundred and seventy-five 10km squares in Britain since 1987, which means it does not qualify as a nationally scarce plant, despite being in danger of extinction in the wild. Eleven of the squares are wholly or partly in Wiltshire. Mabey (1996) says there have been signs of a comeback since the banning of stubble burning early in the 1990s. He also claims that it is less susceptible to herbicides than is commonly believed and that its needle-like fruits are difficult to separate from grain, both of which would favour its survival. This pattern may be reflected in the Wiltshire records under analysis here. The 1993 flora records only one location, and this was in a garden near Ramsbury and therefore not an arable site. Since then, however, it has been found in 5 new tetrads up to 2003 - in arable fields at Easton down, Chute Causeway, Ludgershall and All Cannings, with another in an undefined habitat. Two of the arable sites are described as wheat and oil-seed rape fields respectively. Conversely, a 1998 audit of the 40 best arable plant sites in Wiltshire gave only a single site since 1984 and a 1999 survey of 22 of them and 8 new sites failed to find it at that site or in any of the other sites surveyed (Banks 2002). Plainly, it continues to be rare, though the infrequency and unpredictability of its appearance make comprehensive surveys difficult. Shepherd's Needle is up to 16 inches high and easily recognised as an umbel by its inflorescence structure. The leaves are finely divided into very narrow leaflets and, as in the more familiar Cow Parsley, the outer flowers of the umbel are much larger than the inner. Recognition is easiest when it is fruiting, since it has very distinctive fruits with a narrow beak up to about three inches in length, which give the plant its name.

**Portrait of Night-scented Catchfly**  
(*Silene noctiflora*)

Night-scented Catchfly has been recorded in many 10km squares in South and East England since 1987, but only 19 of these were wholly or partly in Wiltshire. It was in only 16 tetrads in the Wiltshire Flora, there have been only 5 new ones since, and only 2 of them noted as in arable locations, in one of them possibly planted. It was not found in Bank's arable weed survey (Banks 2002). Yet Grose (1957) reported it in locations all over the county and mostly in cultivated fields. This was its national picture at the time, when it was regarded as a common cornfield weed, flowering with the corn and therefore perhaps having its seeds dispersed with the grain. Since then it has been in decline. Grose (1957) reported that it was a late flowerer and thus often seen in stubble, and stubble burning may have contributed to its decline along with seed cleaning improvements and herbicides. It is now found mainly on infertile soil and appears to do best near to the coast. Given the opportunity, it should be able to spread quickly, producing up to 2800 seeds per plant, all of which are commonly viable after five years. The plant is similar to White Campion (*Silene latifolia*), both in its vegetative and floral structure and its pollination by night-flying moths. To aid this, both have flowers that open at night, when they emit a sweet scent, and are less conspicuous during the day. However, the flowers are smaller than White Campion's, usually roll up comprehensively during the day and have petals yellowish underneath and pinkish above. They also have many more sticky glandular hairs on the upper parts of the stem, perhaps helpful in stopping the wrong insects from reaching the nectar.

**Night-scented Catchfly (*Silene noctiflora*)**

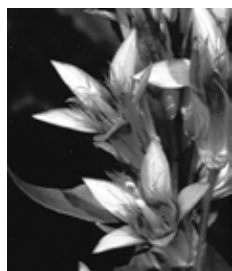


## AFTER THE WILTSHIRE FLORA SUPPLEMENT A

### 10. REFOUND TAXA

#### Chiltern Gentian (*Gentianella germanica*)

Top-right photo by Nigel Kendall



### Introduction

The 1993 Wiltshire Flora (Gillam, Green and Hutchison 1993) lists, in Appendix IV, taxa which were included in Grose's (1957) flora of Wiltshire and/or Stearn's (1975) supplement but not refound during the Wiltshire Flora Mapping Project. A number of these taxa were refound during the post-Flora period up to 2003, and they are the subject of this article. A list of these taxa was assembled from Appendix IV and the main record list. There were 32 taxa in the list, 17 of them native to Wiltshire and 15 non-native. Before analysis begins, however, there are a number of entries and absentees to question.

Firstly, for some of the taxa, there are uncertainties about whether they really were recorded in these earlier times. All were certainly mentioned by Grose, except for three. Two of these (*Allium triquetrum*, and *Muscari comosum*) were both in Stearn. However *Crocus vernus* was in neither, so its presence in Appendix IV is a mystery. Of those mentioned by Grose, he said that *Puccinellia distans* was probably a mistake, and that the record for *Utricularia minor* had no clear Wiltshire location and was probably in Hampshire. *Ulmus minor ssp. minor* is in the 1993 Flora, so it looks as though it should not be in the list. Grose said it is doubtful for Wiltshire anyway, so it fails to qualify on two counts. It looks, therefore, as though four entries in appendix IV should not be there, thus cutting our list down to 28.

It seems, also, that three of the species listed have not actually been refound. This applies to *Cardamine impatiens*, where an error in the records followed from a record being sent in and then rescinded; *Vicia hybrida*, which was an entry error in the records; and *Rosa agrestis*, whose tetrad 0212 is not in Wiltshire nor in vc8, being clearly a Hampshire location. This leaves 25 taxa to consider.

There are at least two taxa which are absent from the list, but should be included. *Gentianella germanica* was in Grose but not in the 1993 Flora, and was refound in 2001, but did not find its way into WBS records. The same applies to *G. x pamplinii*, its hybrid with *G. amarella*. So we get to 27 taxa.

There are three species which are not in the Flora but were recorded during the WFMP period. Two of these (*Hydrocharis morsus-ranae* and *Pulicaria vulgaris*) are present in the WFMP records. Perhaps they were overruled and therefore not included in the Flora. *Carthamus tinctorius* was recorded on waste ground in Trowbridge in 1989 or 1990, but did not enter the records, either through an oversight or perhaps through disqualification because it probably came from birdseed scattered by human hand. None of these taxa have been refound since, so it is as well

to include them here, treating the unrecognised WFMP records as refinds, so that their status can be noted in published form. This takes us to 30 taxa.

### Analysis of records

An obvious first question to ask about a refound taxon is whether or not it was refound in one of its pre-WFMP locations or not. The answer for most taxa considered is that they were not. In the more detailed treatment of individual taxa below, they are divided into three groups: those where the refind may have some relationship or other to an original population; those where this is less likely but the pre- and post-Flora records are fairly close to each other geographically; and those where they are a considerable distance apart.

### Refind with possible relationship to original

***Lycopodiella inundata* (Marsh Clubmoss).** Grose called this *Lycopodium inundatum* and gave several locations in the extreme Southeast of the county ie in the New forest area. The locations were Landford, Plaitford Common and Alderbury Common. The 1994 record is at Plaitford Common, with a grid reference of SU 277189. Grose gave the tetrad 2718 for that location, so the refind is in the same area, though not necessarily at the same place within it.

***Barbarea verna* (American Wintercress).** Grose gives several localities, including Bradford-on-Avon, giving the grid reference 8261 for the area generally. We do not know the precise location for the plant, but it is a possibility that it could be as little as a kilometre away from the 1999 record at Turleigh (tetrad 8060). The plant is said to crop up when the soil is disturbed in Turleigh and it may well have been cultivated in the area generally in the past as a substitute for watercress. Though mainly a biennial and therefore liable to rapid disappearance in a particular location, it does form long-lived seed banks, and there could be a common seed bank stretching over a kilometre or more in this locality. However, it is just speculation. Interestingly, its cultivation has now been revived, so we could see more of it escaping.

***Gentianella germanica* (Chiltern Gentian).** Grose quotes a record at Mere Down in ST 8334 in 1893 and 1898. The 2001 record was also at Mere Down with the grid reference ST 826336. The two locations are very close, and there is little doubt that this is a refind of the original population. It is a remote spot, the species is not obviously different from *G. amar-ella*, which was reported as common in the district generally by Grose and recorded in both tetrads concerned in the WFMP, and the abundant hybrids between the two species at the same spot could have masked the existence of two separate species. It therefore seems likely that *G. germanica* has been there all the time and simply overlooked.

### Refind and original fairly close

***Ambrosia artemisiifolia* (Ragweed).** Grose notes this casual from North America, which has usually come in with foreign seed, for a railway embankment near Box and The Butts in Salisbury. There are several widely dispersed post-Flora records, but even the nearest, at Laverstock in 2001, is unlikely to have any connection with the earlier finding in Salisbury.

***Anchusa azurea* (Garden Anchusa).** The post-Flora records for this alien and probable garden escape at Stapleford and Little Durnford are unlikely to be related to Grose's Larkhill location, though it is not far away from Little Durnford. It is not normal for it to survive long outside gardens.

***Carex divulsa* ssp. *leersii* (Grey Sedge).** Grose gives records near Marlborough, Salisbury, Alderbury and Downton. The post-Flora records include a number around Salisbury and to the South, none near enough to be the same population, one at Lockeridge near Marlborough which may or may not relate to the earlier one in the area, and two at distant Limpley Stoke.

***Hydrocharis morsus-ranae* (Frogbit).** Grose's only site was in a pond at South Wraxall in 1903. It was refound in the moat at Great Chalfield Manor in 1989, but not included in the Flora, probably because it was thought to be an introduction. The two locations are of the order of 2 miles apart and connected by a waterway, so some connection is not impossible. It has not been refound since.

### Refind and original well apart

***Allium triquetrum* (Three-cornered Garlic).** This naturalising garden escape was not in Grose, but Stern noted it for Wootton Rivers, far from the 1995 record for Bentley Wood, near the Winterbournes.

***Alopecurus aequalis* (Orange Foxtail).** Grose reported it as in the Swindon area and possibly Harnham nr Salisbury, but the only post-Flora record is from Aldbourne Chase in 1995.

***Antennaria dioica* (Mountain Everlasting).** Grose noted it only at Morgan's Hill near Devizes, but the only post-Flora record is from Martin Down in Hampshire but in Vc8. It was still thriving there in 2005.

***Cannabis sativa* (Hemp)** The records of this casual, usually arriving with birdseed or agricultural seed from abroad, by Grose at Potterne, Stratton Park, Winterbourne Bassett, Marlborough and Wilsford and those by Stearn at Chippenham and Newton Tony are all a long way from the 1996 find at Pepperbox Hill in the extreme Southeast.

***Carthamus tinctorius* (Safflower).** Grose gave a record of this alien as a casual introduced with chicken food at Bemerton, and Stearn on waste ground at Westbury in 1968. It was recorded on waste ground in Trowbridge in 1989 or 90.

***Coriandrum sativum* (Coriander).** The refinds of

this species, usually either an escape from cultivation or coming in with foreign seed, at Potterne in Grose and Bratton in Stearn clearly have no connection with the 1997 record at Harnham near Salisbury.

