Species Status

No. 7

The Vascular Plant

Red Data List

for Great Britain

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Further information on the JNCC Species Status project can be obtained from the Joint Nature Conservation Committee website at http://www.jncc.gov.uk/

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Membership of the Working Group

Botanists from different organisations throughout Britain and N. Ireland were contacted in January 2003 and asked whether they would like to participate in the Working Group to produce a new Red List. The core Working Group, from the first meeting held in February 2003, consisted of botanists in Britain who had a good working knowledge of the British and Irish flora and could commit their time and effort towards the two-year project. Other botanists who had expressed an interest but who had limited time available were consulted on an appropriate basis.

Chris Cheffings	(Secretariat to group, Joint Nature Conservation Committee)
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Lynne Farrell	(Chair of group, Scottish Natural Heritage)
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Gentianella campestris (L.) Börner

F. Rumsey

The illustration on the cover of this report was chosen for very good reasons. We wished to have a species which occurred throughout the UK and which represented our analysis of the entire British flora, rather than just those species known from previous Red Data Books and Nationally Scarce lists. Field gentian has not appeared on national threat lists before and there are many other such plants that are declining rapidly even though they may still be relatively widespread.

Gentianella campestris, Field gentian, is described in the *New Flora of the British Isles* (Stace, 1997) as native in grassland and dunes; scattered over Britain and Ireland and locally common in the north, but absent from most of Southern Ireland, South and Central Britain. It is a species which many botanists and general observers might think of as relatively widespread, but good to see in the countryside.

The *New Atlas of the British and Irish Flora* (Preston *et al.*, 2002), however, shows a significant decline and states that, although the species had already suffered a marked decline before 1930, there are still sites being lost through overgrazing in the uplands and the neglect of lowland pastures. We have now classified *G. campestris* as Vulnerable. This is one example of the many species that were previously not known to be under threat but are now shown to be disappearing over a wide area.

Contents

1 Introduction

This report has been produced as part of the JNCC Species Status Assessment project. The remit was to assess the status of the vascular plants throughout Great Britain. For the first time, all native and archaeophyte taxa have been analysed, not just those that had already been identified as rare or scarce. This analysis has been made possible by the publication of the *New Atlas of the British and Irish Flora* (Preston *et al.*, 2002), which has allowed comparisons to be made with the *Atlas of the British Flora* (Perring & Walters, 1962) for all taxa. This work satisfies the commitment made in *Plant Diversity Challenge: The UK's response to the Global Strategy for Plant Conservation* (JNCC, 2004) to assess all vascular plants in the UK using IUCN criteria. It will also be used to inform future priority setting in the Biodiversity Action Plan (BAP) process.

The bulk of the report is, of course, the Red List itself, but it contains much more than this. There are sections on data sources, the criteria used, endemics, international responsibility and difficult groups. Throughout the project the Working Group and others have identified individual taxa or groups of species where further distributional data or taxonomic research are required before proper threat assessments can be made. Many such taxa do not appear in the new Red List but, for now, are listed in the so-called 'Waiting List' in section 8. More generally, the Working Group recognised that much more population data are required in order to apply some of the IUCN criteria. Our discussions included wider aspects of Red List interpretation and how the list might be used (for example, when reviewing the list of taxa included in the UK Biodiversity Action Plan).

There have been three editions of the Red Data Book for vascular plants in Great Britain (Perring & Farrell, 1977, 1983; Wigginton, 1999). These were all based on the distributional data provided in the first plant atlas, with additional information from targeted surveys looking at rare and scarce taxa. The huge quantity of new distributional information provided by the *New Atlas*, meant that a thorough revision of the conservation status of all vascular plants was appropriate. The IUCN categories assigned in this report supersede those given in Wigginton (1999) or in Cheffings (2004).

In this report, the terms 'Red List' and 'Red Data List' have been used synonymously, to refer to the list of *all* taxa that have been analysed according to IUCN criteria. This includes threatened taxa as well as those that are 'Least Concern'. This is a change in usage compared to the past, when a taxon that was 'on the Red List' was considered to be threatened. In this report, a taxon that is 'on the Red List' is not necessarily threatened, but has been assigned an IUCN category.

This report has been produced by a working group with representation from a range of interested organisations. The organisations represented were: Scottish Natural Heritage, the Joint Nature Conservation Committee, the Biological Records Centre (within the Centre for Ecology and Hydrology), the Botanical Society of the British Isles, the Countryside Council for Wales, English Nature, the Natural History Museum, Plantlife International and the Royal Botanic Garden Edinburgh.

2 Coverage

2.1 Taxonomic coverage

The scope of this project was all vascular plants, comprising pteridophytes (fern and fern allies) and flowering plants (gymnosperms and angiosperms). Therefore, the two starting points for the project were the *New Atlas of the British & Irish Flora* (Preston *et al.*, 2002) and the *New Flora of the British Isles* (Stace, 1997). Within this broad scope, there were some groups of plants that were excluded from the IUCN threat analysis, based on conservation priorities. There were four particular issues that we needed to consider: 1) how to treat plants classified as native, archaeophyte or neophyte, 2) whether to consider 'new natives', such as *Serapias parviflora* or *Senecio eboracensis*, 3) whether it would be possible to include the large apomictic

genera, and 4) how to treat hybrids. The first two of these questions are discussed in this section, the latter two are sufficiently complex to warrant their own sections, and are discussed later in this report. Finally, it has not been possible to include taxa at ranks below that of subspecies due to lack of detailed information, this may be reconsidered in the future.

2.1.1 Native, archaeophyte and neophyte taxa

In the *New Atlas of the British and Irish Flora* (Preston *et al.,* 2002) there was a fresh attempt to distinguish between native species (occurring in Britain and Ireland as a result of natural dispersal) and introduced, or alien, species (those known or thought to have been brought here by man). This also made a distinction between alien species known or suspected to have been introduced before AD 1500 (archaeophytes) and more recent introductions (neophytes).

Distinguishing between native and introduced taxa is frequently straightforward – compare, for example, *Corylus avellana*, a native species with a continuous fossil record dating back to at least the last glacial period, with *Carpobrotus edulis*, brought to Britain from South Africa in the late 17th century and not recorded in the wild until 1886 – there can be little debate over the status of these two species.

Native status categorisations for the *New Atlas* were not always so easily arrived at, however, and there were many species which were classified as 'native' or 'alien' only after a careful weighing of the available evidence, with the final decision often having to be made on a 'balance of probabilities' rather than being 'proven beyond all reasonable doubt'. Even then, there were a small number of species where the evidence for and against native status seemed to be so finely balanced that in the *New Atlas* an equivocal 'Native or Alien' seemed to be the only option (*e.g. Gastridium ventricosum, Gaudinia fragilis, Lathyrus aphaca*).

Selection of species for analysis

In compiling the new Red List we agreed at the outset that our native status assessments would, as far as possible, follow those given in the *New Atlas*. It was also accepted that in Britain, as elsewhere, conservation efforts should be directed mainly at *native* species, and that, with few exceptions, all taxa listed as 'native' or 'native or alien' in the *New Atlas* would therefore be included in the Red List, while those listed as 'neophytes' would be excluded.

We re-examined the status categorisations, however, for a number of *New Atlas* neophytes. These were taxa over which there had been disagreement in the past, and where at least *some* authorities had previously regarded them as either possibly or certainly native. We reconsidered all taxa for which new evidence had appeared after the publication of the *New Atlas*. For example, we re-assessed the native status of the *New Atlas* neophyte *Valerianella eriocarpa* as 'native or alien', in the light of work in Dorset (Pearman & Edwards, 2002).

There is a rather larger group of *New Atlas* neophytes that we were unable to reach agreement on (*e.g. Lathyrus hirsutus, Vulpia unilateralis*): these have been excluded from the Red List, but are included in the Waiting List in section 8. We are happy, for the moment, to regard them as neophytes, but we remain open to the possibility that our position might need to change in the light of new data (as for *V. eriocarpa*).

Conversely, we now have serious doubts about the native status of a small number of species treated as 'native' or 'native or alien' in the *New Atlas* (*e.g. Cynodon dactylon, Limosella australis*), and feel that there may be some justification in these now being re-assessed as probable neophytes. These, too, have been excluded from the Red List and are listed in the Waiting List with a note there as to the reasons for their exclusion.

The special case of archaeophytes

In contrast to neophytes, we decided that *ancient* introductions (archaeophytes) should be included along with native and 'native or alien' taxa in the Red List. This decision was taken for the following reasons:

- *Evidence of decline and the need for conservation action*. Most archaeophytes (in contrast to neophytes) have either stable distributions or are declining. Analysis of the *New Atlas* dataset showed that archaeophytes *as a group* declined severely in the 20th century (Preston *et al.*, 2002), with many of those species occurring in arable habitats continuing to decline, and some now under considerable threat of extinction. Many archaeophytes are known to be declining throughout their European range, not just in Britain.

- *Lack of a known 'native' world distribution*. Archaeophytes, unlike neophytes, tend to have native world ranges which are not known, or which are highly uncertain; indeed, some archaeophytes are regarded as 'alien' throughout their known global range. If we were to argue that such species should be ignored on account of their 'non-nativeness', this could lead to them being ignored almost *everywhere*, and so an important group of species would effectively fall through the conservation net.

- *Cultural and historic importance – the 'human' dimension*. Archaeophytes are of considerable historical and cultural interest. They have developed (and exploited) a close relationship with man which is, in effect, one of *commensalism* – many archaeophytes are, quite literally 'followers of man'. The way in which humans now value these species is partly a consequence of having been so intimately associated with them over such a long time period.

Preston *et al.* (2004) provide a detailed assessment of British archaeophytes and an explanation of the rationale (and evidence required) for treating certain species as archaeophytes. In compiling the new Red List, we have taken as archaeophytes all those listed as such in the *New Atlas* and in Preston *et al.* (2004), but we also acknowledge that the distinction between archaeophytes and neophytes (as also between archaeophytes and native species) is not always clear-cut, and that further research may be needed to re-assess the status of a few taxa for which there remains some uncertainty or disagreement. These species are included in the Waiting List in section 8. Once the native status of Waiting List taxa has been clarified, those that qualify can be included in the IUCN threat analysis.

2.1.2 'New native' species

There are only a few taxa that can be considered to fall into the category of 'new native'. These include taxa that have recently colonised Great Britain as a result of natural dispersal, taxa that are newly evolved, and taxa that are newly described.

There is just one taxon that is considered to be a possible 'new native' having reached Great Britain through natural dispersal. *Serapias parviflora* is considered to be 'native or alien' in the *New Atlas*, with some authors viewing it as native, whilst others believe it to be a deliberate introduction. We decided, that before we would include such a species in the Red List, we would need evidence that they were not casual populations. If a hypothetical species is moving northwards under the influence of climate change, then it might be envisaged that 'pioneer' populations would at first be casual until the species became established. If the population can be shown to be established, then it would be included in the threat analysis in the normal way.

We used a similar argument for those taxa that are newly evolved, such as *Senecio eboracensis*. We also discuss the problems of conserving actively speciating groups of plants in section 3.

Wherever possible we have included newly described taxa in the Red List in the normal way. However, the lack of distributional data for these taxa means that many of them have been either listed as Data Deficient (see 6.7), or else placed on the Waiting List in section 8.

2.2 Geographical coverage

The scope of this work is confined to Great Britain, excluding both the Channel Islands and the Isle of Man. It is hard to justify on phytogeographical grounds the preparation of a single list of threatened vascular plants for the United Kingdom as a whole or, indeed, for the United Kingdom and Ireland together. However, the Biodiversity Action Plan process is required to take into account the whole of the United Kingdom, and hence when trend analysis was carried out for the application of IUCN criterion A, both a GB and a UK trend was calculated. The few taxa for which a significant difference in trend was calculated are noted in the Red List 'Notes' column.

3 Apomictic and critical groups

3.1 Apomicts and other complex groups and their treatment in this report

A number of groups of plants are remarkably difficult to include in threat assessments. Apomictic groups, along with certain other critical taxa, are particularly complex. Much of the difficulty associated with these groups comes from species identification problems, and distributional data are, consequently, very patchy. There are also problems associated with changing taxonomy. In the past, only 'small and manageable' groups have been included in threat assessments. In this report we have tried to consider all taxa equally but as the available data are variable this is still not really possible. When further information is to hand the groups can be reassessed and the Red List reviewed. In general, whenever sufficient information has existed, and taxonomy has been stable, we have included taxa in the Red List.

Apomicts are plants that produce seed wholly (or almost entirely) female in origin and without fertilisation. There is evidence in most groups for occasional or very rare sexual outcrossing but, by and large, each new generation has the same genetic make-up as its female parent. The result of this is a large number of 'clones' which are all reproductively isolated but very closely related and these 'clones' are distinguished as microspecies. There are also other critical groups of plants that may hybridise extensively or have a number of inbred lines, which, equally, makes them difficult to identify at the species level.

At present, 11 groups of taxa have been considered.

Taxon group	**Description of group**	**Treatment**
Dactylorhiza	This is a difficult genus owing to ready hybridisation between almost all of the taxa, and active speciation is evidently taking place. It is currently the subject of research.	Taxa included in Red List, Waiting List or Parking List as appropriate.
Dryopteris affinis	This species consists of apogamous diploids or triploids derived from hybridisation. Three to six subspecies have been recognised but their characters and delimitation are still being studied. The two referees have agreed on the taxa but not agreed the appropriate rank.	The different subspecies and varieties have all been lumped under *Dryopteris affinis* as a species in this report.
Epipactis	*Epipactis phyllanthes*, *E. leptochila*, *E. sancta*, *E. dunensis* and *E. youngiana* form a problematic complex of self-pollinated plants in which species limits are the subject of research. Speciation is considered to be still taking place. Conservation for this group may be best to be 'process-based'.	Taxa included in Red List, Waiting List or Parking List as appropriate.

Taxon group	Description of group	Treatment
Euphrasia	A highly critical genus with over 60 wild hybrids and, evidently, very active speciation. Several of the emergent taxa are endemics. This genus is the subject of current research. Conservation measures for this group may be best to be 'process-based'.	Taxa included in Red List, Waiting List or Parking List as appropriate.
Hieracium	All taxa are obligate apomicts. 261 microspecies are currently recognised in the British Isles of which many are endemic and probably a considerable number are aliens. A revision is in progress at the present time.	Section *Alpina* has been included, as the taxonomy for this section has been agreed and Tennant and Rich (2002) have provided an IUCN analysis. All other sections are not included in any of the lists.
Limonium	Another complex genus which in Britain comprises three sexual species (*Limonium vulgare*, *L. humile* and *L. bellidifolium*) and a group of apomictic taxa (within the *Limonium binervosum* aggregate). The existing taxonomy is being reviewed following a molecular study. All the apomictic taxa in this group in Britain are considered to be ancient with active speciation not now taking place.	Taxa included in Red List, Waiting List or Parking List as appropriate.
Ranunculus auricomus	This is an apomictic taxon and several hundred agamospecies have been described from the Continent. The British plants are possibly different from almost all of these and probably well over 100 taxa could be recognised.	The species appears in the Red List, but not any of the agamospecies, which remain to be described.
Rubus	An extremely complex genus, largely apomictic, with over 400 microspecies recognised in the British Isles, and evidently very active speciation. It is considered that 'hotspots' may be the best approach for this group in future work.	A list of species that are endemic and restricted to five or fewer hectads is included in this section, but many of the rarest *Rubi* are not named, and consequently these cannot be included in this report. No *Rubi* are included on the Red List, Waiting List or Parking List.
Salicornia	This is a difficult genus with the problems arising mainly from great phenotypic plasticity and the inbreeding nature of the plants, which tend to form numerous distinctive local populations.	Taxa included in Red List, Waiting List or Parking List as appropriate.
Sorbus	This is another difficult genus, consisting of several well-defined but variable sexual species and a number of apomictic ones, many of hybrid origin. The apomicts mostly fall into three groups. Work on this genus is in progress at present. Speciation has effectively stopped, or is very slow.	Taxa included in Red List, Waiting List or Parking List as appropriate.
Taraxacum	This is a critical genus in which nearly all of the 235 microspecies occurring in the British Isles are apomicts. Of these, no more than 150 are native (most of the rest are probably recent introductions). The native taxa include more than 40 that are considered to be certain or probable endemics.	A few native species, for which there are clear data, have been included in the Red List. There are several species which are rare but for which there are insufficient data for analysis so they are listed separately in this section. No species are included in the Waiting List or Parking List.

Process and products

There is very active speciation in some critical groups *e.g. Dactylorhiza*, whilst it has almost stopped in several others *e.g. Sorbus*. For *Sorbus* we therefore know what the 'product' is and where it occurs, but for the other taxa which are still evolving there is no final 'product' only a continuing 'process'. The Red List focuses on the products, but conservation action needs to focus on the process when it is occurring. Therefore, although we consider a number of *Euphrasia* species (for instance) to be threatened currently, conservation action should conserve the processes which principally create these taxa.

Hotspots

A possible mechanism for conserving areas in which 'process' is occurring, is to identify species hotspots, where several species of a group occur together. This situation applies to several of the groups, such as *Dactylorhiza*, *Epipactis*, *Euphrasia* and *Rubus*. There is the possibility of applying the hotspot concept to more groups in the future when data become available.

3.2 Rare Rubus *microspecies*

This list of endemic *Rubus* species, confined to five or fewer hectads, was supplied by R. Randall. Most or all of these species are likely to be threatened. More information is available in Newton & Randall (2004).

Taxon name	**Hectads**	**Notes**
R. aquarum	3	Local endemic of mid-Wales. Stable or declining.
R. briggsii	4	Local endemic of Plymouth area. Static or declining in scrubby grassland, hedges and wood borders.
R. britannicus	1	Local endemic of Surrey. The typical plant is apparently restricted to the Munstead, Surrey area. The form widespread in S. British Isles is now suspected to be a named European species.
R. bucknallii	5	Endemic with a disjunct distribution. 3 hectads in the Wotton-under-Edge and Dursley, W. Gloucs. area, the *locus classicus*, and 2 hectads in the Kimbolton, Hunts. area. Probably static in woods and hedges.
R. castrensis	4	Local endemic of Cheshire. Static or decreasing in hedges, banks and wood borders.
R. daltrii	5	Local endemic of N.W. Staffs. Static or declining in woods on sandstone.
R. dasycoccus	3	Local endemic of S.E. Wales and W. Gloucs. Static on heath and wood margins and in hedges.
R. devoniensis	3	Regional endemic of Devon. Static or declining on margins of moors.
R. diversiarmatus	2	Local endemic of N. Somerset. Static in hedges, scrub and open woods. Possibly derived locally by hybridisation of *R. adscitus* and *R. rubritinctus*.
R. dobuniensis	1	Local endemic of Mitcheldean Meend, W. Gloucs. Static or decreasing, possibly extinct. Probably a local derivative of *R. gratus*.
R. durescens	4	Local endemic of S. Derbys. Static on wood margins and in hedges.
R. herefordensis	1	Local endemic of Herefordshire. Static or declining in woods.
R. hirsutissimus	3	Local endemic of Gwent and Herefordshire. Static or decreasing on wood borders and open ground.
R. hyposericeus	2	Local endemic of Herefordshire. Static or decreasing in woods.
R. iodnephes	2	Local endemic of Surrey. Static or decreasing on heaths near London.
R. laxatifrons	1	Local endemic of Herefordshire. Static or declining in woods.
R. longifrons	1	Local endemic of Tunbridge Wells area. Static or declining in woods.
R. melanocladus	4	Regional endemic of S.E. Wales and the Marches. Static or declining in woods and hedges.

Taxon name	Hectads	Notes
R. mercicus	4	Regional endemic in S. Lincs. and Warwickshire. Probably static or decreasing in ancient woodland in Lincs., probably extinct in hedges in the Warwickshire locality.
R. obesifolius	3	Local endemic of Staffs. Static or declining on heathy roadsides and upland wood margins.
R. permundus	1	Local endemic of Surrey. Static or declining in a beech wood on superficial deposits over chalk. Susceptible to felt disease in dry seasons. Possibly arising by hybridisation of *R. surrejanus* with *R. sprengelii* or *R. brevistaminosus*.
R. pervalidus	3	Local endemic of S.E. England. Static or declining in open woods.
R. pliocenicus	4	Regional endemic of S.E. England. Static or decreasing in hedges and wood margins.
R. powellii	2	Local endemic of Epping Forest. Decreasing in open woods.
R. pseudoplinthostylus	1	Local endemic of Dorset. Static or decreasing in woods.
R. putneiensis	1	Local endemic of Putney Heath, Surrey. Static, decreasing or extinct.
R. regillus	1	Local endemic of Herefordshire. Static, decreasing or extinct in woods.
R. rotundifolius	1	Local endemic of Leics. Static, decreasing or extinct in a plantation near Twycross.
R. sagittarius	4	Local endemic of Plymouth area. Static or declining on wood borders and in hedges.
R. salteri	1	Local endemic of Wight. Static or decreasing in open woods.
R. spadix	1	Local endemic of Eltham, Kent. Static or declining on wood borders and hedges.
R. tresidderi	1	Local endemic of Cornwall. Decreasing, now only known from one locality.
R. trelleckensis	2	Local endemic of Trelleck area, Monmouthshire. Static or decreasing in heathy oak-birch wood on quartzitic sandstone.
R. wolley-dodii	2	Local endemic of Edge Park, Cheshire. Static or declining in scrub, wood borders and hedges.

3.3 Rare Taraxacum *microspecies*

Six *Taraxacum* species were included on the Red List on the basis of the information included in Dudman & Richards (1997). A further nine are listed here, as they are known to occur in five or fewer hectads, and it is quite likely that they are threatened.

T. beeftinkii	
T. breconense	Endemic
T. cenabense	
T. gotlandicum	
T. hirsutissimum	Endemic
T. hygrophilum	
T. margettsii	Endemic
T. pseudonordtstedtii	Endemic
T. serpenticola	Endemic

4 Hybrids

To the best of our knowledge, no hybrid taxa have ever been considered in the Red List process, and IUCN provide no guidance on such taxa. However, hybridisation followed by polyploidy is one of the main mechanisms in plant speciation, and hybrids have an essential role to play in plant evolutionary processes.

Nor is there any justification for the exclusion of hybrids on the grounds of taxonomic rank and IUCN themselves state that their selection criteria "can be applied to any taxonomic unit at or below species level". A paper by Preston (2004) in *British Wildlife* sets out arguments for the inclusion of hybrids in the conservation process.

4.1 Criteria for Red Listing

The results of our work should be seen as the first step towards including hybrids in the conservation process. Since different hybridisation mechanisms operate within a wide range of species, hybrids form an extremely diverse group, and because hybrids have not been considered for conservation before, many discussions are still needed over the appropriate mechanisms, priorities and responsibilities for conservation of these different hybrid types (see *Consideration of conservation concern*).

It was first necessary to consider which types of hybrid taxa would be most appropriate for conservation action before assessing threat. Beginning with an initial list of 872 hybrid taxa drawn from Stace (1997) and the Biological Records Centre database, we principally aimed to exclude those taxa which could not, realistically, be effectively conserved. For example, it would clearly be inappropriate to Red List a highly sterile, annual hybrid that persists for just one season. Even though such a taxon may have considerable scientific merit, it cannot be practically conserved and should be excluded from the list.

Consideration of these practicalities led to the development of the following five criteria for selecting taxa in Britain worthy of conservation:

a) The hybrid must be between native parents (or parents that were once native to Britain)
This follows IUCN guidelines on selection criteria and means that we are only considering hybrids between native taxa, or taxa that were once native to our area but are now extinct (*e.g. Potamogeton vaginatus*). All hybrids introduced as aliens are excluded (*e.g. Forsythia* x *intermedia*). Complications arise with hybrids between alien taxa that arise *de novo* in our area, and similarly with those between alien and native taxa. Although some consider such taxa to be native (and even endemic), we have taken the view that since they arise only as a result of the introduction of the alien parent(s) to Britain they cannot be considered as native and should be excluded; such introductions could take place in any other country and such events are entirely dependent on man's activities.

b) The hybrid is not a short-lived annual
As mentioned above, it is not possible to effectively conserve rare sterile annual hybrids with no means of vegetative reproduction and these have been excluded. Some annual hybrids, however, are fully fertile and can produce long-lived colonies (*e.g. Euphrasia*). Such hybrids are extremely important, with frequent back-crossing and the formation of hybrid swarms indicating the presence of active speciation. These hybrids are dealt with under criterion **e** below.

c) The hybrid is not a single occurrence of a long-lived individual
This is clearly related to the previous criterion but refers instead to single, isolated occurrences of long-lived individuals that lack the ability to spread vegetatively. This is again a practical consideration; it is inappropriate to attempt to conserve such hybrids despite their potentially long life-span. An example would be *Asplenium adiantum-nigrum* x *Phyllitis scolopendrium*, a single plant of which is currently known from Cornwall. We appreciate that application of this criterion can be difficult given the poor understanding of many hybrids. Since both parents of *Asplenium* x *murbeckii* (*A. ruta-muraria* x *septentrionale*) produce compact clumps from shortly spreading rhizomes, we assume that the plant known on Arthur's Seat in Edinburgh for 10 years behaves in the same manner and is therefore not excluded by this criterion.

d) The hybrid reproduces vegetatively, producing long-lived colonies
Vegetative reproduction by rhizomes, stolons or other means allows for often large colonies of hybrids to form. *Equisetum* x *robertsii* (*E. arvense* x *telmateia*), for example, is found over an area of *c*. 400 m^2 of cliff at its single site on Anglesey. The age of such colonies is impossible to determine, but is likely to be considerable. It may be argued that individuals of such hybrids are clones and thus actually constitute a single individual (see previous criterion), but since they usually fragment, more than one individual is

normally present (a view in accordance with IUCN criteria). Definition of 'long-lived' is difficult, but we have used 10 years as baseline (either 10 years of records of a hybrid from a given site, or an estimation of 10 years or more for the hybrid to have produced the current size of colony).

e) The hybrid is not regularly present as part of a hybrid swarm between similar parents (*e.g. Euphrasia, Dactylorhiza*)
These are groups in which active speciation can be considered to be occurring. Such groups have a tendency to produce hybrid swarms, in which species and hybrids are difficult or impossible to define with any clarity. Hybrid taxa in these groups are of very great importance. However, it is clear that these groups merit a process-based conservation response, rather than attempting to conserve the individual named entities (the conservation of complex groups such as these is discussed in section 3). It is neither possible nor desirable to attempt to apply threat criteria to the hybrid taxa in these groups, in which it is the *process* which allows them to hybridise extensively that is of importance.

Application of the above criteria produced a short-list of 331 hybrid taxa. These were then assessed for threat as follows.