***Fumaria bastardii* (Tall Ramping-fumitory).** Grose had this annual of arable and horticultural land a little to the East of Salisbury, not very near to the post-Flora site at Newton Tony.

***G. germanica* x *G. amarella* (*G. x pamplinii*) (Hybrid between Chiltern Gentian and Felwort).** Grose's only record was from an old chalkpit near Shalbourne in 1913, whereas the refind in 2001 was miles away at Mere Down, where it kept company with both its parents but had not been recorded previously.

***Potentilla palustris* (Marsh cinquefoil).** The post-Flora record was at Bramshaw, in Hampshire but in Vc8, in 1993, and the site given by Grose (among a small number of sites widely distributed in the county) at Alderbury is not very near. Subsequent searches have failed to find it in the area, so it may have disappeared again.

***Isatis tinctoria* (Woad).** The Grose record as a casual at Farley can have no connection with the 1996 record at Urchfont.

***Lavatera thuringiaca* (a group of garden Tree Mallows).** The post-Flora record of this probable garden relic or escape at North Newnton near Pewsey is some distance from Mildenhall, where Grose noted it as a casual in 1914.

***Linaria maroccana* (Annual Toadflax).** Grose's record of this species, usually a garden escape or coming in with foreign seed, as a casual in a cabbage field near Warminster is miles away from the 2001 record at West Woods near Marlborough.

***Muscari comosum* (Tassel Hyacinth).** This was found as a garden relic at Great Cheverell in 1995 and bears no relationship to Grose's record at Malmesbury in 1956.

***Panicum capillare* (Millet).** Grose noted this alien grass as a casual on waste ground at Chippenham and in a cabbage field at Bromham, both remote from Horningsham, where it was found in maize in 1999.

***Pulicaria vulgaris* (Small Fleabane).** Grose gives sites for this annual at Poulshot, Marston and Landford, and Stearn also gives Poulshot in 1967, but these are nowhere the old railway station site at Hullavington, found during the Flora Mapping and probably an introduction. Its absence from the Flora is a mystery - it was recorded there several times. It has not been refound since.

***Rorippa x sterilis* (*R. nasturtium-aquatica* x *R. microphylla*) (Hybrid Watercress).** Grose had it only on the edge of Salisbury, whereas the post-Flora records are all along the Kennet near Marlborough.

***Salix x rubens* (*S. alba* x *S. fragilis*) (Hybrid Crack-willow).** This was refound on a WBS excursion at East Harnham in 1998), nowhere near the several widely distributed Grose locations. Though this hybrid can arise spontaneously, it is

more commonly planted, formerly for basket making and more recently for amenity and landscaping, so it appears mainly where it has been put.

***Salix x rubra* (*S. purpurea* x *S. viminalis*) (Green-leaved Willow).** Grose noted this hybrid of two native species at Marlborough and at Boyton, near Salisbury, nowhere near the post-Flora find at Coate Water on the edge of Swindon in 2002.

***Vicia bithynica* (Bithynian Vetch).** Grose mentions this native annual only as a garden casual in Salisbury, whereas the only post-Flora location was in Swindon.

***Vicia villosa* (Fodder Vetch).** Grose notes this annual alien on garden ground at Salisbury, far from the 1995 record at Trowbridge. It appeared in the wild in 1857 as a contaminant of grain seed and occurs only as a casual.

## Conclusion

Of the large number of taxa listed in Appendix IV, only *Gentianella germanica* has been identified since as in the original location. One other (*Lycopodiella inundata*) may possibly qualify, and another (*Barbarea verna*) could conceivably have arisen from the same wider seedbank. A few others have been refound fairly near to the original site, but with no clear indication of any link. Plainly refinds of the original population are unlikely events. Perhaps this is not surprising, because the original population must have died out for a reason, usually some change in the environment. It is then unlikely that the original environment will be reinstated. If it is, there may be nothing left of the plants to recolonise it. It is significant that the only more or less certain instance is in a remote spot where, not only could the continuity of the population have been overlooked, but there has been little change in the environment. It is in such areas, perhaps, that we should look for further instances.

There is more encouragement in the refinds of taxa which could have been thought to be extinct, which applies to most taxa whose inclusion was validated in the introduction. Plainly, a number of taxa can disappear for long periods and then reappear. Many of them are garden escapes or casuals which can occur at any time - or not at all. Others may be introductions. Probably less than half a dozen are native British plants originating from a naturally occurring local seed bank. Nowadays, this is likely to occur mainly in protected areas.

## Portrait of Chiltern Gentian (*Gentianella germanica*)

Chiltern Gentian was thought to have become extinct in Wiltshire, but caused some excitement when it was refound in 2001. It is an annual or biennial chalk grassland species reproducing by seed whose dis-

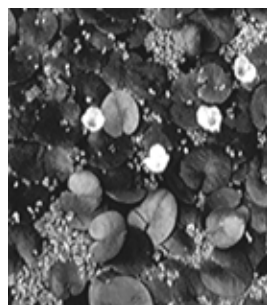
tribution centres on the Chilterns, where most plants occur, with outliers in a number of other counties. Since 1987, it has been recorded in only twenty-five 10 kilometre squares in the British Isles, which places it at the rare end of nationally scarce plants. An obvious question to ask about a re-found taxon is whether or not it was re-found in one of its pre-Flora Mapping locations or not. Most of them were not. However, Grose's flora gave a record for Chiltern Gentian at Mere Down in 1898, and the 2001 record's grid reference was so close to the original as to make it clear that it was a re-find of the original population. *G. x pamplinii*, its hybrid with *G. amarella* (Felwort), was found at the same place in 2001. It was amongst *G. amarella* plants, which were widespread. This was a remote spot, *G. germanica* is not obviously different from *G. amarella*, which was reported as common in the district generally by Grose and recorded in both tetrads concerned in the Flora Mapping, and the abundant hybrids could have masked the existence of two separate species. It therefore seems likely that *G. germanica* has been there all the time and simply overlooked. The hybrid was not recorded here in Grose's time, but among populations of the two very similar parents it could have been missed. Grose's only record of the hybrid was miles away. Rich and McVeigh (2002) suggest that it may also be worth looking for Chiltern Gentian in the part of Wiltshire which borders on Berkshire, particularly Ham Hill near Shalbourne, since there are other old sites in that area. They provide detailed distinctions between these two similar and overlapping species and the hybrid. Briefly, however, *G. germanica* is usually 15-40 cm tall, is often branched only above, usually has 7-12 internodes, has middle stem leaves 1-3 times as long as wide, and corollas 22-30 cm long, 1.9-2.7 times as long as the calyx and with a funnel-shaped tube. *G. amarella* is usually 7-20 cm tall, is often branched above and below, usually has 6-10 internodes, has middle stem leaves 2.5-5 times as long as wide, and corollas 14-19 cm long, 1.25-2.3 times as long as the calyx and with a cylindrical tube.

**Portrait of Frogbit (*Hydrocharis morsus-ranae*)**

Frogbit is a perennial floating plant of ponds and ditches in calcareous districts. It has been found in 10km squares widely distributed in England, but only two in Wiltshire. Grose's (1957) only site was in a pond at South Wraxall in 1903. It was re-found in the moat at Great Chalfield Manor in 1989, two miles from the original site. Either it spread along the connecting waterway or was introduced. It has not been re-found since, so may well now be extinct in the county. It is a readily recognisable plant, with both stems and leaves floating, the latter like small water-lily leaves, and the stems sending down roots into the water and themselves branching to produce new plants at the tips. The flowers are unisexual, with

variable structure, though always with 3 petals each with a yellow patch at the base. The female flowers have 6 styles each divided into two and 6 staminodes (stamens without anthers and therefore non-functional). The male flowers have 9-12 stamens, but some of the outer ones are usually sterile. However, fruits rarely form in this country, so reproduction is probably entirely vegetative. Most of the plant dies in the winter, but winter buds form on the stem first, and these break away and sink to the bottom, rising to the surface again in spring to produce fresh stems, leaves and flowers.

**Frogbit (*Hydrocharis morsus-ranae*)**



## AFTER THE WILTSHIRE FLORA - SUPPLEMENT A

### 11. SOME SPECIAL WILTSHIRE PLANTS

Summer Snowflake (*Leucojum aestivum*)



#### What makes plants special to Wiltshire?

This article provides “portraits” of some plants with a special relationship with Wiltshire which have not been covered in this way in other articles in *Wiltshire Botany* 8 or in this issue. The portraits provide descriptive material about each taxon concerned and analyses of the relevant Wiltshire records.

There are a number of ways in which a plant could be regarded as having a special relationship with Wiltshire. In particular, the county is home to a number of plants of national importance. The first British record for the nationally rare Tuberous Thistle (*Cirsium tuberosum*) was in Wiltshire and, until 1992, there were only 8 sites in Great Britain, 7 of them in Wiltshire. There are also several nationally scarce plants particularly well represented in the county. Wiltshire holds around 80% of the total British population of *Fritillary* (*Fritillaria melagris*), and North Meadow at Cricklade may have several million in flower in a good year. **Spiked Star-of-Bethlehem** or **Bath Asparagus** (*Ornithogalum pyrenaicum*) is restricted to a very few areas of the country, with by far the largest number within an area of perhaps 20 miles of Bath. **Summer Snowflake** or **Loddon Lily** (*Leucojum aestivum*) has its finest British site in damp willow carr at Woodford Green on the Avon north of Salisbury, with something like 2000 plants considered to be native. There are also several nationally scarce plants of chalk downland associated particularly with Wiltshire - **Burnt Orchid** (*Orchis ustulata*), **Round-headed Rampion** (*Phyteuma orbiculare*), **Bastard Toadflax** (*Thesium humifusum*), **Dwarf sedge** (*Carex humilis*), and **Early gentian** (*Gentianella anglica*). Parsonage Down has perhaps the most important surviving single population of Burnt Orchids in Northwest Europe, with at least 30,000 flowering plants sometimes appearing. **Downy-fruited Sedge** (*Carex filiformis*), an infrequent plant found in a variety of habitats in Great Britain, was first recorded as a British native at Marston Meysey in North Wiltshire in 1799, and the Wiltshire site near Somerford Keynes is the richest in Britain. The uncommon **Juniper** (*Juniperus communis*) has its largest population in England at Wiltshire's Porton Down, where more than 14,000 bushes have been reported growing amongst heather.