4.2 Assessment of threat

For the hybrids selected, an assessment of threat immediately presents us with problems. The recording of hybrids is far from complete and indeed they continue to be frequently overlooked by many field botanists. Consequently, distribution data are often very poor and assessing any decline is usually impossible. Until more complete data are available, application of IUCN threat criteria is severely limited and criteria A, B & C cannot be used, relying as they do on evidence of decline. For the time being we can only apply criterion D, which assesses population size, as follows:

CR	population < 50 mature individuals
EN	population < 250 mature individuals
VU	population < 1000 individuals OR recorded from five or fewer locations

The size of hybrid populations was assessed initially by extracting hectad counts from *New Atlas* database. Those hybrids recorded from 20 or fewer hectads were examined in more detail, mostly by cross-referencing with County Floras and with the Vice-county Census Catalogue (Stace *et al.*, 2003). From this, many hybrids with no recent records (1987 or onwards) were excluded, as were those recorded from more than five hectads. In only very few cases were direct population counts available; recent detailed studies of hybrids, such as that of *Drosera* x *belezeana* (Pearman & Rumsey, 2004), clearly illustrate the value of such work in improving our understanding of this group.

In order to be certain that IUCN criteria were being applied strictly, we have only allocated a Vulnerable category to those hybrids that are known to be extant in 5 or less documented sites (*not* hectads). Sites could, however, be individual locations, single management units or single river systems. The resulting list of 42 hybrids is included in the Red List. Another 70 hybrids may qualify, but more information on sites, dates or ecology is needed before they can be assessed more fully. We have not included the remaining hybrids on either the Red List as LC, or on the Waiting List.

4.3 Consideration of conservation concern

The list of 42 Vulnerable hybrids included in the Red List are those for which a threat assessment can be made on the number of sites from which they are known, and which would benefit from site safeguard measures. As mentioned before, however, more discussion is needed over appropriate mechanisms, priorities and responsibilities for the conservation of hybrids.

There are a small number of hybrids in the UK for which it could be argued that we have a special responsibility to conserve. These are hybrids that have as one of their parents a taxon that no longer occurs in

the UK; *Potamogeton* x *bottnicus*, which has *P. vaginatus* as a parent, is a good example. These hybrids represent the only remaining examples of the UK genome of these extinct parental taxa and the full range of protection mechanisms is therefore appropriate for their conservation; the loss of such hybrids would mean the complete elimination of the extinct genome.

Similar considerations may apply when one or both of the parental taxa are themselves threatened in the UK, *i.e.* they appear elsewhere in the Red List. In these cases the hybrids clearly represent an additional source of the threatened genome, and if we were to lose the parent taxa the hybrids would become of great importance. Of the 42 hybrids included in the list, 14 have parents that are also threatened; indeed, four of them have Critically Endangered parents (*Dryopteris carthusiana* x *cristata*, *Potamogeton acutifolius* x *berchtoldii, Schoenoplectus lacustris* x *triqueter and S. tabernaemontani* x *triqueter*).

Clearly the hybrid in such cases could provide a 'safer' home for the threatened genome if it helps the genome escape the cause of endangerment (which is likely to be related to the nature of the interaction of the biology of the parent taxon with prevalent forces in the environment). On the other hand, if the reason for the breakdown of barriers to gene flow between the parent taxa is anthropogenic (such as a sudden influx to an area of the non-threatened taxon) the ensuing level of introgression may be so high as to itself constitute a threat (ultimately the loss of the endangered genome through selection or drift). Therefore, each case of hybrids with a threatened parental taxon should be considered on its merits, given the biology of the hybrid population and the non-threatened taxon, and the nature of the plight of the endangered parent. When analysing the threat to non-hybrid taxa, we have not attempted to provide any correction for the existence of hybrids containing further examples of that genome. Such an analysis would require a much greater understanding of the hybrid distribution and trends, as well as the biology of the group.

4.4 Summary

Why have some hybrid taxa on the Red List?

- The Red List is an assessment of threat facing all UK taxa, and there is no case for the exclusion of hybrids if this assessment is to be genuinely objective.
- If a long-lived, vegetatively reproducing hybrid is found in 5 or fewer sites it merits some level of protection.
- Hybrids can represent reservoirs of genetic diversity when parental taxa are nationally or regionally extinct.
- Hybrids may assist in the conservation of threatened parental taxa.
- Although conservation of evolutionary process (especially with hybrid swarms) is of great importance, this will not lead to the listing of the hybrid taxa but of the whole group.

Future work to assist in the conservation of hybrids:

- Discussion of the appropriate mechanisms, priorities and responsibilities for the conservation of hybrids.
- Improved information on population size, distribution and trends.
- Improved understanding of the biology of some hybrids, to assess whether they represent a positive or negative aspect to the conservation of threatened parental taxa.

5 Data sources

In evaluating the current distribution of British vascular plants, and recent trends in their frequency, we have relied for the most part on the Vascular Plant Database (VPD) compiled for the *New Atlas of the British and Irish Flora* (Preston *et al.*, 2002). We have also drawn on the results of other, more detailed, studies of particular species. A brief summary of those aspects of the Vascular Plant Database which are most relevant to Species Status Assessment follows.

There have been two nationwide surveys of British plant distribution at the hectad (10-km square) scale. The first was undertaken by the BSBI in preparing the pioneer *Atlas of the British Flora* (Perring & Walters, 1962). Although the majority of records were collected for this survey in the late 1950s, 1930 was chosen as the starting point for recent records, and the momentum built up by the scheme continued after the publication of the *Atlas* in 1962. It is therefore convenient to regard 1930-69 as the first period of survey. Historical records from the pre-1930 era were also assembled for inclusion in this *Atlas*.

The original *Atlas* survey was repeated in the period 1987-99 for the *New Atlas*, although it was not possible to survey thoroughly some northern Scottish counties in this period, and comprehensive records from these areas are only available for the period 1970-99. It is nevertheless possible to take 1987-1999 as a period with which the records for 1930-69 can be compared. Like the original *Atlas*, historical data were also collected for the *New Atlas*.

The VPD includes the results of these two surveys, plus those of other projects which took place between 1962 and 1999. These include data compiled for the three editions of the vascular plant *Red Data Book* (Perring & Farrell, 1977, 1983; Wigginton, 1999) and for the survey of slightly less uncommon species, *Scarce Plants in Britain* (Stewart *et al*., 1994).

Detailed population studies of particular species were used to inform decisions on threat category, wherever this information was accessible. Botanists who were known to have worked, or be working, on certain species were contacted directly and asked for their help; for instance Plantlife provided information on 'Back from the Brink' species. Over the past six years, Common Standards Monitoring of designated sites has provided some further details on species that are the main features of those sites, including their current population status and notes on the change in status from previous surveys.

Although the rich historical data on the distribution of British plants provide a wealth of information on changes in their distribution and frequency, it requires careful interpretation. The available data are a heterogeneous assemblage both spatially and temporally. Any numerical analysis must take this into account, and questions must be framed in the light of the limitations of the database. It is, for example, appropriate to compare the distribution of plant species for the 1930-69 and 1987-99 periods, but any attempt to make a similar comparison for the periods 1960-79 and 1980-99 would not yield meaningful results for most species.

For a general comparison of the results of the two Atlas surveys, Telfer *et al*. (2002) devised a relative change index in an attempt to counteract differences in recording intensity. This was referred to in carrying out the IUCN threat analysis, although for rare species, for which there tend to be many more detailed records than common species, direct comparisons of the results of the two surveys is often justifiable.

6 Application of IUCN criteria

The IUCN criteria represent the accepted method of producing Red Lists, both nationally and internationally. In this report we have adopted the categories and criteria published by IUCN in 2001. We have also made extensive use of the *Guidelines for Using the IUCN Red List Categories and Criteria* published by IUCN in 2003. The criteria are described in detail in section 7. We have not been able to apply criterion E to the British flora, as so few population viability analyses have yet been published.

6.1 Native and introduced status of records

In the *New Atlas* a distinction was made between native and introduced records of taxa. That is to say, taxa which are native to Great Britain are not necessarily native *throughout* Great Britain, and there can also be isolated incidents of introduction even within the native range. For archaeophytes, all records are marked in the *New Atlas* as non-native, and hence it is impossible to distinguish 'true' archaeophyte occurrences from recent introductions. It was decided that all statistics and analyses should be based on native records only for

native taxa, and on all records for archaeophytes. A potential exception to this rule is the case for 'conservation reintroductions'. In these instances, introductions were included in the analysis as if they were native, if: 1) appropriate genetic stock had been used, and 2) the population was now self-sustaining. This second rule excluded practically every known reintroduction at the current time.

6.2 Application of Criterion A

The A Criterion looks exclusively at percentage decline of a taxon, regardless of current range or abundance. This decline may be in the recent past or projected into the future. The decline may be in a range of measures including the range occupied by a taxon, the area within the range that is actually occupied, and counts of sites, populations or individuals. In our work, we have not attempted to project future declines, all statistics are based on declines in the recent past. We have also concluded that there are no taxa for which we are confident that the causes of the decline are clearly reversible, understood, and the decline has ceased. Therefore all of assessments under criterion A have concentrated on subcriterion A2, not A1, A3 or A4 (see 7.1.3). We have also not considered, due to lack of available data, any of: indices of abundance for taxa, declines in the quality of the supporting habitat, levels of exploitation, or the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites. This has limited our work to either A2a (direct observation) or A2c (decline in area or occupancy or extent of occurrence).

6.2.1 Time period for decline statistics

IUCN state that the trend should be measured over three generation lengths, with a minimum of a ten-year trend. Also, the effect of the seed bank on generation length should be accounted for. Therefore, even for the majority of annual species, three generation lengths would equate to more than ten years once the seed bank is included. However, the detailed population information that is required for a measure of generation length is lacking for almost the entirety of the British flora. Therefore it was decided not to extrapolate or interpolate the trend data we had to an estimate of generation length, as the uncertainties involved would be extreme. The use of date classes rather than single time points would further complicate any extrapolation or interpolation. Hence, the criterion A decline thresholds have been applied to the trend data between the two date classes 1930-69 and 1987-99 as described in section 5. A few exceptions were made for taxa for which good data existed for the 1970-86 date class; in a few instances these data actually showed a more rapid decline in recent years than was indicated by the earlier comparison.

6.2.2 Trends in Area of Occupancy

The area of occupancy (AOO) of a taxon is defined as the area occupied by that taxon within its overall extent of occurrence, excluding cases of vagrancy (IUCN, 2001). One possible measure of the trend in AOO would be the percentage change in the number of occupied hectads between the two date classes. However, it was considered that in some cases a small decline in the number of hectads masked a much greater decline at a finer spatial scale. Indeed, IUCN recommend that in many cases the tetrad is the most appropriate scale for measuring AOO (IUCN, 2003). IUCN also provide a statistical method for extrapolating the number of tetrads from the number of hectads that takes into account the patchiness of the distribution. This extrapolation was applied to the two date classes. The results of the extrapolation for the current date class were then checked against two independent sets of tetrad data: 'real' tetrad distributions of rare and scarce taxa, and tetrad counts from the BSBI Monitoring Scheme (1987-88). The BSBI Monitoring Scheme looked at only a subset of tetrads in Great Britain, and hence provides good tetrad estimates for commoner taxa, but not for scarce taxa. These comparisons with the extrapolated data showed an excellent correlation, except for those taxa occurring in fewer than 30 hectads, at which point the number of outliers increased dramatically. Therefore, the trend between the two date class extrapolations was used as a second measure of AOO trend (in addition to hectad trend) for all those taxa which occur in more than 30 hectads.

The 'Change Index' quoted in the *New Atlas* is related to AOO trend statistics, however it is not given as a percentage, and cannot be used directly in an IUCN analysis. It does not in itself indicate whether there has

been an absolute increase or decrease in AOO, but shows relative performance compared to an 'average' species. It is generally assumed that those taxa with very negative Change Indices have declined. There are two main differences in the calculation of the Change Index as compared to the statistics in this report: 1) the Change Index includes all records of a taxon irrespective of native status, 2) the Change Index includes the Isle of Man. The second difference will have a negligible effect. However, the inclusion of introduced records can cause significant differences from the AOO trends reported here: for instance, non-native sites for *Marrubium vulgare* have declined far more dramatically than native sites. Therefore, we have used the Change Index to check our results, but it has not been directly used in the analysis.

6.2.3 Trends in Extent of Occurrence

The extent of occurrence (EOO) is defined as the area contained within the shortest continuous imaginary boundary which can be drawn to encompass all the known, inferred or projected sites of present occurrence of a taxon, excluding cases of vagrancy (IUCN, 2001). This is also commonly referred to as the species *range*. IUCN allow the exclusion of discontinuities and disjunctions within the overall distributions of taxa.

We decided to follow the recommendation given by IUCN (2003) to use the α-hull method (with α equal to 2) to calculate the extent of occurrence. This removes disjunctions and discontinuities; for instance it only includes coastal areas for coastal taxa. This method is described in detail by Burgman & Fox (2003). We applied this analysis to the two date classes for Great Britain, and calculated the trend between them. We were concerned that the α-hull method is prone to sampling errors. For instance, fewer disjunctions were calculated if a species was under-recorded in the past, but more disjunctions will appear if the same species is now well-recorded. This may have the overall effect of showing a reduction in the EOO, despite the range being stable or even increasing. Therefore, further checks were devised: 1) three different trends were calculated for each taxon with α either fixed or variable, and these trends were then checked for consistency, 2) all taxa which only showed negative trends in EOO, and not in other measures, were mapped and checked visually for anomalies. Finally, taxa with very restricted distributions, for which the calculated EOO was less than 1000 km^2, did not have trends calculated, since a hectad scale was too coarse for these distributions.

6.3 Application of Criterion B

The B criterion is designed to identify threats associated with extremely restricted distribution when combined with other risk factors. For the reasons that are described in this section, the application of criterion B was simplified to the following:

	Critically Endangered	**Endangered**	**Vulnerable**	**Near Threatened**
BOTH	Single location	≤5 locations	≤10 locations	≤30 locations
AND	Continuing decline	Continuing decline	Continuing decline	Continuing decline

This means that neither severe fragmentation nor extreme fluctuations were used in the risk factor analysis.

6.3.1 Severe fragmentation

IUCN include severe fragmentation as an alternative risk factor to the number of locations. We investigated the possibility of using the average distance between populations as a potential measure of fragmentation, but decided that fragmentation needed to include population measures as well as distances between populations. We based this decision on both the IUCN definition that 'most of its individuals are found in small and relatively isolated subpopulations', and also the discussion of this definition in the *Atlas y Libro Rojo de la Flora Amenazada de España* (Bañares *et al*., 2003). The Spanish discussion focuses on measures of the minimum viable population size, information that is lacking for the British flora. Without this information we decided not to use this measure in the current list, although we may return to this in the future.

6.3.2 Number of locations

The exact number of locations is not always easy to define. The IUCN (2001) definition of a location is 'a geographically or ecologically distinct area in which a single threatening event can rapidly affect all individuals of the taxon present'. This is not synonymous with the number of populations (or subpopulations), as a single population can cover more than one location or there can be multiple populations in a single location. We have attempted to define locations as 'management units', where the change in management of an area is assumed to be the most threatening event likely to be faced by a taxon. Single drainage systems are assumed to be single locations for aquatic plants, since a pollution event could affect the entire system. Large, relatively open areas proved particularly problematic to classify as locations. In these cases we have sometimes used the number of occupied tetrads in these areas as a proxy for the number of locations.

6.3.3 Continuing decline

Evidence of continuing decline can come from measures of EOO or AOO trend, as well as direct observations of locations, populations, or individuals. We have used all of these possible measures. We assumed that any decline in EOO or AOO between the two date classes represented a 'real' decline, since the most recent date class was in general better recorded, and hence an increase in EOO or AOO would be predicted for a stable taxon. However, in a few instances we considered that there were current data showing that the decline had now ceased, and hence in these cases a decline in EOO or AOO was not considered to be evidence for a *continuing* decline. There are a number of detailed sources of information on numbers of locations and individuals, although many of these sources are unpublished. Examples include Plantlife Back from the Brink Reports and recent information from Country Agencies on Common Standards Monitoring.

6.3.4 Extreme fluctuations

Extreme fluctuations are the third possible risk factor identified by IUCN. The group decided not to include this risk factor in the analysis of vascular plant threat, because it focuses on fluctuations of above-ground parts (*i.e.* the plants that are recorded) and ignores the importance of the seed or spore bank as a part of the normal life cycle for a plant taxon. In fact, we considered that those species that demonstrated fluctuations in above-ground individuals were often *more* resistant to threats, as they were usually accompanied by a large seed bank of individuals that could wait until the threat receded. This was contrasted with the situation for animals, in which a fluctuation in individuals is not buffered by a 'seed bank' of incipient animals. For animals, a fluctuation can increase the threat, if a destructive event occurs in a year when numbers are low. This is not the case for a plant taxon with a seed bank.

6.4 Application of Criterion C

Criterion C considers the combination of extremely small population size with similar risk factors to criterion B. Population information was obtained from a large number of sources, many of them unpublished. Continuing decline and extreme fluctuation were dealt with in the same manner as for criterion B.

6.5 Application of Criterion D

Criterion D identifies very small or restricted populations. Population information was obtained as for criterion C. The category of VU D2 (see section 7 for details) was defined as occurring in five or fewer locations. Locations were defined as described under criterion B. A proxy of five or fewer tetrads was only used in a small number of cases in which the identification of locations was particularly difficult. After careful consideration, a proxy using other grid scales (*e.g.* 1-km squares or hectads) was not used.

6.6 Thresholds for Near Threatened

IUCN do not provide quantitative thresholds for the category of Near Threatened, but they clearly state that the taxon should be close to qualifying for the Vulnerable category, and that the criteria that were nearly met should be stated. For the purposes of this report, we decided to adopt the following quantitative thresholds for this category:

Criterion A	≥20% decline between the two date classes
Criterion B	≤30 locations and continuing decline
Criterion D	≤10000 individuals

6.7 Use of the Data Deficient category

There are a considerable number of taxa in the British flora for which information is either lacking or insufficient to undertake IUCN threat analysis. However, rather than over-burden the Red List with large numbers of Data Deficient (DD) taxa, the majority of these have been placed in the Waiting List, with indications of the information that is required before a threat assessment can be made. A smaller number of taxa have been included in the Red List as DD. These are taxa which are believed to have very restricted populations, and hence it is possible that they are threatened.

7 Red Data List

7.1 Description of columns

7.1.1 Taxon name

In general, taxonomy in the Red List has followed that used in the *New Atlas of the British and Irish Flora* (Preston *et al.*, 2002). There are a number of subspecific taxa which are not mapped in the *New Atlas*, and for these we have generally followed the taxonomy given in Stace's *New Flora of the British Isles* (2nd Edn., 1997). Microspecies in *Hieracium* Sect. *Alpina* have been taken from Tennant & Rich (2002). *Taraxacum* microspecies are from *Dandelions of the British Isles* (Dudman & Richards, 1997). For Orchidaceae, we have followed current advice, in particular from Richard Bateman; those orchid taxa which differ in taxonomy from that given in the *New Atlas* have footnotes in the table.

7.1.2 Category

The IUCN categories are as defined in *IUCN Red List Categories and Criteria: Version 3.1* (IUCN, 2001):

EXTINCT (EX). A taxon is Extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

EXTINCT IN THE WILD (EW). A taxon is Extinct in the Wild when it is known to survive only in cultivation, in captivity or as a naturalized population (or populations) well outside the past range. A taxon is presumed Extinct in the Wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

CRITICALLY ENDANGERED (CR). A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered, and it is therefore considered to be facing an extremely high risk of extinction in the wild.

ENDANGERED (EN). A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered, and it is therefore considered to be facing a very high risk of extinction in the wild.

VULNERABLE (VU). A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild.

NEAR THREATENED (NT). A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

LEAST CONCERN (LC). A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

DATA DEFICIENT (DD). A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that a threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases great care should be exercised in choosing between DD and a threatened status. If the range of a taxon is suspected to be relatively circumscribed, and a considerable period of time has elapsed since the last record of the taxon, threatened status may well be justified.

NOT EVALUATED (NE). A taxon is Not Evaluated when it has not been assessed against the criteria.

There are no NE taxa in this Red List. However, those taxa listed in the Waiting and Parking Lists (section 8) are, in effect, 'not evaluated' taxa, in that they were considered for evaluation, but then excluded for the reasons stated.

7.1.3 Criteria

The four criteria columns in the Red List table refer to criteria A-D, with their relevant subcriteria, as defined by IUCN (2001). Each IUCN category has separate thresholds for these criteria. The thresholds for Near Threatened were described in 6.6, no subcriteria were used for this category. There is a hierarchical alphanumeric numbering system of criteria and subcriteria. Under criteria A-D, the first level of the hierarchy is indicated by the use of numbers (1-4) and if more than one is met, they are separated by means of the '+' symbol. The second level is indicated by the use of the lower-case alphabet characters (a-e). These are listed without any punctuation. A third level of the hierarchy involves the use of lower case roman numerals (i-v). These are placed in parentheses and separated by the use of commas if more than one is listed. The thresholds for the three threat categories are as follows:

Critically Endangered (CR)

A. Reduction in population size based on any of the following:

1. An observed, estimated, inferred or suspected population size reduction of ≥90% over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible AND understood AND ceased, based on (and specifying) any of the following:
    (a) direct observation

(b) an index of abundance appropriate to the taxon
(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
(d) actual or potential levels of exploitation
(e) the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.

2. An observed, estimated, inferred or suspected population size reduction of ≥80% over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.
3. A population size reduction of ≥80%, projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1.
4. An observed, estimated, inferred or suspected population size reduction of ≥80% over any10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.

B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both:

1. Extent of occurrence estimated to be less than 100 km^2, and estimates indicating at least two of a-c:
    a. Severely fragmented or known to exist at only a single location.
    b. Continuing decline, observed, inferred or projected, in any of the following:
        (i) extent of occurrence
        (ii) area of occupancy
        (iii) area, extent and/or quality of habitat
        (iv) number of locations or sub-populations
        (v) number of mature individuals.
    c. Extreme fluctuations in any of the following:
        (i) extent of occurrence
        (ii) area of occupancy
        (iii) number of locations or sub-populations
        (iv) number of mature individuals.
2. Area of occupancy estimated to be less than 10 km^2, and estimates indicating at least two of a-c:
    a. Severely fragmented or known to exist at only a single location.
    b. Continuing decline, observed, inferred or projected, in any of the following:
        (i) extent of occurrence
        (ii) area of occupancy
        (iii) area, extent and/or quality of habitat
        (iv) number of locations or sub-populations
        (v) number of mature individuals.
    c. Extreme fluctuations in any of the following:
        (i) extent of occurrence
        (ii) area of occupancy
        (iii) number of locations or sub-populations
        (iv) number of mature individuals.

C. Population size estimated to number fewer than 250 mature individuals, and either:

1. An estimated continuing decline of at least 25% within 3 years or one generation, whichever is longer, (up to a maximum of 100 years in the future) OR
2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a-b):
    a. Population structure in the form of one of the following:
        (i) no subpopulation estimated to contain more than 50 mature individuals, OR
        (ii) at least 90% of mature individuals in one subpopulation.
    b. Extreme fluctuations in number of mature individuals.

D. Population size estimated to number fewer than 50 mature individuals.

E. Quantitative analysis showing the probability of extinction in the wild is at least 50% within 10 years or 3 generations, whichever is the longer (up to a maximum of 100 years).

Endangered (EN)

A. Reduction in population size based on any of the following:

1. An observed, estimated, inferred or suspected population size reduction of ≥70% over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible AND understood AND ceased, based on (and specifying) any of the following:
    (a) direct observation
    (b) an index of abundance appropriate to the taxon
    (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
    (d) actual or potential levels of exploitation
    (e) the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.
2. An observed, estimated, inferred or suspected population size reduction of ≥50% over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.
3. A population size reduction of ≥50%, projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1.
4. An observed, estimated, inferred or suspected population size reduction of ≥50% over any10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.

B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both:

1. Extent of occurrence estimated to be less than 5000 km^2, and estimates indicating at least two of a-c:
    a. Severely fragmented or known to exist at no more than five locations.
    b. Continuing decline, observed, inferred or projected, in any of the following:
        (i) extent of occurrence
        (ii) area of occupancy
        (iii) area, extent and/or quality of habitat
        (iv) number of locations or sub-populations
        (v) number of mature individuals.
    c. Extreme fluctuations in any of the following:
        (i) extent of occurrence
        (ii) area of occupancy
        (iii) number of locations or sub-populations
        (iv) number of mature individuals.
2. Area of occupancy estimated to be less than 500 km^2, and estimates indicating at least two of a-c:
    a. Severely fragmented or known to exist at no more than five locations.
    b. Continuing decline, observed, inferred or projected, in any of the following:
        (i) extent of occurrence
        (ii) area of occupancy
        (iii) area, extent and/or quality of habitat
        (iv) number of locations or sub-populations
        (v) number of mature individuals.
    c. Extreme fluctuations in any of the following:
        (i) extent of occurrence
        (ii) area of occupancy
        (iii) number of locations or sub-populations
        (iv) number of mature individuals.

C. Population size estimated to number fewer than 2500 mature individuals, and either:

1. An estimated continuing decline of at least 20% within five years or two generations, whichever is longer, (up to a maximum of 100 years in the future) OR
2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a-b):
    a. Population structure in the form of one of the following:
        (i) no subpopulation estimated to contain more than 250 mature individuals, OR
        (ii) at least 95% of mature individuals in one subpopulation.
    b. Extreme fluctuations in number of mature individuals.

D. Population size estimated to number fewer than 250 mature individuals.

E. Quantitative analysis showing the probability of extinction in the wild is at least 20% within 20 years or five generations, whichever is the longer (up to a maximum of 100 years).

Vulnerable (VU)

A. Reduction in population size based on any of the following:

1. An observed, estimated, inferred or suspected population size reduction of ≥50% over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible AND understood AND ceased, based on (and specifying) any of the following:
    (a) direct observation
    (b) an index of abundance appropriate to the taxon
    (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
    (d) actual or potential levels of exploitation
    (e) the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.
2. An observed, estimated, inferred or suspected population size reduction of ≥30% over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.
3. A population size reduction of ≥30%, projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1.
4. An observed, estimated, inferred or suspected population size reduction of ≥30% over any10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.

B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both:

1. Extent of occurrence estimated to be less than 20,000 km^2, and estimates indicating at least two of a-c:
    a. Severely fragmented or known to exist at no more than 10 locations.
    b. Continuing decline, observed, inferred or projected, in any of the following:
        (i) extent of occurrence
        (ii) area of occupancy
        (iii) area, extent and/or quality of habitat
        (iv) number of locations or sub-populations
        (v) number of mature individuals.
    c. Extreme fluctuations in any of the following:
        (i) extent of occurrence
        (ii) area of occupancy
        (iii) number of locations or sub-populations
        (iv) number of mature individuals.
2. Area of occupancy estimated to be less than 2000 km^2, and estimates indicating at least two of a-c:
    a. Severely fragmented or known to exist at no more than 10 locations.
    b. Continuing decline, observed, inferred or projected, in any of the following:
        (i) extent of occurrence
        (ii) area of occupancy
        (iii) area, extent and/or quality of habitat
        (iv) number of locations or sub-populations
        (v) number of mature individuals.
    c. Extreme fluctuations in any of the following:
        (i) extent of occurrence
        (ii) area of occupancy
        (iii) number of locations or sub-populations
        (iv) number of mature individuals.