Some taxa are special to Wiltshire because they illustrate some of the wide range of plant habitats found in the county - woodland, chalk downland, limestone downland, neutral lowland meadows, water-meadows, rivers and wetlands, arable land, market gardens and horticultural nurseries, urban development sites, rubbish tips, walls, road verges, ponds, quarries and chalkpits (Gillam and Woodruffe 1993). Some habitats are particularly rich, particularly ancient chalk downland, so well preserved on

the military training areas on Salisbury Plain, where they have been protected from much of the agricultural developments which have reduced wild plant life elsewhere.

There could be any other number of other reasons for regarding a plant as special. Readers will undoubtedly have their own favourites. Most of us, for instance, may have been excited about the re-find of an old site for **Chiltern Gentian** (*Gentianella germanica*), apparently lost for over a hundred years. Others may be impressed because a taxon thought to be rare is much more common than realised, as with **Downy Birch** (*Betula pubescens*) and the native **Black Poplar** (*Populus nigra* ssp. *betulifolia*), both cases where the plant was present earlier but overlooked. **Rough poppy** (*Papaver hybridum*) is of particular interest because there is evidence that, with changes in attitudes to agricultural weeds, it is now increasing after agricultural activities had made it comparatively rare. The rapid spread of some alien species is also of interest - and could be important to track because of threats to the native flora. In this category are **Nuttall's Waterweed** (*Elodea canadensis*). **Silvered Garden Yellow Archangel** (*Lamium galeobdolon* ssp. *argentatum*). **New Zealand Pigmyweed** (*Crassula helmsii*) and **Danish Scurvy-grass** (*Cochlearia danica*). **Corncockle** (*Agrostemma githago*) will appeal to those hoping for re-appearance in native habitats of plants thought to be extinct in them. The portraits that follow are, therefore, a selection. A number of others were provided in *Wiltshire Botany* 8, and Black Poplar will feature in *Wiltshire Botany* 10.

The portraits refer particularly to data in the Record List. As has been pointed out elsewhere, their scope is limited by the facts that the information represents only recorded additions to the distribution of each taxon covered; and that it is based on individual interests and targeted surveys, rather than on a systematic study of the flora as a whole. Sometimes, the data are meaningful only when taken in conjunction with information from other sources. General sources used for this purpose are Stewart, Pearman and Preston (1994), Marren (1999), Mabey (1996), Preston, Pearman and Dines (2002) and the *BSBI Atlas Update Project* provided on-line by the Botanical Society of the British Isles. One consistent feature of the analyses is that issues are constantly raised which are in need of further thought or investigation.

### Nationally rare plants

A nationally rare plant is one that is found in 15 or fewer of the 2,800+ ten kilometre squares into which the British Isles can be divided. There are 13 such taxa which have been recorded in Wiltshire since 1983, and there are additional tetrads since the Flora

for 6 of these. Indeed, for **Cornflower** (*Centaurea cyanus*) there are 4 such tetrads (though at least one came from deliberate sowing of wild flower seed). For **Corncockle** (*Agrostemma githago*) (portrait in *Wiltshire Botany* 8, page 39) there are 3, and there are two for **Pheasant's-eye** (*Adonis annua*). The locally famous **Tuberous Thistle** (*Cirsium tuberosum*) is explored more fully below as an example.

**Tuberous Thistle** (*Cirsium tuberosum*) has been recorded in Wiltshire in 9 of the fourteen 10km squares in Britain in which the plant has been recorded since 1987. It is a knapweed-like perennial of old chalk and limestone grassland with softly spiny leaves, and can be 2 feet tall. It was recorded in 16 tetrads during the Flora Mapping, most of them in the Salisbury Plain Training Area, with an additional one in North Wiltshire and a few others in the South. It has been noted in two more since. One of these was in a tetrad adjacent to one that had been recorded in the Flora Mapping, but the other was in a completely new part of the Ministry of Defence Salisbury Plain Training Area. Are these new sites or just new records of plants formerly not noticed? The question is complicated by the readiness of Tuberous Thistle to hybridise with the more common Dwarf Thistle (*Cirsium acaule*) the hybrid being known as *C. x medium*. This was in 14 tetrads in the Flora Mapping, but in no new ones since. Everett (1993) states that, in the Flora Mapping, the hybrid was found in 6 Tuberous Thistle sites, and was also found in 9 other sites on its own, raising the possibility that hybridisation caused the extinction of originally "pure" colonies. This may be because the Dwarf Thistle has been able to invade areas where the long grass formerly prevented it but Tuberous Thistle survived. Ironically, this could be because nature conservation measures have increased grazing, though it could also be because of an increase in the stemmed form of Dwarf Thistle, which is better than the normal form at growing in long grass (Marren 1999). However, Everett also reported variations in what is seen at the same site on different visits, depending partly on grazing intensity, and thought it possible that the pure species might persist unseen on some of the hybrid sites. So perhaps the new tetrads do not mean new sites. The main message here, apart from being encouraged that we can still find it in new places, is that we need to keep looking. Tuberous Thistle is most easily distinguished from Dwarf Thistle by the flower head being broad and rounded in the former and elongated and cylindrical in the latter. The hybrid shows a range of conditions in between.

### Nationally scarce plants

A nationally scarce plant is one which occurs in 15-100 of the 10km squares in the British Isles. There are 57 such taxa which have been recorded in

Wiltshire since 1983, and 28 of them have additional tetrads since the Flora. **Early Gentian** (*Gentianella anglica*) has 8 additional tetrads, **Stinking Hellebore** (*Helleborus foetidus*) 6, **Blue Pimpernel** (*Anagallis arvensis* ssp. *foemina*), **Green-flowered Hellebore** (*Epipactis phyllanthes*), **Burnt Orchid** (*Orchis ustulata*) and **Round-headed Rampion** (*Phyteuma orbiculare*) have 5 each, **Dwarf Sedge** (*Carex humilis*) and **Fine-leaved Fumitory** (*Fumaria parviflora*) have 3 each, and **Monkshood** (*Aconitum napellus* ssp. *napellus*), **Summer Snowflake or Loddon Lily** (*Leucojum aestivum*), **Spiked Star-of-Bethlehem or Bath Asparagus** (*Ornithogalum pyrenaicum*), **Field Fleawort** (*Tephrosia integrifolia*), **Bastard Toadflax** (*Thesium humifusum*), and **Spreading Hedge-parsley** (*Torilis arvensis*) 2 each. A number of these are dealt with more fully below.

### Nationally scarce plants of chalk downs

Some of our most interesting nationally scarce plants are, like the nationally rare Tuberous Thistle, on the chalk downs with which Wiltshire is so well blessed. The following are examples which are plants with a special association with Wiltshire.

**Early Gentian** (*Gentianella anglica*) is restricted to chalk and limestone soils in South and Southwest England and occurs on a number of chalk downs in Wiltshire, which is one of its strongholds. Of the seventy-two 10km squares in which it has been recorded in Britain since 1987, 20 are wholly or partly in Wiltshire. It does best where the soil is shallow and the grass closely grazed. It is that rare being a British endemic, never having been found as a native outside Britain. In appearance, it is like a miniature Felwort (*Gentianella amarella*), with its purple tubular flowers dividing into 4 or 5 lobes at the top, but the two are rarely seen together because Early Gentian has usually finished flowering well before the earliest Felwort plants in mid-July. This difference is often enough for an identification, but the two species can occasionally flower together and even hybridise. Early Gentian can, when necessary, be distinguished by the number of internodes varying from 0-4 (as opposed to 4-11), and by the terminal internode constituting 40-100% of the stem (as opposed to 1-35ish%) (Rich et al 1997). Some experts think that Early Gentian is just an early flowering form of Felwort, and recent DNA studies appear to confirm this. In the Flora Mapping, it was recorded in 19 tetrads, 16 of them in the South. It is easily overlooked, since, as an annual or biennial, it is not consistent in its appearance, and can grow from nothing obvious, flower, fruit and disappear within a few weeks. Marren (1999) suggests that its unpredictability is due to the setting of a large amount of seed, which germinates only when the right conditions occur, namely disturbance and a wet

winter followed by a warm, wet spring. Yet it has been found in 8 new tetrads, perhaps partly because it has been much looked for. None of them are very far from its Flora Mapping tetrads, and the possibility that it has spread cannot be dismissed.

**Burnt Orchid** (*Orchis ustulata*) has been recorded in three hundred and seventy 10km squares in Britain from 1987 onwards, and 18 of these are wholly or partly in Wiltshire. However, this does not reflect its abundance on chalk downland in Wiltshire, which is its main stronghold. At Parsonage Down, for instance, it has been estimated that more than 30,000 flowering plants sometimes appear over an area approaching 95 hectares, perhaps the most important surviving single population in Northwest Europe. It was recorded in 31 tetrads in the Wiltshire Flora Mapping, mostly in the South of the county. Since then it has been found in a new tetrad adjacent to a Flora Mapping tetrad at Pewsey Down and at two adjacent tetrads at Porton Down, where it had not been seen previously. Porton Down, however, is a vast area where it could have been overlooked, perhaps because of the young plant's not infrequent habit of remaining below ground as a tuber for ten or more years feeding on its associated fungus before appearing above ground. We cannot assume that these records indicate an extension of range. It seems most likely that it occurs only in its earlier sites or very near them. Nationally, it is a declining species due to such agricultural practices as ploughing, herbicides and artificial fertilisers - or even cessation of grazing. It is not known how far this decline applies to Wiltshire (Foley 1990). The situation is not helped by the plant's being poor at competing with other plants. However, a positive feature is that it can reproduce by short rhizomes to form clusters of plants as well as from seed. Its appearance is typically orchid-like, but distinguishable by the dark maroon colour of the hoods of the young flowers, most noticeable in the unopened flowers at the tip of the spike. Look out for a change of name to *Neotinea*, following recent DNA studies.

**Round-headed Rampion** (*Phyteuma orbiculare*) is a perennial of chalk grassland and scrub found only from Dorset to Kent, including a few sites in Wiltshire, mainly in the North, though colonies of something like 5,000 plants have been found in both Wiltshire vice-counties. Of the forty-two 10km squares in which it has been recorded in Britain from 1987 onwards, 8 are wholly or partly in Wiltshire. It has blue scabious-like flower heads on a stem up to perhaps a foot high, but the flower heads are borne singly at the top of the stem, whereas the Devil's-bit Scabious with which it is most likely to be confused has several heads, and is typically a much taller plant anyway (Gillam and Green 1993). In the Flora Mapping, it was recorded in 20 tetrads, of which 17 were in the North in the vicinity of Calne, Devizes



and Pewsey and areas between. Outlying sites were on the downs north of Tidworth, near the Winterslows and on the downs near Martin in what is geographically Hampshire but in Wiltshire's Vice-county 8. Since then there has been a new tetrad far from any others in the middle of Salisbury Plain, another near Pewsey, two in the Porton Down area and, very surprisingly, one in the New Forest, where chalk downland is unlikely. Plainly we have added significantly to its known range, but we do not know how far this is because it was overlooked earlier.