C. Population size estimated to number fewer than 10,000 mature individuals, and either:

1. An estimated continuing decline of at least 10% within 10 years or three generations, whichever is longer, (up to a maximum of 100 years in the future) OR
2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a-b):
    a. Population structure in the form of one of the following:
        (i) no subpopulation estimated to contain more than 1000 mature individuals, OR
        (ii) all mature individuals are in one subpopulation.
    b. Extreme fluctuations in number of mature individuals.

D. Population very small or restricted in the form of either of the following:

1. Population size estimated to number fewer than 1000 mature individuals.
2. Population with a very restricted area of occupancy (typically less than 20 km^2) or number of locations (typically five or fewer) such that it is prone to the effects of human activities or stochastic events within a very short time period in an uncertain future, and is thus capable of becoming Critically Endangered or even Extinct in a very short time period.

E. Quantitative analysis showing the probability of extinction in the wild is at least 10% within 100 years.

7.1.4 Statistics

There are five columns that provide the supporting statistics for the IUCN category, whenever it is not LC. 'AOO: extrapolated', 'AOO: hectad' and 'EOO' were described in section 6. An entry in these columns of 'Trend' implies that there has been a decline greater than or equal to the threshold for the IUCN criteria listed. The 'Locations' or 'Individuals' columns give numbers, or occasionally also have a 'Trend' entry.

7.1.5 Endemics and near endemics

For this project, a taxon is defined as *endemic* if its entire native distribution is confined to one or more of the following countries: England (including the Isles of Scilly), Wales and Scotland. The Channel Islands, the whole of Ireland and the Isle of Man are excluded from this definition. If a taxon's entire native distribution is confined to the United Kingdom, Republic of Ireland, Channel Islands and the Isle of Man, it is termed *near endemic*.

The list of endemics was drawn from Stace (1997), Rich *et al*. (1999) and Preston *et al*. (2002). Previously published lists were brought up-to-date in the light of published research. Taxa for which questions still remain over taxonomic validity or endemic status (*e.g. Gladiolus illyricus* subsp. *britannicus*) have been placed on the Waiting List. Those for which such issues have been resolved, and the taxon is no longer considered to be endemic as a result, have been placed on the Parking List (*e.g. Anthyllis vulneraria* subsp. *corbierei*, which is now rejected as a subspecies).

7.1.6 International responsibility

There has never been anything other than a very partial comparison of the distribution of our flora with the same species in North and West Europe, and consequently there is no reliable source for ascertaining whether we hold a significant proportion (>25%) of the World population.

We have investigated as many species in our flora as possible (see Pearman & Preston, 2003), including all those species with Oceanic and Suboceanic ranges (Preston & Hill, 1997), many of which are European endemics. We have attempted to estimate their European range by using the UTM 50 x 50 km grid (which is used in *Atlas Florae Europaeae* and others), and then estimating the proportion of that total found in the UK. In the absence of direct population data, we have then used these *range* estimates to indicate those taxa for which the UK is likely to hold a significant proportion of the total European population.

We have consulted *Atlas Florae Europaeae* (which currently covers around 20% of our flora), the principal distribution atlases of N. Europe (which cover many species extending to W. Europe), Germany, N.E. France and N.W. France as well as any other relevant Floras that contain maps. The total coverage in all these works is fairly comprehensive, though it gives a picture more of the historical range before the losses of the last 50 years. Much more work could be done to support and confirm the initial findings presented here. We intend to proceed with this over the next few years, with our colleagues in Europe. This work does not yet encompass subspecies.

The initial conclusions are presented as follows:

Yes. We are sure that the UK holds more than 25% of the European population (and, in all but two cases, the World population).

Probably. We are fairly sure that the UK holds more than 25% of the European population.

Possibly. There is a reasonable chance that the UK holds more than 25% of the European population.

7.1.7 Notes

Any specific notes on a taxon have been included in this column. In particular this column has been used to note a number of caveats that apply to the threat assessment, and which should be taken into account when formulating conservation action. For instance, a considerable number of species are annotated 'montane and under-recorded'. This implies that there is a lower confidence in the accuracy of the threat assessment provided, particularly when it is heavily reliant on decline statistics that may have been biased by recording coverage. The precise way in which the Red List is translated into conservation action remains to be decided. However, it may be appropriate to improve knowledge of these species as a first step, before considering further conservation action.

7.2 Summary of new findings

This new Red List is significantly different to previous editions. The principal differences stem from analysing the entire flora, not just rare or scarce species. This has led to the identification of a considerable number of taxa which are still relatively widespread, but are undergoing rapid decline. We have followed a new definition of Near Threatened, in line with IUCN recommendations, and this has led to a considerable number of changes. Table 1 summarises the number of taxa in each IUCN category according to Wigginton (1999) and in this report. It is clear from this that there are considerably more taxa in each threat category given in this report. This increase in threatened and near threatened taxa is even more remarkable given there are 60 taxa listed by Wigginton which are no longer considered threatened; these changes are summarised in Table 2.

Table 1. Numbers of taxa by IUCN category.

IUCN Category	Wigginton (1999)	This report
Extinct	12	9
Extinct in the Wild	6	4
Critically Endangered	25	35
Endangered	44	90
Vulnerable	136	220
Data Deficient	2	39
Near Threatened	81	98
Least Concern	-	1261
Total	306	1756

Table 2. Taxa listed as threatened (CR, EN or VU) in Wigginton (1999), but which are not considered threatened in this report.

Taxon	New category
Alchemilla minima	Waiting list
Althaea hirsuta	Parking list
Anisantha madritensis	Parking list

Taxon	New category
Arenaria norvegica subsp. *anglica*	Near Threatened
Athyrium flexile	Parking list

Taxon	New category
Bupleurum falcatum	Parking list
Carex chordorrhiza	Least Concern
Carex muricata subsp. *muricata*	Near Threatened
Carex norvegica	Least Concern
Centaurea cyanus	Least Concern
Cerastium brachypetalum	Parking list
Cirsium tuberosum	Near Threatened
Cynodon dactylon	Waiting list
Cytisus scoparius subsp. *maritimus*	Near Threatened
Echium plantagineum	Parking list
Eleocharis parvula	Least Concern
Epipactis youngiana	Parking list
Eriophorum gracile	Near Threatened
Euphorbia serrulata	Least Concern
Festuca longifolia	Least Concern
Fumaria reuteri	Waiting list
Gentiana nivalis	Near Threatened
Gnaphalium luteoalbum	Parking list
Himantoglossum hircinum	Near Threatened
Hypochaeris maculata	Near Threatened
Lavatera cretica	Waiting list
Limonium binervosum subsp. *cantianum*	Waiting list
Limonium binervosum subsp. *mutatum*	Waiting list
Limonium dodartiforme	Waiting list
Limonium loganicum	Waiting list
Limonium paradoxum	Waiting list
Limonium parvum	Waiting list
Limonium procerum subsp. *devoniense*	Waiting list
Limonium procerum subsp. *cambrense*	Waiting list
Limonium transwallianum	Waiting list
Limosella australis	Waiting list
Lonicera xylosteum	Waiting list
Lychnis viscaria	Near Threatened
Melampyrum arvense	Waiting list
Ononis reclinata	Least Concern
Orobanche caryophyllacea	Near Threatened
Petrorhagia prolifera	Waiting list
Physospermum cornubiense	Least Concern
Pilosella peleteriana	Near Threatened
Polygala amarella	Least Concern
Rhinanthus angustifolius	Waiting list
Scheuchzeria palustris	Least Concern
Schoenus ferrugineus	Least Concern
Seseli libanotis	Near Threatened
Sorbus anglica	Near Threatened
Spergularia bocconei	Parking list
Stachys alpina	Waiting list
Teucrium botrys	Parking list
Teucrium chamaedrys	Waiting list
Tordylium maximum	Parking list
Trichomanes speciosum	Least Concern
Tuberaria guttata	Near Threatened
Valerianella eriocarpa	Least Concern
Veronica spicata subsp. *spicata*	Waiting list
Viola kitaibeliana	Near Threatened

7.3 Main table

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Acer campestre	LC													
Achillea millefolium	LC													
Achillea ptarmica	LC													
Actaea spicata	LC													
Adiantum capillus-veneris	LC													
Adonis annua	EN	A2c					Trend	Trend						
Adoxa moschatellina	LC													
Aegopodium podagraria	LC													
Aethusa cynapium	LC													
Aethusa cynapium subsp. cynapium	LC													Assumed to be LC as species, not analysed
Agrimonia eupatoria	LC													
Agrimonia procera	LC													
Agrostis canina	LC													
Agrostis capillaris	LC													
Agrostis curtisii	LC													
Agrostis gigantea	LC													
Agrostis stolonifera	LC													
Agrostis vinealis	LC													
Aira caryophyllea	LC													
Aira praecox	LC													
Ajuga chamaepitys	EN	A2c					Trend	Trend						
Ajuga pyramidalis	VU	A2c						Trend						Montane and under-recorded
Ajuga pyramidalis x reptans (A. x pseudopyramidalis)	VU				D2				1					

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Ajuga reptans	LC													
Alchemilla acutiloba	VU	A2c					Trend	Trend						Alchemilla were better recorded in 1930-69
Alchemilla alpina	LC													Alchemilla were better recorded in 1930-69
Alchemilla filicaulis subsp. filicaulis	LC												Possibly	Alchemilla were better recorded in 1930-69
Alchemilla filicaulis subsp. vestita	LC												Possibly	Alchemilla were better recorded in 1930-69
Alchemilla glabra	LC													Alchemilla were better recorded in 1930-69
Alchemilla glaucescens	LC													Alchemilla were better recorded in 1930-69
Alchemilla glomerulans	VU	A2c					Trend							Alchemilla were better recorded in 1930-69
Alchemilla micans	EN		B1ab(v)+2ab(v)	C2a(i)					4	<800				Alchemilla were better recorded in 1930-69
Alchemilla monticola	EN	A2c					Trend							Alchemilla were better recorded in 1930-69
Alchemilla subcrenata	EN	A2ac	B1ab(iv)+2ab(iv)				Trend		Trend, <5					Alchemilla were better recorded in 1930-69
Alchemilla wichurae	EN	A2c				Trend								Alchemilla were better recorded in 1930-69
Alchemilla xanthochlora	LC													Alchemilla were better recorded in 1930-69
Alisma gramineum	CR			C2a(i)						<250				
Alisma lanceolatum	LC													
Alisma plantago-aquatica	LC													
Alliaria petiolata	LC													
Allium ampeloprasum	LC													
Allium oleraceum	VU	A2c						Trend						
Allium schoenoprasum	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Allium scorodoprasum	LC													
Allium sphaerocephalon	VU				D2				1	>1000				
Allium ursinum	LC													
Allium vineale	LC													
Alnus glutinosa	LC													
Alopecurus aequalis	LC													
Alopecurus borealis	LC												Yes	
Alopecurus bulbosus	LC													
Alopecurus geniculatus	LC													
Alopecurus myosuroides	LC													
Alopecurus pratensis	LC													
Althaea officinalis	LC													
Ammophila arenaria	LC													
Anacamptis morio[1]	NT	A				Trend								
Anacamptis pyramidalis	LC													
Anagallis arvensis	LC													
Anagallis arvensis subsp. arvensis	LC													Assumed to be LC as species, not analysed
Anagallis arvensis subsp. foemina	LC													
Anagallis minima	NT	A				Trend	Trend							Decline may be accelerating
Anagallis tenella	LC													
Anchusa arvensis	LC													
Andromeda polifolia	LC													
Anemone nemorosa	LC													
Angelica sylvestris	LC													

[1] Formerly *Orchis morio*.

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Anisantha sterilis	LC													
Antennaria dioica	LC													
Anthemis arvensis	EN	A2c				Trend								
Anthemis cotula	VU	A2c						Trend						
Anthoxanthum odoratum	LC													
Anthriscus caucalis	LC													
Anthriscus sylvestris	LC													
Anthyllis vulneraria	LC													
Anthyllis vulneraria subsp. vulneraria	LC													Assumed to be LC as species, not analysed
Apera spica-venti	NT	A						Trend						Cannot distinguish casuals from established sites
Aphanes arvensis	LC													
Aphanes australis	LC													
Apium graveolens	LC													
Apium inundatum	LC												Probably	
Apium nodiflorum	LC													
Apium repens	VU				D2				3					
Aquilegia vulgaris	LC													
Arabidopsis thaliana	LC													
Arabis alpina	EN				D					83				
Arabis glabra	EN	A2c					Trend	Trend						
Arabis hirsuta	LC													
Arabis petraea	VU	A2c				Trend							Possibly	Montane and under-recorded
Arabis scabra	VU				D2				2	>1000				Also two long-standing introduction sites
Arctium lappa	LC													
Arctium minus	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Arctostaphylos alpinus	LC													
Arctostaphylos uva-ursi	LC													
Arenaria norvegica subsp. anglica	NT		B		D				27	<10000	Yes		Yes	
Arenaria norvegica subsp. norvegica	VU			C1						<10000				
Arenaria serpyllifolia	LC													
Arenaria serpyllifolia subsp. leptoclados	LC													
Arenaria serpyllifolia subsp. serpyllifolia	LC													
Armeria maritima	LC													
Armeria maritima subsp. maritima	LC													Assumed to be LC as species, not analysed
Armeria maritima subsp. elongata	CR	A2a							Trend					
Armoracia rusticana	LC													
Arnoseris minima	EX													
Arrhenatherum elatius	LC													
Artemisia absinthium	LC													
Artemisia campestris	VU	A2c					Trend							
Artemisia norvegica	VU				D2				3	16000			Possibly	
Artemisia vulgaris	LC													
Arum italicum subsp. neglectum	NT	A				Trend								
Arum maculatum	LC													
Asparagus officinalis subsp. officinalis	LC													
Asparagus officinalis subsp. prostratus	EN			C2a(i)										
Asperula cynanchica	LC													
Asperula cynanchica subsp. cynanchica	LC													Assumed to be LC as species, not analysed

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Asplenium adiantum-nigrum	LC													
Asplenium marinum	LC												Yes	
Asplenium obovatum	NT	A				Trend								
Asplenium ruta-muraria	LC													
Asplenium ruta-muraria x septentrionale (A. x murbeckii)	VU				D2				1					
Asplenium septentrionale	NT				D					2350				
Asplenium trichomanes	LC													
Asplenium trichomanes subsp. pachyrachis	NT				D				9	<10000				
Asplenium trichomanes subsp. quadrivalens	LC													
Asplenium trichomanes subsp. trichomanes	LC													
Asplenium viride	LC													
Aster linosyris	LC													
Aster tripolium	LC													
Astragalus alpinus	VU				D2				4					
Astragalus danicus	EN	A2c				Trend								
Astragalus glycyphyllos	LC													
Athyrium distentifolium	LC													
Athyrium filix-femina	LC													
Atriplex glabriuscula	LC												Yes	
Atriplex laciniata	LC												Yes	
Atriplex littoralis	LC													
Atriplex longipes	LC													
Atriplex patula	LC													
Atriplex pedunculata	CR		B1ab(v)+2ab(v)						1					

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Atriplex portulacoides	LC													
Atriplex praecox	LC													
Atriplex prostrata	LC													
Atropa belladonna	LC													
Avena fatua	LC													
Baldellia ranunculoides	NT	A				Trend	Trend						Probably	
Baldellia ranunculoides subsp. ranunculoides	NT	A												Assumed NT as species, not analysed
Baldellia ranunculoides subsp. repens	DD													Described from GB after publication of *New Atlas*
Ballota nigra	LC													
Barbarea vulgaris	LC													
Bartsia alpina	LC													
Bellis perennis	LC													
Berberis vulgaris	LC													
Berula erecta	LC													
Beta vulgaris subsp. maritima	LC													
Betula nana	LC													
Betula pendula	LC													
Betula pubescens	LC													
Bidens cernua	LC													
Bidens tripartita	LC													
Blackstonia perfoliata	LC													
Blechnum spicant	LC													
Blysmus compressus	VU	A2c				Trend	Trend							
Blysmus rufus	LC												Possibly	
Bolboschoenus maritimus	LC													
Botrychium lunaria	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Brachypodium sylvaticum	LC													
Brassica nigra	LC													
Brassica oleracea	LC												Yes	
Brassica rapa	LC													
Brassica rapa subsp. campestris	LC													Assumed to be LC as species, not analysed
Briza media	LC													
Briza minor	LC													
Bromopsis benekenii	LC													
Bromopsis erecta	LC													
Bromopsis ramosa	LC													
Bromus commutatus	LC													
Bromus hordeaceus	LC													
Bromus hordeaceus subsp. hordeaceus	LC													Assumed to be LC as species, not analysed
Bromus hordeaceus subsp. ferronii	LC													
Bromus hordeaceus subsp. thominei	LC													
Bromus interruptus	EW													In *New Atlas* as neophyte
Bromus racemosus	LC													
Bromus secalinus	VU	A2c				Trend	Trend							
Bryonia dioica	LC													
Bunium bulbocastanum	LC													
Bupleurum baldense	VU				D2				2					
Bupleurum rotundifolium	CR	A2c				Trend	Trend	Trend						Cannot distinguish casuals from established sites
Bupleurum tenuissimum	VU	A2c				Trend	Trend							
Butomus umbellatus	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Buxus sempervirens	LC													
Cakile maritima	LC													
Calamagrostis canescens	LC													
Calamagrostis canescens x stricta (C. x gracilescens)	VU				D2				1					
Calamagrostis epigejos	LC													
Calamagrostis purpurea	DD													
Calamagrostis scotica	VU				D1 +2				1	1000	Yes		Yes	
Calamagrostis stricta	VU	A2c					Trend							
Callitriche brutia	LC													
Callitriche hamulata sens. lat.	LC													
Callitriche hermaphroditica	LC													
Callitriche obtusangula	LC												Possibly	
Callitriche palustris	EN				D				1	<250				Found in GB after publication of *New Atlas*
Callitriche platycarpa	LC													
Callitriche stagnalis sens. lat.	LC													
Callitriche truncata	LC													
Calluna vulgaris	LC													
Caltha palustris	LC													
Calystegia sepium	LC													
Calystegia sepium subsp. sepium	LC													Assumed to be LC as species, not analysed
Calystegia sepium subsp. roseata	LC													
Calystegia soldanella	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Camelina sativa	LC													
Campanula glomerata	LC													
Campanula latifolia	LC													
Campanula patula	EN			C2a(i)						330				
Campanula rapunculus	EN	A2c					Trend							Cannot distinguish casuals from established sites
Campanula rotundifolia	LC													
Campanula trachelium	LC													
Capsella bursa-pastoris	LC													
Cardamine amara	LC													
Cardamine bulbifera	LC													
Cardamine flexuosa	LC													
Cardamine hirsuta	LC													
Cardamine impatiens	NT	A					Trend							
Cardamine pratensis	LC													
Carduus crispus	LC													
Carduus nutans	LC													
Carduus tenuiflorus	LC													
Carex acuta	LC													
Carex acuta x aquatilis	VU				D2				1					
Carex acuta x elata (C. x prolixa)	VU				D2				1					
Carex acutiformis	LC													
Carex acutiformis x riparia (C. x sooi)	VU				D2				3					
Carex acutiformis x vesicaria (C. x ducellieri)	VU				D2				1					
Carex appropinquata	NT	A					Trend							
Carex appropinquata x paniculata (C. x rotae)	VU				D2				4					

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Carex aquatilis	LC													
Carex aquatilis x bigelowii (C. x limula)	VU				D2				2					
Carex aquatilis x nigra (C. x hibernica)	VU				D2				5					
Carex arenaria	LC													
Carex atrata	LC													
Carex atrofusca	VU				D2									Apparent trend not real
Carex bigelowii	LC													
Carex binervis	LC												Probably	
Carex binervis x laevigata (C. x deserta)	VU				D2				1					
Carex buxbaumii	VU				D2				4					
Carex capillaris	LC													
Carex caryophyllea	LC													
Carex chordorrhiza	LC													
Carex curta	LC													
Carex curta x echinata (C. x biharica)	VU				D2				1					
Carex curta x lachenalii (C. x helvola)	VU				D2				2					
Carex curta x paniculata (C. x ludibunda)	VU				D2				1					
Carex depauperata	EN	A2c			D		Trend			<100				
Carex diandra	NT	A						Trend						LC in UK
Carex diandra x paniculata (C. x beckmannii)	VU				D2				2					
Carex digitata	LC													
Carex dioica	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Carex dioica x echinata (C. x gaudiniana)	VU				D2				1					
Carex distans	LC													
Carex disticha	LC													
Carex divisa	VU	A2c						Trend						
Carex divulsa subsp. divulsa	LC													
Carex divulsa subsp. leersii	LC													
Carex echinata	LC													
Carex elata	LC													
Carex elongata	LC													
Carex ericetorum	VU	A2c					Trend							
Carex extensa	LC													
Carex filiformis	LC													
Carex flacca	LC													
Carex flava	VU				D2				1					
Carex flava x viridula (C. x alsatica)	VU				D2				2					
Carex hirta	LC													
Carex hostiana	LC													
Carex humilis	LC													
Carex lachenalii	NT	A					Trend							Montane and under-recorded
Carex laevigata	LC												Possibly	
Carex lasiocarpa	LC													
Carex lasiocarpa x riparia (C. x evoluta)	VU				D2				2					
Carex limosa	LC													
Carex magellanica	LC													
Carex maritima	EN	A2c					Trend						Possibly	
Carex microglochin	VU				D2				1					

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Carex montana	LC													
Carex muricata subsp. lamprocarpa	LC													
Carex muricata subsp. muricata	NT				D					1022				
Carex nigra	LC													
Carex norvegica	LC													
Carex ornithopoda	LC													
Carex otrubae	LC													
Carex ovalis	LC													
Carex pallescens	LC													
Carex panicea	LC													
Carex paniculata	LC													
Carex pauciflora	LC													NT in UK
Carex pendula	LC													
Carex pilulifera	LC													
Carex pseudocyperus	LC													
Carex pseudocyperus x rostrata (C. x justi-schmidtii)	VU				D2				1					
Carex pulicaris	LC													
Carex punctata	LC												Probably	
Carex rariflora	LC													
Carex recta	VU				D2				3	300000-400000				
Carex remota	LC													
Carex riparia	LC													
Carex riparia x rostrata	VU				D2				1					
Carex riparia x vesicaria (C. x csomadensis)	VU				D2				1					
Carex rostrata	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Carex rupestris	LC													
Carex salina	DD													Found in GB after publication of *New Atlas*
Carex saxatilis	LC													
Carex saxatilis x vesicaria (C. x grahamii)	VU				D2				5					
Carex spicata	LC													
Carex strigosa	LC												Possibly	
Carex sylvatica	LC													
Carex vaginata	LC													
Carex vesicaria	LC													
Carex viridula subsp. brachyrrhyncha	LC													
Carex viridula subsp. oedocarpa	LC													
Carex viridula subsp. viridula	LC													
Carex vulpina	VU	A2c					Trend							
Carlina vulgaris	LC													
Carpinus betulus	LC													
Carum carvi	EN	A2c				Trend	Trend							Cannot distinguish casuals from established sites
Carum verticillatum	LC												Probably	
Castanea sativa	LC													
Catabrosa aquatica	LC													
Catapodium marinum	LC													
Catapodium rigidum	LC													
Caucalis platycarpos	EX													Not mapped in *New Atlas*

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Centaurea calcitrapa	CR	A2c						Trend						Cannot distinguish casuals from established sites
Centaurea cyanus	LC													Cannot distinguish between casuals and established sites
Centaurea nigra	LC													
Centaurea scabiosa	LC													
Centaurium erythraea	LC													
Centaurium littorale	LC													
Centaurium pulchellum	LC													
Centaurium scilloides	EN		B1ab(v)+2ab(v)						2					
Centaurium tenuiflorum	VU				D2					100000s				
Cephalanthera damasonium	VU	A2c				Trend								
Cephalanthera longifolia	VU	A2c				Trend				5741				
Cephalanthera rubra	CR			C2a(i)	D					*c.* 30				
Cerastium alpinum	VU	A2c				Trend	Trend	Trend						Montane and under-recorded
Cerastium arcticum	NT	A						Trend						Montane and under-recorded
Cerastium arvense	LC													One to watch in the future
Cerastium cerastoides	LC													
Cerastium diffusum	LC												Yes	
Cerastium fontanum	LC													
Cerastium fontanum subsp. holosteoides	LC													Assumed to be LC as species, not analysed
Cerastium fontanum subsp. scoticum	VU				D2				1		Yes		Yes	
Cerastium glomeratum	LC													
Cerastium nigrescens	EN		B1ab(v)+2ab(v)						2		Yes		Yes	

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Cerastium pumilum	NT	A						Trend						
Cerastium semidecandrum	LC													
Ceratocapnos claviculata	LC												Yes	
Ceratophyllum demersum	LC													
Ceratophyllum submersum	LC													
Ceterach officinarum	LC													
Chaenorhinum minus	LC													
Chaerophyllum temulum	LC													
Chamaemelum nobile	VU	A2c						Trend						EN in UK
Chamerion angustifolium	LC													
Chelidonium majus	LC													
Chenopodium album	LC													
Chenopodium bonus-henricus	VU	A2c				Trend	Trend							
Chenopodium chenopodioides	LC													
Chenopodium ficifolium	LC													
Chenopodium glaucum	VU	A2c				Trend	Trend	Trend						Cannot distinguish casuals from established sites
Chenopodium hybridum	LC													
Chenopodium murale	VU	A2c				Trend	Trend	Trend						Cannot distinguish casuals from established sites