**Bastard Toadflax (*Thesium humifusum*)** is restricted to chalk and limestone soil in the North and South Downs, Hampshire, Dorset, Wiltshire, Gloucestershire, East Anglia and Lincolnshire. Wiltshire has more unimproved chalk grassland than any other county and probably supports the largest number of colonies. The taxon has been recorded in around a hundred 10km squares in Britain from 1987 onwards, and 27 of these are wholly or partly in Wiltshire. Walker and Pywell (2000) found it in 71 sites on the Salisbury Plain Training Area alone in 1996-7. The plants are rather hidden in the turf, where the prostrate stems from the woody rootstock have many wiry branches, and, with the linear leaves, form yellow or olive-green mats. The white flowers are tiny and star-like. It's a perennial hemiparasite attached to the roots of grasses and other herbs by food-absorbing structures called haustoria. It prefers grazed areas, and can die out if scrub is allowed to develop. It is tolerant of drought - by the autumn of 1990, it was almost the only species not to have wilted on steep, south-facing slopes after a summer of almost tropical heat (Gillam 1993). In the Flora Mapping it was recorded for 77 tetrads, but there is only 1 new tetrad since, not far from one of the Flora Mapping tetrads. Though it is not hard to overlook, the indications are that it has not increased its range.

**Dwarf Sedge (*Carex humilis*)** is a long-lived perennial of close-grazed chalk grassland, forming mats 15 cm across in a small number of chalk and limestone grassland localities in Great Britain, especially on steep slopes. The taxon has been recorded in around eighty 10km squares in Britain from 1987 onwards, and in 26 of the 57 such squares which are wholly or partly in Wiltshire. It is found mostly in Wiltshire, Dorset and Hampshire with small outliers in N Somerset and the Avon and Wye gorges, but South Wiltshire contains over 100 colonies, some extending half a mile or more and numbering thousands of plants. It has stiff leaves less than 1.5 mm wide, the anthers of the single male flower spike are bright lemon yellow and can be seen as early as mid-March and there are 2-4 female flower spikes below the male. After flowering, the plant stands out from the rest of the vegetation because of the vivid emerald green colour of the leaves, which become an equally conspicuous bronze. Before flowering, the leaves

have a characteristic reddish-brown colour which enables it to be recognized from a distance (David 1993). Walker and Pywell (2000) found it in over 80 sites on the Salisbury plain Training Area alone in 1996-7. In the Flora Mapping it was recorded in 55 tetrads, all in the South, but only 3 new ones have been registered. Two of these are in probably little explored tetrads in the extreme south, one of these geographically in Hampshire, while the other is in a new area in the vicinity of Thorny Down amid the Winterslows. It is not difficult to overlook, so we have no real evidence that it has increased its range, and, on a national scale, there is no evidence of regeneration from seed and spread to new areas. It is threatened by replacement of sheep by cattle, which destroy the turf it inhabits, and by aerial spraying of fertilisers drifting on to it, which encourages its replacement by docks and nettles.

#### Other plants of chalk downland

**Juniper (*Juniperus communis*)** is a plant of national importance still growing wild and native in Wiltshire. It is planned to provide a portrait in the next issue of this journal

**Frog Orchid (*Coeloglossum viride*)** is a tuberous perennial which grows locally in short grassland mainly on the southern chalk and northern limestone, but also in a variety of other calcareous habitats. Overall, it has been recorded in getting on for four hundred 10km squares in Britain from 1987 onwards, and in 26 of the 57 such squares which are wholly or partly in Wiltshire. It is often inconspicuous in the turf, since it can be as little as 2 inches high, though, exceptionally, it can grow to 10 inches. To make things more difficult, it can disappear from a site for several years and then reappear, though whether this is because the adult plant remains dormant for that time or because of the seedling's habit of growing underground for several years before appearing above ground is not clear. The flowers are yellowish green or red-brown, with the lip strap-shaped and forked at the end with a small tooth in the middle. From some angles, and with a little imagination, they can be interpreted as frog-shaped. It was in 36 tetrads in the Flora Mapping, 29 of them in the South, and 4 new tetrads since. Three of these are not far from Flora Mapping tetrads, but 50 plants found near Highworth are in a totally new area. It's inconspicuousness in the grass means it could have been there previously. Look out for a change of name to *Dacrylorhiza*, which would place it with the spotted and marsh orchids, following the findings of recent DNA studies.

#### Nationally rare and scarce plants in other habitats

Our nationally rare and scarce plants well illustrate some of the other habitats which combine to make

Wiltshire's flora of so much interest. Woodland, wetland and arable plants all feature. A selection is discussed below.

**Spiked Star-of-Bethlehem** or **Bath Asparagus** (*Ornithogalum pyrenaicum*) is typically a bulbous perennial of Ash and Elm woods, but is also found in fields, hedges and by roadsides. Though nationally scarce, it has by far its largest number of plants within an area around Bath. The taxon has been recorded in forty-one 10km squares in Britain from 1987 onwards, and 14 of these are wholly or partly in Wiltshire. It is not easily overlooked when in flower, because of its crowded spikes of creamy flowers on stems up to a metre high. In dark woods, it flowers reluctantly, but, in the early part of the year, its narrow whitish green basal leaves, much longer than Snowdrop, are also distinctive. The Flora map showed it as present in 29 tetrads, with 20 of them in West Wiltshire within about 10 kilometres of the border with Somerset. Other populations were noted near Devizes, southwest of Swindon, near Marlborough and at Farley in the Southeast. Most locations were in ancient woods but also along lane verges. Only one new tetrad has been noted since - in a tetrad bordering on the one at Farley. This suggests that it has hardly spread at all beyond its range at the time of the Flora Mapping. This may be associated with having large seeds, which do not easily move around. There does also seem to be an association with habitats that have been undisturbed for many years, which are in increasingly short supply so that suitable locations for spread are not available. Where it does occur, however, it can be remarkably abundant, because the germination rate of seeds is high and there is also vegetative reproduction from lateral buds of the bulbs, and it is a common plant in some areas. In the parish of Winsley alone, for instance, over 2,500 flowering spikes were found along roadsides and easily accessible footpaths in 2002, whilst in 2003 less accessible woodlands not visited in 2002 yielded several thousand leaf clusters (Presland 2005). A visitor looking for it alongside roads in the locality in late June or early July would encounter it very frequently and often in large colonies. In woods, however, too much shade can prevent it from flowering, so that only leaves are observable (Aisbitt 2004, 2005).

**Fritillary** (*Fritillaria melagris*) is a nationally scarce plant which typically grows in periodically wet, unimproved hay meadows where haymaking is followed by grazing. The taxon has been recorded in approaching one hundred and fifty 10km squares in Britain from 1987 onwards, and only 11 of these are wholly or partly in Wiltshire. However, many of the nationally recorded sites are of introductions, with not many more than 30 regarded as native - though there are some doubts even about this for a plant cultivated in Britain since the 16<sup>th</sup> Century. Wiltshire

holds around 80% of the total native British population and 30% of the 20 or so sites in Great Britain with more than 100 plants. North Meadow at Cricklade may have several million in flower in a good year. Population size can, however, fluctuate wildly. At Coleshill Meadows, for instance, it has varied between 1294 in 1996 to zero in 2004, depending on water level and the intensity of grazing (Hearn 2006). It is a perennial plant well-known from its narrow leaves and large drooping flowers, either chequered pink to purple or uniformly white. It reproduces by seed and division of bulbs. It was recorded in 13 tetrads during the Flora Mapping, 11 of them in the Thames Valley area in the North of the county. The other two were in West Wiltshire, one of them in an overgrown garden and probably an introduction. The single tetrad since (in Southwest Wiltshire) almost certainly was. Its typical habitat is disappearing, so that there is little opportunity to colonise new sites (King and Wells 1993).

**Summer Snowflake** or **Loddon Lily** (*Leucojum aestivum*) is a nationally scarce plant which grows best on seasonally flooded ground containing much silt and with some shade. It has long linear dark green leaves and a stem up to about 2 feet high bearing clusters of 3-6 snowdrop-like flowers drooping from the base of a leaflike spathe. The native taxon is ssp. *aestivum*, which has been recorded in only eleven 10km squares in Britain from 1987 onwards, one of which is in Wiltshire. It has its finest British site in damp willow carr at Woodford Green on the Avon north of Salisbury, where something like 2000 plants considered to be native have been reported and where it is still abundant. It was recorded in 9 tetrads in the Flora Mapping, largely in damp situations, but also in one or two other places where it could well be a garden throwout. It was possibly also planted at one time in at least one of the damp places. Since then, it has been recorded in college grounds at Marlborough, where it is probably a garden throwout, and somewhere unspecified south of Salisbury. There is little evidence of spread from its Flora Mapping locations. With modern reclamation and drainage techniques, its survival is potentially threatened, and its presence needs to be clearly signaled to prevent this. In the process, it is important to distinguish between ssp. *aestivum*, which is thought to be native and the escaped garden subspecies *pulchellum*. Ssp. *aestivum* has translucent scarious teeth along the edges of the spathe, whereas ssp. *pulchellum* has a perfectly entire edge. A lens may be needed to see this, but the subspecies can usually be distinguished by flower size - 25-27 mm long in ssp. *aestivum* and 14-15 mm in ssp. *pulchellum* (Fitzgerald 1993).

**Downy-fruited Sedge** (*Carex filiformis*) is an infrequent rhizomatous perennial found in a variety of calcareous habitats in Great Britain, with damp meadows the commonest, mainly in Gloucestershire

but extending into Oxfordshire and N Wiltshire. Overall, it has been recorded in only twelve 10km squares in Britain from 1987 onwards, including two adjacent squares in Wiltshire. It was first recorded as a British native at Marston Meysey in North Wiltshire in 1799. A Wiltshire site near Somerford Keynes is the richest in Britain. There were just two tetrads for it in that area in the Flora Mapping and none since. The plant usually grows in a series of small tufts arising from a rhizome, with upright, somewhat bluish green leaves 2 mm wide or less arising from red or red-purple basal sheaths which are not present in the similar Glaucous Sedge (*Carex flacca*). The stem can be up to a foot high, ends in a single (or occasionally paired) terminal male flower spike and has one or two globose or ovoid female flower spikes close below (David 1993). All of its current sites have some degree of legal protection, so it has a reasonable chance of survival.

### Arable weeds

It is hard to identify arable weeds with any special association with Wiltshire, though they are an important part of the flora. Nationally rare arable weeds like **Pheasant's-eye** (*Adonis annua*), **Corn-flower** (*Centaurea cyanus*) and **Shepherd's Needle** (*Scandix pecten-veneris*) are particularly important species because they are considered to be in danger of extinction, but they are so infrequent and unpredictable in their appearance that it is hard work to take an active interest in them - though they have appeared in new tetrads since the Flora. There is perhaps more hope of seeing **Corn Marigold** (*Chrysanthemum segetum*), another nationally rare species which has occurred in rather more new tetrads. However there is probably more appeal in fuller detail of a species which was regarded as nationally scarce a few years ago but has now recovered sufficiently to have the label removed - **Rough Poppy** (*Papaver hybridum*) - and this has a portrait on page 22 of *Wiltshire Botany* 8. Shepherd's Needle is profiled in the article on arable weeds in this issue.

### Plants of man-made habitats

Most plants growing in man-made habitats in Wiltshire are just as likely to be found in many other counties. The dry stone walls of the West and Northeast provide environments for such interesting plants as **Rue-leaved Saxifrage** (*Saxifraga tridactylites*) and occasionally **Round-leaved Cranes-bill** (*Geranium rotundifolium*), which are otherwise uncommon in the County. **Danish Scurvy-grass** (*Cochlearia danica*), a native coastal plant which had not been recorded in Wiltshire at all at the time of the

Flora, has since spread in hundreds along a number of our dual carriageways, particular the central reservation - but this is a national phenomenon associated with heavy salting of main roads. It is profiled on page 32 of *Wiltshire Botany* 8. **Keeled-fruited Cornsalad** (*Valerianella carinata*) is a species formerly thought of as rare which has increased dramatically nationally since around 1960, and is now found in wall-pavement angles in many places in Wiltshire. It is, however, on the side of a single lane at Redlynch that we find a Wiltshire speciality - **Asarabacca**.

**Asarabacca** (*Asarum europaeum*) is almost certainly an introduction, despite claims to the contrary. It is a scarce and declining medicinal perennial herb of shady places, originally introduced from the European mainland in 1640 and naturalised in a few places. It is easily recognised from its shiny cyclamen-shaped leaves and hidden purplish or greenish brown flowers with the sepals joined to form a 3-lobed tube and no petals. The taxon has been recorded in only ten 10km squares in Britain from 1987 onwards, one of them in Wiltshire, where Redlynch is one of its more notable sites, known since 1820. Another site in South Wiltshire was noted in the Flora, but there have been no new tetrads since. This is not surprising, since its flowers lurk in semi-darkness beneath the leaves where they are pollinated by woodlice and other invertebrates. Production of seeds and seedlings is unusual, though the Redlynch colony does have them (Marren 1999), reproduction being mainly by rhizomes which give rise to dense masses of plants. It is interesting that there were fifty-nine 10k squares recorded for this plant in Britain before 1970. It has, since ancient times, been used for a staggering number of medical conditions, though apparently validated for none. Nowadays it is sold rarely, either for herbal use with a health warning about its poisonous nature or as a ground cover plant for shady parts of gardens. There may be fewer sources for garden escapes than formerly.

### Refound plants

A refound taxon is one that was in Grose's (1957) flora or Stearn's (1975) supplement, not in the 1993 Flora, but refound since. Such taxa were thought of as possibly extinct in the County, so it is a particular delight when one is found. Such plants are of most interest because of their tenuous relationship with Wiltshire. One such is **Chiltern Gentian** (*Gentiana germanica*), which has a portrait in the article on refound taxa in this issue. The same article gives details of two other examples - **Marsh Clubmoss** (*Lycopodiella inundata*), and **Frogbit** (*Hydrocharis morsus-ranae*).

## SELF-SEEDING CONIFERS IN NORTHEAST WILTSHIRE

Jack Oliver

Lawson Cypress (*Chamaecyperis lawsoniana*) seedling, showing seed leaves, juvenile needles and the start of a spray of adult-type foliage with transparent glands



### Introduction

Stace (1993) discusses 38 conifer species, which are likely to be seen (outside collections) in the British Isles, with a mention of 6 more. Only 28 of these were signalled as native, or confirmed as naturalized or semi-naturalized in parts of Britain (often geographically very restricted, perhaps only one district of one county). The 1993 Wiltshire Flora (Gillam, Green and Hutchison 1993) details only 5 conifer species: Norway Spruce, European Larch, Scots Pine, Juniper and Yew. Appendix I lists 6 more: Lawson's Cypress, Sitka Spruce, Austrian Pine, Douglas Fir, Western Red-cedar and Western Hemlock-Spruce. All 6 in the appendix are titled as "Planted Trees in Semi-Natural Habitats", and the phrase "all trees planted" was also applied to European Larch.

However, conifer seedlings are usually inconspicuous in the summer months, when the Wiltshire Flora Mapping Project volunteers, on whose recording the 1993 Flora was based, were active. Saplings were wrongly assumed to have been intentionally planted. Massed seedling to sapling progressions in forestry areas were unrecorded in the mistaken assumption that clear felling and replanting would destroy them all. In short, the mind set of recorders was that recording of non-native conifers was generally inappropriate.

I have carried out walks in and between West Woods and Savernake Forest, and east towards the NE Wiltshire border, as part of a preparation for two chapters in a proposed book covering the ancient extent of Savernake Forest. During these walks, especially in winter months, I made special note of conifer and other tree seedlings, and natural progression to saplings; in short, incipient, potential or actual naturalizations.

### Results and conclusions

The table shows those naturally dispersed conifer seedlings I have seen which have at least survived to their third year. These were scarcely considered in the 1993 Wiltshire Flora because Forestry plantations and private estates were not considered "natural environments". After all, there had been Government and European subsidies to plant conifers; there are now European grants to pull the conifers out again. A senior Forestry Commission employee has told me that Western Hemlock-spruce (No. 2 on the table) can seed and spread so densely that control measures are necessary. The same can apply to Scots Pine (No. 9) and Douglas Fir (No. 1). Two Wiltshire Botanical Society members have told me that Lawson's Cypress seedlings can sometimes be abundant enough to be considered weeds in their gardens.

Of special interest to me were some seedlings of Nos. 2, 12, 14 and 15, and all the seedlings of 4 and 10 thriving on decaying fallen trunks, above the level of rooting of dense ground vegetation such as bracken, brambles, grasses, nettles and hedge woundwort. This is reminiscent of Canadian Pacific conifer forests, where new straight lines of trees can arise on fallen giants. If, however, timber is always tidied up, natural spread by seedlings might be much curtailed.

Nearly all our habitats are no longer "natural". However it can be seen from the Table that numbers of conifers introduced to Wiltshire can become naturalized, some in the face of human control measures. When conifers are harvested and controlled, individuals or scatters of naturally seeded saplings can be left on the fringes of plantations, and beyond. Yew berries are mainly dispersed by birds (and possibly by rodents too?), and Yew trees naturally spread are more common than those planted in churchyards. By contrast, the efforts to encourage Juniper regeneration (Banks 2004) are considerable.

It is arguable that native Juniper encouragement amounts to a type of gardening more artificial than the natural regeneration of some conifer species originally introduced to Wiltshire two hundred or so years ago.

If laissez faire measures were permitted in this part of England, putting a stop to current agricultural and forestry controls, I would predict survival, spread and thriving of conifer species Nos. 1, 2, 9, 11, 12 and 15 in NE Wiltshire, and extinction of No. 13, the native Juniper.

#### Footnote

In February 2006, seedlings of *Abies grandis* (Giant Fir) and *Abies procera* (Noble Fir) were noted by a vehicle lay-by between Grand Avenue and the Arboretum in Savernake Forest. These are the first records of any naturally seeded Silver Firs for Wiltshire.

**Table - Conifer Seedlings Progressing to Saplings.**

\* Sometimes; or \*\* often seen as remote from parent trees.

Species	Seedlings Seen			Favoured sites for progression to saplings
	0-9	10-100	100+	
1) <i>Pseudotsuga menziesii</i> Douglas Fir		50+*		Mainly Forestry plantations and fringes.
2) <i>Tsuga heterophylla</i> Western Hemlock-spruce			Many	Mainly Forestry plantations and fringes.
3) <i>Picea abies</i> Norway Spruce	7			Mainly Forestry plantations and fringes.
4) <i>Picea sitchensis</i> Sitka Spruce	2			Private estate, on decaying fallen trunk.
5) <i>Larix decidua</i> European Larch	6			Mainly Forestry plantations and fringes.
6) <i>Larix kaemferi</i> Japanese Larch	3			Mainly Forestry plantations and fringes.
7) <i>Larix x marschlinsii</i> Dunkeld Larch	6			Mainly Forestry plantations and fringes.
8) <i>Pinus nigra</i> Corsican & Austrian Pines	6			Mainly Forestry plantations and fringes.
9) <i>Pinus sylvestris</i> Scots Pine			Many	Forestry and other trackside fringes, heathland.
10) <i>Cryptomeria japonica</i> Japanese Redwood	4			All as young saplings rooted on decaying fallen trunks.
11) <i>Chamaecyparis lawsoniana</i> Lawson's Cypress		50+		Gardens, churchyards, parks and forestry areas.
12) <i>Thuja plicata</i> Western Red-cedar		20+*		Gardens, woodlands, parks, forestry areas.
13) <i>Juniperus communis</i> Juniper	2			Unimproved and managed chalk downland. Very poor regeneration. (See Banks 2004).
14) <i>Araucaria araucana</i> Monkey Puzzle	5			Private estate (2 seedlings epiphytic on Cedars, 3 on the ground).
15) <i>Taxus baccata</i> Yew		50+ **		A great variety of sites both near and distant from human habitations, including Savernake Forest.