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Chenopodium polyspermum	LC													
Chenopodium rubrum	LC													
Chenopodium urbicum	CR	A2c					Trend	Trend						Cannot distinguish casuals from established sites
Chenopodium vulvaria	EN	A2c					Trend	Trend						
Chrysanthemum segetum	VU	A2c				Trend								
Chrysosplenium alternifolium	LC													
Chrysosplenium oppositifolium	LC													
Cicendia filiformis	VU	A2c					Trend							
Cicerbita alpina	VU				D1				4	600				
Cichorium intybus	LC													
Cicuta virosa	LC													
Circaea alpina	LC													
Circaea lutetiana	LC													
Cirsium acaule	LC													
Cirsium arvense	LC													
Cirsium dissectum	LC												Possibly	
Cirsium eriophorum	LC													
Cirsium heterophyllum	LC													
Cirsium palustre	LC													
Cirsium tuberosum	NT		B											
Cirsium vulgare	LC													
Cladium mariscus	LC													
Clematis vitalba	LC													
Clinopodium acinos	VU	A2c				Trend	Trend							
Clinopodium ascendens	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Clinopodium calamintha	VU	A2c						Trend						
Clinopodium menthifolium	CR		B1ab(v)+2ab(v)	C2a(ii)					1	<250				
Clinopodium vulgare	LC													
Cochlearia anglica	LC												Yes	
Cochlearia danica	LC													
Cochlearia officinalis sens.lat.	LC													
Cochlearia officinalis subsp. officinalis	LC													Assumed to be LC as *sens. lat.*, not analysed
Cochlearia pyrenaica	LC													
Coincya monensis subsp. monensis	LC											Yes	Yes	
Coincya wrightii	VU				D2				1		Yes		Yes	
Colchicum autumnale	NT	A						Trend						
Conium maculatum	LC													
Conopodium majus	LC												Probably	
Convallaria majalis	LC													
Convolvulus arvensis	LC													
Corallorhiza trifida	VU	A2c					Trend							Under-recorded
Cornus sanguinea	LC													
Cornus suecica	NT	A				Trend								Montane and under-recorded
Coronopus squamatus	LC													
Corrigiola litoralis	CR		B1ab(v)+2ab(v)	C2a(ii)	D				1	<50				
Corylus avellana	LC													
Corynephorus canescens	NT		B						27					
Cotoneaster integerrimus	CR		B1ab(v)+2ab(v)	C2a(ii)	D				1	6				In *New Atlas* as neophyte
Crambe maritima	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Crassula aquatica	VU				D2				1					
Crassula tillaea	LC													
Crataegus laevigata	LC													
Crataegus monogyna	LC													
Crepis biennis	LC													
Crepis capillaris	LC													
Crepis foetida	EW													
Crepis mollis	EN	A2c					Trend							Threat may be under-estimated
Crepis paludosa	LC													
Crepis praemorsa	EN				D				1	200				
Crithmum maritimum	LC													
Cruciata laevipes	LC													
Cryptogramma crispa	LC													
Cuscuta epithymum	VU	A2c						Trend						
Cuscuta europaea	LC													
Cynoglossum germanicum	CR	A2c						Trend						
Cynoglossum officinale	NT	A				Trend	Trend							
Cynosurus cristatus	LC													
Cyperus fuscus	VU	A2c					Trend							
Cyperus longus	NT	A					Trend							
Cypripedium calceolus	CR				D				1	1				
Cystopteris alpina	EX													
Cystopteris diaphana	VU				D2				3					Found in GB after publication of *New Atlas*
Cystopteris dickieana	VU				D2				5					
Cystopteris fragilis	LC													
Cystopteris montana	LC													Threat may be under-estimated
Cytisus scoparius	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Cytisus scoparius subsp. scoparius	LC													Assumed to be LC as species, not analysed
Cytisus scoparius subsp. maritimus	NT		B						12?					
Dactylis glomerata	LC													
Dactylorhiza ebudensis[2]	VU				D2				2?					
Dactylorhiza fuchsii	LC													
Dactylorhiza fuchsii subsp. fuchsii	LC													As species
Dactylorhiza incarnata	LC													
Dactylorhiza incarnata subsp. cruenta	DD													
Dactylorhiza incarnata subsp. ochroleuca	DD													
Dactylorhiza maculata	LC													
Dactylorhiza maculata subsp. ericetorum	LC													As species
Dactylorhiza occidentalis[2]	DD													
Dactylorhiza praetermissa	LC												Probably	
Dactylorhiza purpurella	LC												Yes	
Dactylorhiza purpurella subsp. cambrensis[2]	DD													
Dactylorhiza purpurella subsp. purpurella	LC													As species
Dactylorhiza traunsteinerioides[3]	LC													
Dactylorhiza viridis[4]	VU	A2c				Trend								

[2] Included within *D. majalis* in the *New Atlas*.
[3] Formerly *D. traunsteineri*.
[4] Formerly *Coeloglossum viride.*

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Damasonium alisma	CR			C2a(i)					1	2				
Danthonia decumbens	LC													
Daphne laureola	LC													
Daphne mezereum	VU	A2c					Trend							
Daucus carota	LC													
Daucus carota subsp. carota	LC													Assumed to be LC as species, not analysed
Daucus carota subsp. gummifer	LC													
Deschampsia cespitosa	LC													
Deschampsia cespitosa subsp. cespitosa	LC													Assumed to be LC as species, not analysed
Deschampsia cespitosa subsp. alpina	DD													
Deschampsia cespitosa subsp. parviflora	LC													
Deschampsia flexuosa	LC													
Deschampsia setacea	LC												Yes	
Descurainia sophia	LC													
Dianthus armeria	EN	A2c					Trend							
Dianthus deltoides	NT	A				Trend								
Dianthus gratianopolitanus	VU				D2				4					
Diapensia lapponica	VU				D2				1					
Digitalis purpurea	LC													
Diphasiastrum alpinum	LC													
Diphasiastrum complanatum	NT				D					<10000				
Diplotaxis tenuifolia	LC													
Dipsacus fullonum sens.lat.	LC													
Dipsacus pilosus	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Draba aizoides	NT				D					Just over 1000				
Draba incana	LC													NT in UK
Draba muralis	LC													
Draba norvegica	LC													
Drosera anglica	NT	A						Trend						
Drosera intermedia	LC													
Drosera intermedia x rotundifolia (D. x belezeana)	VU				D2				1					
Drosera rotundifolia	LC													
Dryas octopetala	LC													
Dryopteris aemula	LC												Yes	
Dryopteris affinis	LC												Yes	
Dryopteris carthusiana	LC													
Dryopteris carthusiana x cristata (D. x uliginosa)	VU				D2				1					
Dryopteris carthusiana x expansa (D. x sarvelae)	VU				D2				2					
Dryopteris cristata	CR	A2c						Trend						
Dryopteris dilatata	LC													
Dryopteris expansa	LC													
Dryopteris filix-mas	LC													
Dryopteris oreades	LC												Yes	
Dryopteris submontana	LC													
Echium vulgare	LC													
Elatine hexandra	LC												Possibly	
Elatine hydropiper	LC													
Eleocharis acicularis	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Eleocharis austriaca	LC													
Eleocharis multicaulis	LC												Possibly	
Eleocharis palustris	LC													
Eleocharis palustris subsp. vulgaris	LC													Assumed to be LC as species, not analysed
Eleocharis palustris subsp. palustris	DD													
Eleocharis parvula	LC													
Eleocharis quinqueflora	LC													
Eleocharis uniglumis	LC													
Eleogiton fluitans	LC												Probably	
Elymus caninus	LC													
Elytrigia atherica	LC													
Elytrigia juncea	LC													
Elytrigia repens	LC													
Elytrigia repens subsp. arenosa	LC													
Empetrum nigrum	LC													
Empetrum nigrum subsp. nigrum	LC													Assumed to be LC as species, not analysed
Empetrum nigrum subsp. hermaphroditum	LC													Patchy recording in Scotland in 1987-1999
Epilobium alsinifolium	LC													Patchy recording in Scotland in 1987-1999
Epilobium anagallidifolium	LC													
Epilobium hirsutum	LC													
Epilobium lanceolatum	LC													
Epilobium montanum	LC													
Epilobium obscurum	LC													
Epilobium palustre	LC													
Epilobium parviflorum	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Epilobium roseum	LC													
Epilobium tetragonum	LC													
Epipactis atrorubens	LC													
Epipactis dunensis[5]	DD										Yes		Yes	
Epipactis helleborine	LC													
Epipactis leptochila	DD													Trend statistics not valid since they include *E. dunensis*
Epipactis palustris	LC													
Epipactis phyllanthes	LC												Yes	
Epipactis purpurata	LC													
Epipactis sancta[5]	EN				D						Yes		Yes	
Epipogium aphyllum	EX													
Equisetum arvense	LC													
Equisetum arvense x telmateia (E. x robertsii)	VU				D2				1					
Equisetum fluviatile	LC													
Equisetum fluviatile x telmateia (E. x willmotii)	VU				D2				2					
Equisetum hyemale	LC													
Equisetum palustre	LC													
Equisetum pratense	LC													
Equisetum sylvaticum	LC													
Equisetum sylvaticum x telmateia (E. x bowmanii)	VU				D2				1					
Equisetum telmateia	LC													
Equisetum variegatum	LC													

[5] Formerly included within *E. leptochila*.

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Erica ciliaris	LC												Possibly	
Erica cinerea	LC												Possibly	
Erica tetralix	LC												Possibly	
Erica vagans	LC													
Erigeron acer	LC													
Erigeron borealis	VU				D1					600				
Eriocaulon aquaticum	LC												Yes	
Eriophorum angustifolium	LC													
Eriophorum gracile	NT	A	B				Trend		11					
Eriophorum latifolium	LC													
Eriophorum vaginatum	LC													
Erodium cicutarium	LC													
Erodium lebelii	LC													Trend statistics not reliable
Erodium maritimum	LC												Possibly	
Erodium moschatum	LC													
Erophila glabrescens	LC													
Erophila majuscula	LC													
Erophila verna sens.lat.	LC													
Erophila verna sensu Stace	LC													
Eryngium campestre	CR	A2c						Trend						Cannot distinguish between casuals and established sites
Eryngium maritimum	LC													
Erysimum cheiranthoides	LC													
Erysimum cheiri	LC													
Euonymus europaeus	LC													
Eupatorium cannabinum	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Euphorbia amygdaloides	LC													
Euphorbia exigua	NT	A				Trend								
Euphorbia helioscopia	LC													
Euphorbia hyberna	VU				D2				4					
Euphorbia lathyris	LC													
Euphorbia paralias	LC													
Euphorbia peplis	EX													
Euphorbia peplus	LC													
Euphorbia platyphyllos	LC													
Euphorbia portlandica	LC												Possibly	
Euphorbia serrulata	LC													
Euphrasia anglica	EN	A2c				Trend						Yes	Yes	Euphrasia is a critical group that is poorly recorded
Euphrasia arctica subsp. arctica	DD												Probably	Euphrasia is a critical group that is poorly recorded
Euphrasia arctica subsp. borealis	DD												Probably	Euphrasia is a critical group that is poorly recorded
Euphrasia cambrica	VU				D1						Yes		Yes	Euphrasia is a critical group that is poorly recorded
Euphrasia campbelliae	DD										Yes		Yes	Euphrasia is a critical group that is poorly recorded
Euphrasia confusa	DD												Yes	Euphrasia is a critical group that is poorly recorded
Euphrasia foulaensis	DD												Yes	Euphrasia is a critical group that is poorly recorded

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Euphrasia frigida	DD													Euphrasia is a critical group that is poorly recorded
Euphrasia heslop-harrisonii	LC										Yes		Yes	Euphrasia is a critical group that is poorly recorded
Euphrasia marshallii	EN	A2c					Trend				Yes		Yes	
Euphrasia micrantha	DD													Euphrasia is a critical group that is poorly recorded
Euphrasia nemorosa	LC													Euphrasia is a critical group that is poorly recorded
Euphrasia officinalis agg.[6]	LC													
Euphrasia ostenfeldii	DD												Probably	Euphrasia is a critical group that is poorly recorded
Euphrasia pseudokerneri	EN	A2c				Trend						Yes	Yes	Euphrasia is a critical group that is poorly recorded
Euphrasia rivularis	VU				D1						Yes		Yes	Euphrasia is a critical group that is poorly recorded, EOO trend not used since new sites found post-Atlas which would negate this trend
Euphrasia rostkoviana subsp. montana	VU	A2c					Trend	Trend						Euphrasia is a critical group that is poorly recorded

[6] Includes all *Euphrasia* taxa.

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Euphrasia rostkoviana subsp. rostkoviana	VU	A2c						Trend						Euphrasia is a critical group that is poorly recorded
Euphrasia rotundifolia	EN				D				2	<250	Yes		Yes	Euphrasia is a critical group that is poorly recorded
Euphrasia scottica	LC													Euphrasia is a critical group that is poorly recorded
Euphrasia tetraquetra	DD												Yes	Euphrasia is a critical group that is poorly recorded
Euphrasia vigursii	EN	A2c					Trend	Trend			Yes		Yes	Euphrasia is a critical group that is poorly recorded
Fagus sylvatica	LC													
Fallopia convolvulus	LC													
Fallopia dumetorum	VU	A2c						Trend						
Festuca altissima	LC													
Festuca arenaria	LC													
Festuca arundinacea	LC													
Festuca filiformis	LC													
Festuca gigantea	LC													
Festuca lemanii	LC													
Festuca longifolia	LC												Possibly	
Festuca ovina	LC													
Festuca ovina agg.[7]	LC													
Festuca pratensis	LC													
Festuca rubra agg.[8]	LC													

[7] Includes *F. ovina*, *F. vivipara*, *F. filiformis*, *F. armoricana*, *F. huonii*, *F. lemanii* and *F. longifolia*.
[8] Includes *F. rubra* and *F. arenaria*.

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Festuca rubra subsp. rubra	LC													Assumed to be LC as species, not analysed
Festuca rubra subsp. arctica	LC													
Festuca rubra subsp. commutata	LC													
Festuca rubra subsp. juncea	LC													
Festuca rubra subsp. litoralis	LC													
Festuca rubra subsp. scotica	DD													
Festuca vivipara	LC													
Filago gallica	EW													
Filago lutescens	EN	A2c						Trend						
Filago minima	LC													
Filago pyramidata	EN	A2c					Trend							
Filago vulgaris	NT	A				Trend	Trend							
Filipendula ulmaria	LC													
Filipendula vulgaris	LC													
Foeniculum vulgare	LC													
Fragaria vesca	LC													
Frangula alnus	LC													
Frankenia laevis	NT	A					Trend						Possibly	
Fraxinus excelsior	LC													
Fritillaria meleagris	VU	A2c				Trend	Trend	Trend						
Fumaria bastardii	LC													
Fumaria capreolata	LC													
Fumaria capreolata subsp. babingtonii	LC											Yes	Yes	Assumed LC as species, not analysed
Fumaria densiflora	LC													
Fumaria muralis	LC												Possibly	

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Fumaria muralis subsp. boraei	LC													Assumed LC as species, not analysed
Fumaria muralis subsp. neglecta	VU				D2				2					
Fumaria occidentalis	LC										Yes		Yes	
Fumaria officinalis	LC													
Fumaria officinalis subsp. officinalis	LC													Assumed to be LC as species, not analysed
Fumaria officinalis subsp. wirtgenii	LC													Assumed to be LC as species, not analysed
Fumaria parviflora	VU	A2c						Trend						
Fumaria purpurea	LC											Yes	Yes	
Fumaria vaillantii	VU	A2c				Trend								
Gagea bohemica	VU				D2				1					
Gagea lutea	LC													
Galeopsis angustifolia	CR	A2c				Trend								
Galeopsis bifida	LC													
Galeopsis segetum	EX													
Galeopsis speciosa	VU	A2c				Trend	Trend							
Galeopsis tetrahit	LC													
Galeopsis tetrahit agg.[9]	LC													
Galium aparine	LC													
Galium boreale	LC													
Galium constrictum	LC													
Galium mollugo	LC													
Galium odoratum	LC													
Galium palustre	LC													
Galium palustre subsp. elongatum	LC													Assumed to be LC as species, not analysed

[9] Includes *G. tetrahit* and *G. bifida*.