## PLANT RECORDS 2005

### Explanatory notes

- ÿ The following is a selection from WBS records received in 2005. Records of common species and updates of the 1993 Wiltshire Flora are not included unless there is some special reason. Unconfirmed records have been omitted.
- ÿ For new pre-2005 records, the year is inserted in brackets after the name of the recorder.
- ÿ Where a record is identified as being a new 10 km square record, this is relative to the period since the flora mapping in the 1980s and 1990s for the 1993 Wiltshire Flora and recorded there.
- ÿ For first county and vice-county records, an unqualified statement means that it is the first record ever, as far as is known. Where the word "recent" is inserted, it means that it is the first since the flora mapping began, but had been recorded before this period.
- ÿ Where a recording square is only partly in Wiltshire, any comment on record status applies only to the part within Wiltshire.
- ÿ In this issue we include "records of specific interest" and "ancient trees" sections, to note unusual or interesting forms of species which would not otherwise be included. There is also a single record liverwort section.
- ÿ Recorders are identified by initials as follows:

AB - Andy Byfield	JRM - John Moon
AJS - Audrey Summers	JW - Jean Wall
ARo - Amber Rosenthal	LS - L. Snell
BG - Beatrice Gillam	LSm - Linda Smith
BL - Barbara Last	MJP - M. J. Porter
DJW - Jeremy Wood	MWa - Marjorie Waters
ER - Eileen Rollo	PD - Paul Darby
GH - Gareth Harris	PGr - Paul Green
GY - Gwyneth Yerrington	PMW - Pat Woodruffe
HP - Hannah Price	RAi - Richard Aisbitt
IA - I. Adgie	RCBs - Richard Charles
JEO - Jack Oliver	RDu - Rosemary Duckett
JFo - Jenny Ford	RMV - Roger Veall
JK - Jonathan King	RR - Rob Randall
JN - Joy Newton	SPi - Sharon Pilkington
JNo - John Notman	SPr - Sarah Priest
JP - John Presland	TCGR - Tim Rich
	TE - Trace Edwards
WBS - Wiltshire Botanical Society (excursion)	

**NOTE:** "10k" stands for "1<sup>st</sup> 10km square record"

### Vc7 records

- Aconitum napellus ssp. napellus;** RDu; nr Westbury; under hedge.
- Alcea rosea;** JEO; Ogbourne St George; roadside tarmac and edges, 15-30 escapes from 2 gardens; 10k.
- Alisma lanceolatum;** JP; Staverton; 1 plant, river.

### Bath Asparagus (*Ornithogalum pyrenaicum*)



**Allium triquetrum**; JEO; Lockeridge; roadside; 1<sup>st</sup> recent vc record.

**Alnus incana**; JW/JEO (2004); Malmesbury SE; bank of river, extensive suckerin; 10k.

**Ambrosia artemisiifolia**; JN (2004); Swindon; bird seed alien; 10k.

**Aquilegia vulgaris**; JEO; Savernake Forest, N; 2 plants, one white, one blue-violet; JRM (2004); Ludgershall; woods, far from house or road; 10k.

**Arum italicum ssp. italicum**; JEO; Clatford; dump and grassy edge; Marlborough; by river; joint 1<sup>st</sup> county records.

**Aubrieta deltoidea**; JEO; Lockeridge; roadside, walls, pavements and wall-pavement angles, some seedlings.

**Avena sativa**; JEO; E of Alton Barnes; fields and enclosures; Savernake Forest, E; roadside in 2 locations; 10ks.

**Barbarea verna**; JW; Malmesbury; car park; 10k.

**Betula pubescens**; JEO; Lockeridge, woods; common in various sites; 10k; Savernake Forest; common or very common in a number of sites, including young trees; two 10ks; E of Marlborough; very common in wood; S of Ramsbury; common in wood.

**Betula x aurata (B. pendula x B. pubescens)**; JEO; Lockeridge; woods, occasional or common in several places; joint 10k; Savernake Forest, N; joint 10k; a number of sites; E of Marlborough; wood; W of Little Bedwyn; wood; S of Ramsbury; wood;.

**Bidens tripartita**; JP; Staverton; several by river.

**Blechnum spicant**; JEO; Savernake Forest; 1 plant.

**Calystegia silvatica ssp. disjuncta**; PGr; Atworth; nursery; on fence; 1<sup>st</sup> county record under this name, but actually the most common ssp.

**Campanula poscharskyana**; JEO; West Overton; walls and wall-pavements angles; JN; Ramsbury; base of walls; 10k.

**Cardamine corymbosa**; PGr; Atworth; nursery weed; 1<sup>st</sup> county record.

**Carex binervis**; JFo; Minety; a few plants in meadow; 10k.

**Carex divulsa ssp. leersii**; JEO; Savernake Forest; dense turf for 30 yards, + outliers; 10k.

**Carex ovalis**; JN (2004); W of Little Bedwyn; wood; common.

**Carex strigosa**; RR/RWa (2002); Stanton St Quintin; path edge in wood; RMV; Bramshaw; 50 plants by foot-path; 10k.

**Centaurea montana**; JEO; Savernake Forest; one.

**Cerastium tomentosum**; JEO; Rockley; roadside fringe, 8 yards.

**Ceratocarpus claviculata**; MWa (2004); Upper Seagry; rough area with Calluna and Ulex; 10k.

**Ceratochloa carinata**; JN; Bromham; field border; 1<sup>st</sup> vc record.

**Ceratophyllum demersum**; JEO (2004); Swindon, canal.

**Chamaecyparis lawsoniana**; JEO; Savernake Forest; 5+ seedlings progressing to saplings; E of Marl-

borough; wood, seedlings to saplings; 10k.

**Chenopodium glaucum**; PGr; Atworth; scattered as weeds in nursery; 1<sup>st</sup> county record.

**Cirsium dissectum**; SPi/JFo; Minety; shallow ditch; new location at Clattinger Farm reserve.

**Cochlearia danica**; JEO/JN; N of Chippenham; roadsides and central reservation, flowers 95% white, 5% lilac-mauve; M4 right across Wiltshire; both sides and central reservation, only white flowers visible at 50-60 mph; includes one 10k.

**Cornus mas**; JN; Aldbourne; about 10 bushes on farm track; 10k.

**Cornus sericea**; JEO; Savernake Forest, NW; dense thickets from root suckers and stem layerings.

**Cotoneaster horizontalis**; JEO; Lockeridge; vertical stonework; Ogbourne St George; walls, wall-pavement angles (seeding).

**Cotoneaster integrifolius**; JEO; West Overton; wall; 10k.

**Crassula helmsii**; JEO; Clatford; amongst river reeds; JP; Broughton Gifford; abundant in pond.

**Crocsmia x crocosmiiflora (C. pottsii x C. aurea)**; JEO; Clatford; 6 on dumped soil, spreading; Savernake Forest, N.

**Cuscuta europaea**; JP; Holt; one by river.

**Cyclamen hederifolium**; JEO; S of Ramsbury; 2 clumps in wood; 10k.

**Cynoglossum officinale**; JN; Alton Barnes; 1 plant in scrubby area of downland.

**Cyperus eragrostis**; GH; Ashton Keynes; lake; 10k.

**Dactylorhiza x grandis (D. fuchsii x D. praetermissa)**; JN; near Minety, Cotswold Water Park; many very large plants, flower shapes and colours as praetermissa, but large spotted leaves.

**Digitaria sanguinalis**; PGr; Atworth; two plants as weeds in nursery; 10k.

**Dryopteris affinis**; JEO; Lockeridge; woods, several shuttlecocks; Savernake Forest, N; several; 10k.

**Echinochloa crus-galli**; JEO; Lockeridge; 2 plants by right-of-way, awnless variety.

**Epipactis phyllanthes**; JEO; W of Little Bedwyn; 6 plants under youngish beeches in wood.

**Erigeron glaucus**; JEO; West Overton; walls, wall-pavement angles; garden escape, seeding; 10k.

**Euphorbia amygdaloides ssp. robbiae**; JEO; Marlborough; rhizomatous spread from garden along roadside; 1st county record.

**Euphorbia lathyris**; JEO; Lockeridge; roadside stonework; Marlborough; occasional on brick and wall-pavement angles and roadside weed.

**Euphorbia oblongata**; JEO; Lockeridge; roadside stonework; 1st county record.

**Fagus sylvatica 'Purpurea'**; JEO; Savernake Forest; 100s of copper seedlings progressing to saplings; 1st county record.

**Fumaria officinalis ssp. wirtgenii**; JN; Bromham; occasional; 1<sup>st</sup> vc record.

**Galinsoga quadriradiata**; PGr; Atworth; nursery weed.

**Galium palustre ssp. palustre**; JP; Broughton Gifford; abundant in pond; 1<sup>st</sup> county record.  
**Geranium x oxonianum (G. endressii x G. versicolor)**; JEO; Savernake Forest; NW, large clump; N; 3 plants.  
**Geranium pusillum**; JN; Aldbourne; garden weed.  
**Geranium rotundifolium**; JFo; Chippenham; 10k.  
**Geranium versicolor**; JP; Broughton Gifford; naturalised in rough grassland; 1<sup>st</sup> vc record.  
**Helianthus annuus**; JEO; Lockeridge; bird-seed origins, spread by rodents to roofs and gutters; 10k.  
**Hypericum androsaemum**; JEO; Lockeridge; 3 plants in woods; 10k.  
**Hypericum x inodorum (various parents)**; JEO; Lockeridge; 2 plants in woods.  
**Impatiens glandulifera**; JN; Aldbourne; large stand in dry bourne.  
**Isolepis setacea**; JN; nr Minety; lake edge.  
**Lactuca serriola**; JP; Staverton; locally abundant on waste ground and one on roadside; Holt; locally abundant on roadside bank.  
**Lagarosiphon major**; JP; Broughton Gifford; abundant in pond.  
**Lamiastrum galeobdolon ssp. argentatum**; JEO; East Kennet; 8 yards x 2 yards roadside patch; W of Little Bedwyn; 3 x 10 yard roadside patch in wood.  
**Larix x marschlinii (L. decidua x L. kaempferi)**; JEO; Savernake Forest; 4 seedlings; E of Swindon, wood; 8 seedlings; joint 1<sup>st</sup> county records.  
**Lemna minuta**; JP; Little Ashley; abundant in roadside pond; 10k.  
**Lobelia erinus**; JP; Turleigh; several plants in cracks in block pavement, escaped from window box; 10k.  
**Lobularia maritima**; JEO; West Overton; wall-pavement angles.  
**Lunaria annua**; JEO; Ogbourne St George; roadside seedlings; 10k.  
**Lycium barbarum**; JP; Lower Wraxall; one presumed garden escape on outside of garden wall; 10k.  
**Lysimachia punctata**; JEO; Lockeridge; rhizomatous spread in woods; JP; Broughton Gifford; naturalised in rough grassland; 10k.  
**Lysimachia vulgaris**; JP; Staverton; one by river.  
**Mahonia aquifolium**; JEO; West Overton; 1 plant by roadside.  
**Meconopsis cambrica**; JEO; Clatford.  
**Melissa officinalis**; JEO; Clatford; wood-chippings.  
**Mimulus moschatus**; JEO; Lockeridge; occasional greenhouse weed; Clatford; occasional weed; joint 10ks.  
**Myosotis sylvatica**; JEO; W of Wroughton; roadside patch 12 x 6 yards.  
**Narcissus pseudonarcissus ssp. major**; JEO; Savernake Forest; 70+ clumps.  
**Nothofagus obliqua**; JEO; Savernake Forest, NW; one young tree; 1<sup>st</sup> county record.  
**Oenothera glazioviana**; JEO; Marlborough; 3 plants on roadsides; Ogbourne St George; 1 plant by roadside; 10k.

**Ononis spinosa**; JP; Corsham; several plants by railway; JN (2004); Cherhill; on bare chalk on track, and a few on downland.  
**Ophrys apifera**; SPi; Stanton St Quintin; plenty of flowering spikes on M4 sliproad verge.  
**Orchis morio**; SPi/JFo.; Minety; plenty of flowering spikes in meadow.  
**Ornithogalum pyrenaicum**; JP; Avoncliff; a few in a wood.  
**Oxalis exilis**; JP; E of Lacock; locally abundant on and near garden steps in parkland; 1<sup>st</sup> vc record Murhill; several plants as weeds in flower pot; 2<sup>nd</sup> vc record;  
**Papaver dubium ssp. lecoqii**; JN; Aldbourne; road verge.  
**Paris quadrifolia**; JN; Aldbourne; 6 plants in wood.  
**Pedicularis sylvatica**; JN; W of Little Bedwyn; path in forestry plantation; JEO; Lockeridge, woods; rhizomatous spread since 1991.  
**Poa compressa**; JEO (2004); Clatford; on stonework of bridge; 10k.  
**Polypodium interjectum**; JEO; Chittoe; epiphytic on oaks; 10k.  
**Polystichum aculeatum**; JN; S of Aldbourne; 10 clumps on overgrown path; 10k; PD/ARo/HP; Lower Stanton St Quintin; 3 plants in wood.  
**Populus balsamifera**; JEO; Great Bedwyn; root suckering on field sides; 1<sup>st</sup> county record.  
**Populus nigra ssp. betulifolia**; JEO (2004); S of Great Bedwyn; wood.  
**Populus x jackii (P. balsamifera x P. deltoides)**; JEO; Savernake Forest; root suckering; 1<sup>st</sup> county record; E of Swindon; numerous suckers in wood; 2<sup>nd</sup> county record and 10k.  
**Potamogeton nodosus**; GY; Bradford-on-Avon; river.  
**Potentilla recta**; JM (2004); Bradford on Avon; 3 strong plants on rough ground; PD; Dauntsey; 5 plants on track-side near old buildings; 10k.  
**Primula x polyantha (P. vulgaris x P. veris)**; JEO; east of West Overton; 3 plants on roadside..  
**Pseudotsuga menziesii**; JEO; Savernake Forest, N; 10+ seedlings progressing to saplings.  
**Pterocarya fraxinifolia or its hybrid with P. stenoptera (P. x rhederana)**; JEO; Savernake Forest, NW; dense thickets of root suckers progressing to trees; 1<sup>st</sup> county record.  
**Pyracantha rogersiana**; JP; Murhill; one in roadside hedgerow, presumed bird-sown garden escape but well established, previously unknown in GB outside Kent; 1<sup>st</sup> county record.  
**Quercus petraea**; JEO; nr Wootton Rivers; 1 tree + 1 seedling in lane, mutant form with huge almost unlobed hooded leaves; 10k; Savernake Forest; a number of trees, including seedlings.  
**Quercus x rosacea (Q. petraea x Q. rubra)**; JEO; E of Lockeridge; 1 tree on ancient track; nr Wootton Rivers; commoner than Q. petraea in lane; Savernake Forest; many from saplings to mature.



**Quercus rubra**; JEO; Savernake Forest, N; occasional trees, including seedlings.  
**Ranunculus peltatus**; SPi; Dauntsey; plenty in deep field pond overhung by willows; 10k.  
**Rorippa microphylla**; JP; Little Ashley; several plants in pond.  
**Rorippa palustris**; PGr; Atworth, nursery; scattered about nursery as weeds.  
**Rorippa sylvestris**; GY; Bradford-on-Avon; 2 plants on stone bank of river.  
**Rosa tomentosa**; JN; Minety; in hedge by roadside.  
**Rosmarinus officinalis**; JEO; Marlborough; 1 seedling on riverside stonework; 1<sup>st</sup> county record.  
**Rubus adenoleucus**; RR; Corsham; quarry; 10k.  
**Rubus cardiophyllus**; RR; Corsham; quarry; 10k.  
**Rubus dasycarpus**; RR; Corsham; quarry.  
**Rubus ulmifolius**; RR; Corsham; quarry.  
**Rubus vestitus**; RR; Corsham; quarry.  
**Rumex x ruhmeri (R. conglomeratus x R. sanguineus)**; JEO; Marlborough, SE; damp wood and riverside; Chittoe; wooded streamside; 10k.  
**Salix purpurea**; JN; nr Minety; frequent around lakes.  
**Salix x reichardtii (S. caprea x S. cinerea)**; JEO; Lockeridge; 1 tree in woods; 10k; Savernake Forest; occasional trees; S of Ramsbury; wood.  
**Salix x sericans (S. viminalis x S. caprea)**; JEO; Lockeridge; isolated tree in woods.  
**Saxifraga granulata**; SPi (2004); Marlborough.  
**Saxifraga tridactylites**; SPi; Trowbridge; many in cracks in car park edge; 10k.  
**Scandix pecten-veneris**; SP; Alton Barnes; edge of rape crop; 10k.  
**Scutellaria galericulata**; JN; South Marston; abundant by lake.  
**Setaria pumila**; JN; Bromham; small area at edge of barley field; 10k.  
**Spiraea salicifolia**; JP; Box; abundant on roadside bank; 10k.  
**Stachys arvensis**; JN; Bromham; dominant on bank for 15 metres.  
**Staphylea pinnata**; JEO; Savernake Forest, NW; multistemmed 5m shrubs; 10k.  
**Symphytum caucasicum**; JP; Winsley; soil dump on agricultural land; 1<sup>st</sup> county record.  
**Symphytum orientale**; WBS; Bromham; hedge; 10k.  
**Taraxacum ancistrolobum**; JEO; Lockeridge; 100+ plants; 1<sup>st</sup> county record.  
**Taraxacum bracteatum**; JEO; Lockeridge; 2+ plants; 1<sup>st</sup> county record.  
**Taraxacum sellandii**; JEO; Lockeridge; village and two 14 acre fields, estimated as well over 200,000 plants; 1<sup>st</sup> county record.  
**Tsuga heterophylla**; JEO; Savernake Forest; about 60 seedlings, some saplings; 1<sup>st</sup> vc record.  
**Valerianella carinata**; SPi; Bradford on Avon; abundant in pavement-wall angles; Trowbridge; many plants; 10k.

**Veronica peregrina**; PGr; Atworth; single plant as nursery weed; 1<sup>st</sup> county record.  
**Veronica polita**; PGr; Atworth; scattered in nursery.  
**Vicia tetrasperma**; JN (2004); near Bedwyn; abundant in wood.  
**Vinca major**; JEO; Savernake Forest, NW; patch.  
**Viola canina**; JN; Savernake Forest; 1 in forest ride.  
**Vulpia bromoides**; JN (2004); W of Little Bedwyn; wood.

#### Vc8 records

**Aceras anthropophorum**; JK; Bratton; about 20.  
**Aconitum napellus**; RDU; Nr Westbury; hedge.  
**Anchusa arvensis**; PMW; Landford; tree nursery.  
**Anthemis arvensis**; BG; N of Chitterne.  
**Anthemis arvensis**; WBS; Upper Chicks Grove; 10k.  
**Apium inundatum**; RMV; Plaitford; abundant in sluggish stream on common.  
**Arabis hirsuta**; SPi; Orcheston, SPTA; occasional patches; joint 10k; Chirton, SPTA; by earthwork.  
**Blackstonia perfoliata**; BG; Imber; fenced areas.  
**Briza maxima**; SPi; Trowbridge; 1 plant on ring road; 1<sup>st</sup> vc record.  
**Callitriche platycarpa**; PMW; Redlynch, lake.  
**Carex humilis**; SPi; W of Larkhill; downland, several places; LS; Figheldean; a few on downland.  
**Carex viridula ssp. oedocarpa**; JFo; Crockerton.  
**Catapodium rigidum**; RDU et al (2004); Tidworth.  
**Centaurium pulchellum**; PMW; S of Winterbournes; Bentley Wood; several sites; 10k; SPi; Bulford; small cluster in grassland; 10k.  
**Cephalanthera damasonium**; JNo (2004); S of Winterbournes; Bentley Wood.  
**Ceratochloa carinata**; SPi, and JFo; Broad Chalke; small stand; 10k.  
**Chenopodium quinoa**; PMW; Landford; tree nursery, introduced, naturalising; 1<sup>st</sup> county record.  
**Chrysanthemum segetum**; JN (2004); Cholderton; edge of a corn field; TE; Upavon; arable; 10k.  
**Clinopodium acinos**; BG (2003); Imber; rare in fenced areas.  
**Conyza canadensis**; PMW; Landford; tree nursery, many as weeds.  
**Cuscuta epithymum**; DJW/PMW/RMV; Furzley; bog, many plants on Calluna and Ulex; 10k; RMV; Plaitford; 4 on Calluna on common; 10k.  
**Cynoglossum officinale**; RDU and others (2004); Tidworth; downland.  
**Danthonia decumbens**; JFo; Warminster.  
**Diploaxis muralis**; SPi; Orcheston; SPTA, occasional in disturbed ground; 10k.  
**Echinochloa crus-galli**; PMW; Landford; tree nursery, many plants, introduced initially but also naturalising; 10k; PMW/AB; Alderbury; many plants in bypass central reservation and roadside; 10k.  
**Epilobium obscurum**; Audrey Summers (2004); Cholderton; wood.  
**Erodium cicutarium**; ER/RDU; Tidworth, down-

land; PMW; Landford; tree nursery.

**Euphorbia platyphyllos**; PMW; Whiteparish, a few plants; WBS; Chicks Grove; 10k.

**Fumaria bastardi**; Audrey Summers (2004); Cholderton; wood.

**Fumaria densiflora**; PMW; West Dean; many in fallow area and headlands; 10k; WBS; Little Wishford; 10k.

**Fumaria parviflora**; WBS; Little Wishford; 10k.

**Galeopsis angustifolia**; JN; Cholderton; edge of a corn field; 10k.

**Galeopsis bifida**; SPi/JFo; Broad Chalke; plentiful in field margin; 10k.

**Galinsoga quadriradiata**; PMW; Landford; tree nursery, many plants in ground used for heeling in and widespread in cultivated areas.

**Gaultheria shallon**; DJW; nr Redlynch; 1<sup>st</sup> recent county record.

**Gentianella anglica**; JFo; Warminster; flowering profusely across large areas of downland; 10k square.

**Gentianella germanica**; TCGR (2001); Mere, downland; 5 good plants with widespread *G. amarella* and abundant hybrids; 1<sup>st</sup> recent county record (re-find of 1891 record).

**Gentianella x pamplinii** (*G. germanica* x *G. amarella*); TCGR (2001); Mere, downland; about 100 plants, with widespread parent species; 1<sup>st</sup> recent county record.

**Helleborus foetidus**; SPi; Heytesbury; woodland edge, away from houses, on road chalk cutting; 10k.

**Hypericum androsaemum**; PMW; S of Winterbournes; Bentley Wood, 1 plant at edge of track.

**Inula conyzae**; JN (2004); Porton; Porton Down, several plants.

**Juniperus communis**; SPi/LS; Larkhill; SPTA, one large bush; Larkhill; downland, 1 large bush.

**Kickxia elatine**; PMW; Landford; tree nursery; SPi/JFo; Winterborne Gunner.

**Lactuca serriola**; ER/RDu; Tidworth; downland; 10k.

**Lathraea squamaria**; JRM; Ludgershall; 150 plants in woods, in patches under hazel and birch.

**Lathyrus nissolia**; BG; N of Chitterne.

**Legousia hybrida**; PMW; West Dean; a few plants; SPi/JFo; Broad Chalke; unsprayed corner of kale field; Winterborne Gunner; recently harrowed field margin, etc; 10k; W of Tidworth; abundant along field edge; Bratton; WBS; West Dean; WBS; East Grafton; TE; W of Amesbury; in arable reversion.

**Lemna minuta**; DJW; S of Redlynch; abundant in pond; PMW; E of Redlynch; 10k.

**Lepidium campestre**; BG; N of Chitterne; 10k.

**Linum usitatissimum**; BG; Imber; fenced areas; 10k.

**Lycopodiella inundata**; RMV; West Wellow; one small patch on common.

**Mahonia aquifolium**; Audrey Summers (2004); Cholderton; wood.

**Malva neglecta**; PMW; Landford; tree nursery.

**Mentha pulegium**; DJW; Bramshaw; all over village green; 1<sup>st</sup> recent county record - recorded in Flower's 1857-74 flora for this square; 10k.

**Minuartia hybrida**; SPi/LS; E of Weatherhill; SPTA, plentiful; Tilshead; SPTA, several fine plants on side of tank track; 10k.

**Myosotis ramosissima**; SPi; S of Chirton; SPTA, downland, on earthwork.

**Narcissus pseudonarcissus ssp. pseudonarcissus**; SPi; Semley; many plants scattered in wood; 10k.

**Narthecium ossifragum**; RMV; West Wellow; on common.

**Ophrys apifera**; JN (2004); S of Earlstoke; Army ranges, large specimens in profusion; Wexcombe; 1 plant; JFo; Warminster; downland; SPi/LS; W of Winterbourne Stoke; a few on road verge.

**Oreopteris limbosperma**; DJW; Nomansland; cluster of plants by stream.

**Ornithogalum pyrenaicum**; IA; Farley; increasing and moving N out of protected road-verge.

**Panicum miliaceum**; PMW; Landford; tree nursery, introduced initially but also naturalising; 10k.

**Papaver argemone**; JRM; Collingbourne Ducis; 1 plant in field, amongst abundant *P. rhoeas*; 10k; SPi/JFo; Winterbourne Gunner; in corner of arable weed plot; W of Tidworth; field edge with *Legousia*; WBS; S of Amesbury; Collingbourne Ducis.

**Papaver hybridum**; JRM/WBS; Collingbourne Ducis, 1 in field; 10k; PMW; West Dean; 100s in field headlands; WBS; Little Wishford; S of Amesbury.

**Paris quadrifolia**; JNo; S of Winterbournes; Bentley Wood.

**Petroselinum segetum**; WBS; S of Amesbury.

**Phacelia tanacetifolia**; PMW; Landford; tree nursery, introduced initially but also naturalising; 10k.

**Picris hieracioides**; JEO (2004); N of Cholderton; cemetery, plant over 2m high, 1.5m spread, over 2x the Stace maximum size; SPi; Orcheston; SPTA.

**Pilularia globulifera**; RMV; Plaitford; common, patch about 1m square almost covering pool; 1<sup>st</sup> recent county record (since 1892).

**Pinguicula lusitanica**; PMW/DJW; Landford; bog; RMV; West Wellow; at least 30 plants on common.

**Poa angustifolia**; TE; W of Amesbury; 10k.

**Poa humilis**; SPi; Orcheston; SPTA, frequent.

**Polygonum rurivagum**; WBS; Collingbourne Ducis.

**Polypodium interjectum**; RMV; Bramshaw; several sites, epiphyte on oak, ash and beech, about 20 on sides of ditches and 20 plants on roadside bank; 10k.

**Pulmonaria officinalis**; JRM; Ludgershall; patch 1m x 1m in woods, presumably of garden origin; 10k.

**Ranunculus arvensis**; JN; East Grafton; single plant at edge of cornfield; 10k.

**Ranunculus trichophyllus**; DJW; Nomansland; a few in a wood; 10k.

**Rhynchospora fusca**; RMV; West Wellow; 40+ on common.

**Rorippa sylvestris**; PMW; Landford; tree nursery, many plants in ground used for heeling in; 10k.

**Rosa micrantha**; SPi; Porton; Porton Down.  
**Rubus armeniacus**; RR; Longbridge Deverill; roadsides.  
**Rubus arrhenii**; MJP (2004); Penselwood; woods; 10k; RR; Crockerton; wood; 10k.  
**Rubus bercheriensis**; RR; Longbridge Deverill; roadsides.  
**Rubus cardiophyllus**; RR; Longbridge Deverill; roadsides; Crockerton; wood.  
**Rubus dasyphyllus**; RR; Crockerton; 2 woodland locations; 10k.  
**Rubus dentatifolius**; RR; Crockerton; marsh.  
**Rubus echinatus**; RR; Crockerton; wood.  
**Rubus glareosus**; RR; Crockerton; wood.  
**Rubus leyanus**; RR; Crockerton; 3 woodland locations; 10k.  
**Rubus melanodermis**; BSBI (2004); Penselwood; woods; 10k.  
**Rubus mucronatiformis**; RR; Crockerton; 3 woodland locations; 10k.  
**Rubus phaeocarpus**; BSBI (2004); Crockerton; wood; 10k; RR; Longbridge Deverill; roadsides; 10k.  
**Rubus polyanthemis**; RR; Crockerton; wood.  
**Rubus prolongatus**; RR; Crockerton; wood; 10k.  
**Rubus silvaticus**; RR; Crockerton; wood.  
**Rubus ulmifolius**; RR; Crockerton; wood; Longbridge Deverill; roadsides.  
**Rubus vestitus**; RR; Longbridge Deverill; roadsides; Crockerton; wood.  
**Sagina nodosa**; SPi/LS; E of Weatherhill; a few plants beside track; 10k.  
**Scutellaria galericulata**; JNo (2004); S of Winterbournes; Bentley Wood; 10k.  
**Sedum telephium**; PMW; S of Winterbournes; Bentley Wood, several plants, 2 on side of ditch.  
**Setaria pumila**; PMW; Landford; tree nursery, introduced initially but also naturalising.  
**Spiranthes spiralis**; LSm/DJW; Martin; several places on downland; joint 10ks.  
**Thesium humifusum**; SPi; Larkhill; downland.  
**Trifolium medium**; SPi; Chirton; large patches.  
**Valerianella carinata**; DJW; Whiteparish; several; 10k.  
**Valerianella dentata**; BL/RDu; nr Amesbury; field; SPi/JFo; Winterborne Gunner; in corner of arable weed plot and in recently harrowed field margin; WBS; Burcombe; Lower Woodford.  
**Viola x wittrockiana (V. tricolor x V. arvensis)**; AJS (2004); Cholderton; garden escape in wood; 1sr vc record.

#### Records of specific interest

**Achillea ptarmica**; JP (2004); Stanton St Quintin; small colony beside woodland path; flore pleno.  
**Cicerbita macrophylla**; JN; Aldbourne; old Grose record still persisting in hedge.  
**Cirsium acaule forma caulescens**; JP; Avoncliff; one plant in meadow, not clear if genetically distinct

or environmental variation.

**Genista tinctoria, European continental variety**; JP (2004); Little Langford; small group of 5-foot high shrubs by nature reserve pathside; a mainland European variety, most likely planted originally but now naturalised.

**Geranium pratense**; JEO; Lockeridge; woods, roadsides and grassland; white flowered nearly as common as blue; West Overton; roadsides and grassland; white flowered nearly as common as blue; Ogbourne St George; roadside; white flowers.

**Geranium robertianum**; JEO; Lockeridge; right of way, white flowers, 5+ plants; Ogbourne St George; roadside, white flowers, 10+ plants.

**Ilex aquifolium**; JEO; Clatford; wholly spineless wild variant with leaves 6-7cm, ovate-elliptic and bronzed.

**Linaria purpurea**; JEO; Marlborough; dozens on walls, including wall-top seedings; pink flowered forms outnumber the normal purple by 30:1.

#### Ancient trees

**Cornus sanguinea**; JEO; Savernake Forest, SW; 6m high. girth of main living limb 40cm at 5ft, circumference of base at 1ft off ground 200cm; champion tree for the British Isles for Tree Register of the British Isles (TROBI). JEO; Savernake Forest; 6m high, girth 200cm at 1ft off ground; 2nd largest dogwood in British Isles.

**Euonymus europaeus**; JEO; Savernake Forest; tree sized, girth 62cm at 5ft; largest in Wiltshire.

**Populus nigra ssp. betulifolia**; JEO; Bedwyn Brail; Girth 260cm at 5 feet; RChs; Bedwyn Brail; girth over 3m at 5 ft.

**Quercus cerris**; JEO; Savernake Forest; huge tall tree, girth nearly 5.5m.

**Salix alba**; JEO; S of Theobald's Green; girth, 630cm at 5ft; 2nd greatest in Wiltshire.

**Sorbus aria**; JEO; E of Lockeridge; girth (at 1ft) 400cm; 6 main limbs, measuring 80, 80, 85, 115, 115 and 120cm in girth (all at 5ft from the ground).

#### Liverworts

**Marchantia polymorpha**; JEO/JW; Malmesbury; rare; base of wall.

#### Bastard Toadflax (*Thesium humifusum*)