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Galium palustre subsp. palustre	LC													Assumed to be LC as species, not analysed
Galium parisiense	VU	A2c				Trend		Trend						Cannot distinguish native and alien sites
Galium pumilum	EN	A2c					Trend	Trend						
Galium saxatile	LC													
Galium sterneri	LC												Yes	
Galium tricornutum	CR	A2c					Trend	Trend						
Galium uliginosum	LC													
Galium verum	LC													
Gastridium ventricosum	LC													
Gaudinia fragilis	LC													
Genista anglica	NT	A					Trend	Trend					Possibly	
Genista pilosa	NT	A					Trend							
Genista tinctoria	LC													
Genista tinctoria subsp. tinctoria	LC													Assumed to be LC as species, not analysed
Genista tinctoria subsp. littoralis	LC													
Gentiana nivalis	NT	A			D		Trend			5000				
Gentiana pneumonanthe	LC													One to watch in the future
Gentiana verna	LC													
Gentianella amarella	LC													
Gentianella amarella subsp. amarella	LC													Assumed to be LC as species, not analysed
Gentianella amarella subsp. septentrionalis	NT	A				Trend	Trend				Yes		Yes	
Gentianella campestris	VU	A2c				Trend								Montane and under-recorded
Gentianella ciliata	CR				D				1	15				
Gentianella germanica	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Gentianella uliginosa	VU		B1ab(v)+2ab(v)						9?					
Geranium columbinum	LC													
Geranium dissectum	LC													
Geranium lucidum	LC													
Geranium molle	LC													
Geranium pratense	LC													
Geranium purpureum	LC													
Geranium pusillum	LC													
Geranium robertianum	LC													
Geranium rotundifolium	LC													
Geranium sanguineum	LC													
Geranium sylvaticum	LC													
Geum rivale	LC													
Geum urbanum	LC													
Gladiolus illyricus	LC													
Glaucium flavum	LC													
Glaux maritima	LC													
Glechoma hederacea	LC													
Glyceria declinata	LC													
Glyceria fluitans	LC													
Glyceria maxima	LC													
Glyceria notata	LC													
Gnaphalium norvegicum	LC													
Gnaphalium supinum	NT	A				Trend								Montane and under-recorded
Gnaphalium sylvaticum	EN	A2c				Trend	Trend							Montane and under-recorded
Gnaphalium uliginosum	LC													
Goodyera repens	LC													
Groenlandia densa	VU	A2c				Trend								

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Gymnadenia borealis[10]	LC													
Gymnadenia conopsea[11]	LC													
Gymnadenia conopsea agg.[12]	LC													
Gymnadenia densiflora[13]	DD													
Gymnocarpium dryopteris	LC													
Gymnocarpium robertianum	LC													
Hammarbya paludosa	LC													
Hedera helix	LC													
Hedera helix subsp. helix	LC													
Hedera helix subsp. hibernica	LC													
Helianthemum apenninum	VU				D2				5					
Helianthemum nummularium	LC													
Helianthemum oelandicum	LC													
Helianthemum oelandicum subsp. incanum	LC													
Helianthemum oelandicum subsp. levigatum	VU				D2				1		Yes		Yes	

[10] Formerly *G. conopsea* subsp. *borealis*.
[11] Formerly *G. conopsea* subsp. *conopsea*.
[12] Includes *G. conopsea*, *G. borealis* and *G. densiflora*.
[13] Formerly *G. conopsea* subsp. *densiflora*.

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Helictotrichon pratense	LC													
Helictotrichon pubescens	LC													
Helleborus foetidus	LC													
Helleborus viridis	LC													
Heracleum sphondylium	LC													
Herminium monorchis	VU	A2c				Trend	Trend							
Herniaria ciliolata	VU				D2									
Herniaria ciliolata subsp. ciliolata	VU				D2							Yes	Yes	As species
Herniaria glabra	LC													
Hieracium alpinum	LC													
Hieracium backhousei	EN				D				4	80	Yes		Yes	
Hieracium calenduliflorum	LC								25		Yes		Yes	
Hieracium calvum	CR				D				3	24	Yes		Yes	
Hieracium completum	LC								20		Yes		Yes	
Hieracium eximium	LC								80		Yes		Yes	
Hieracium globosiflorum	LC								14		Yes		Yes	
Hieracium graniticola	CR				D				4	40	Yes		Yes	
Hieracium grovesii	EN				D				8	*c.* 50	Yes		Yes	
Hieracium hanburyi	LC								>100		Yes		Yes	
Hieracium holosericeum	LC								>100		Yes		Yes	
Hieracium insigne	EN				D				5	77	Yes		Yes	Some forms are more threatened
Hieracium kennethii	EN				D				3	<250	Yes		Yes	
Hieracium larigense	EN				D				4	80+	Yes		Yes	
Hieracium leptodon	EN				D				2	*c.* 70	Yes		Yes	

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Hieracium macrocarpum	VU				D				9	200+	Yes		Yes	
Hieracium marginatum	LC										Yes		Yes	
Hieracium memorabile	LC								20		Yes		Yes	
Hieracium milesii	NT				D				19	200+	Yes		Yes	
Hieracium mundum	LC								13		Yes		Yes	
Hieracium notabile	EN				D				3	60+	Yes		Yes	
Hieracium optimum	CR				D				2	20+	Yes		Yes	
Hieracium pensum	LC								16		Yes		Yes	
Hieracium perscitum	NT				D				7		Yes		Yes	
Hieracium probum	NT				D				12		Yes		Yes	
Hieracium pseudocurvatum	CR				D				2	34	Yes		Yes	
Hieracium pseudopetiolatum	EN				D				7	108	Yes		Yes	Tennant and Rich have as VU
Hieracium subglobosum	LC								50+		Yes		Yes	
Hieracium subgracilentipes	VU				D				12		Yes		Yes	
Hieracium zetlandicum	LC								18		Yes		Yes	
Hierochloe odorata	LC													
Himantoglossum hircinum	NT				D					<10000				Trend statistics not used, many ‘casual’ populations
Hippocrepis comosa	LC													
Hippophae rhamnoides	LC													
Hippuris vulgaris	LC													
Holcus lanatus	LC													
Holcus mollis	LC													
Homogyne alpina	EN				D				1	200				
Honckenya peploides	LC													
Hordelymus europaeus	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Hordeum marinum	VU	A2c				Trend		Trend						
Hordeum murinum	LC													
Hordeum secalinum	LC													
Hornungia petraea	LC													
Hottonia palustris	LC													
Humulus lupulus	LC													
Huperzia selago	LC													
Hyacinthoides non-scripta	LC												Possibly	
Hydrilla verticillata	VU				D2				1					
Hydrocharis morsus-ranae	VU	A2c				Trend		Trend						
Hydrocotyle vulgaris	LC													
Hymenophyllum tunbrigense	LC												Yes	
Hymenophyllum wilsonii	NT	A				Trend		Trend					Yes	Montane and under-recorded
Hyoscyamus niger	VU	A2c					Trend							
Hypericum androsaemum	LC													
Hypericum elodes	LC												Probably	
Hypericum hirsutum	LC													
Hypericum humifusum	LC													
Hypericum linariifolium	NT		B						21					
Hypericum maculatum	LC													
Hypericum maculatum subsp. maculatum	DD													
Hypericum maculatum subsp. obtusiusculum	LC													
Hypericum montanum	NT	A				Trend								
Hypericum perforatum	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Hypericum pulchrum	LC													
Hypericum tetrapterum	LC													
Hypericum undulatum	LC													
Hypochaeris glabra	VU	A2c					Trend	Trend						
Hypochaeris maculata	NT		B						9					
Hypochaeris radicata	LC													
Iberis amara	VU	A2c						Trend						
Ilex aquifolium	LC													
Illecebrum verticillatum	VU	A2c					Trend							
Impatiens noli-tangere	LC													
Inula conyzae	LC													
Inula crithmoides	LC													
Inula helenium	LC													
Iris foetidissima	LC													
Iris pseudacorus	LC													
Isatis tinctoria	LC													
Isoetes echinospora	LC													
Isoetes histrix	VU				D2									
Isoetes lacustris	LC													
Isolepis cernua	LC													
Isolepis setacea	LC													
Jasione montana	LC													
Juncus acutiflorus	LC													
Juncus acutus	LC													
Juncus alpinoarticulatus	LC													
Juncus ambiguus	LC													
Juncus articulatus	LC													
Juncus balticus	LC													One to watch in the future
Juncus biglumis	LC													
Juncus bufonius	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Juncus bufonius sens.lat.	LC													
Juncus bulbosus	LC													
Juncus capitatus	VU				D2				<5					
Juncus castaneus	VU	A2c						Trend						Montane and under-recorded
Juncus compressus	NT	A					Trend							
Juncus conglomeratus	LC													
Juncus effusus	LC													
Juncus filiformis	LC													
Juncus foliosus	LC												Possibly	
Juncus gerardii	LC													
Juncus inflexus	LC													
Juncus maritimus	LC													
Juncus pygmaeus	EN	A2c							Trend					
Juncus squarrosus	LC													
Juncus subnodulosus	LC													
Juncus trifidus	LC													
Juncus triglumis	LC													Patchy recording in Scotland in 1987-1999
Juniperus communis	LC													One to watch in the future
Juniperus communis subsp. communis	LC													
Juniperus communis subsp. hemisphaerica	CR			C2a(i)	D					16				
Juniperus communis subsp. nana	LC													
Kickxia elatine	LC													
Kickxia spuria	LC													
Knautia arvensis	LC													
Kobresia simpliciuscula	LC												Possibly	

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Koeleria macrantha	LC													
Koeleria vallesiana	VU				D2				5					
Koenigia islandica	LC													
Lactuca saligna	EN	A2c					Trend							
Lactuca serriola	LC													
Lactuca virosa	LC													
Lamiastrum galeobdolon subsp. galeobdolon	VU				D2				2					
Lamiastrum galeobdolon subsp. montanum	LC													
Lamium album	LC													
Lamium amplexicaule	LC													
Lamium confertum	LC													
Lamium hybridum	LC													
Lamium purpureum	LC													
Lapsana communis	LC													
Lathraea squamaria	LC													
Lathyrus aphaca	VU	A2c					Trend	Trend						
Lathyrus japonicus	LC													
Lathyrus linifolius	LC													
Lathyrus nissolia	LC													
Lathyrus palustris	NT		B											
Lathyrus pratensis	LC													
Lathyrus sylvestris	LC													
Lavatera arborea	LC													
Leersia oryzoides	EN	A2c					Trend							
Legousia hybrida	LC													
Lemna gibba	LC													
Lemna minor	LC													
Lemna trisulca	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Leontodon autumnalis	LC													
Leontodon hispidus	LC													
Leontodon saxatilis	LC													
Lepidium campestre	LC													
Lepidium heterophyllum	LC												Yes	
Lepidium latifolium	LC													
Lepidium ruderale	LC													
Lepidium sativum	LC													
Leucanthemum vulgare	LC													
Leucojum aestivum	LC													
Leymus arenarius	LC													
Ligusticum scoticum	LC													
Ligustrum vulgare	LC													
Limonium bellidifolium	LC													
Limonium binervosum agg.[14]	LC												Yes	
Limonium humile	LC												Probably	
Limonium recurvum	VU				D2				5					
Limonium vulgare	LC													
Limosella aquatica	LC													
Linaria repens	LC													
Linaria vulgaris	LC													
Linnaea borealis	LC													
Linum bienne	LC													
Linum catharticum	LC													
Linum perenne	LC													
Linum perenne subsp. anglicum	LC										Yes		Yes	As species
Liparis loeselii	EN	A2c		C2a(i)				Trend		<1000				

[14] Includes all the apomictic taxa in *Limonium*.

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Listera cordata	LC													
Listera ovata	LC													
Lithospermum arvense	EN	A2c				Trend								
Lithospermum officinale	LC													
Lithospermum purpureocaeruleum	LC													Only loss a casual
Littorella uniflora	LC												Possibly	
Lloydia serotina	VU				D2				5					
Lobelia dortmanna	LC													
Lobelia urens	VU	A2c					Trend							
Loiseleuria procumbens	LC													Patchy recording in Scotland in 1987-1999
Lolium perenne	LC													
Lolium temulentum	CR	A2c				Trend	Trend							Cannot distinguish between casuals and established sites
Lonicera periclymenum	LC													
Lotus angustissimus	NT		B						21					
Lotus corniculatus	LC													
Lotus glaber	LC													
Lotus pedunculatus	LC													
Lotus subbiflorus	LC													
Ludwigia palustris	LC													
Luronium natans	LC												Yes	Uncertainty over native/alien status of Scottish sites – ‘all records’ trends used
Luzula arcuata	VU	A2c					Trend							Montane and under-recorded
Luzula campestris	LC													
Luzula forsteri	LC													
Luzula multiflora	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Luzula multiflora subsp. congesta	LC													Assumed to be LC as species, not analysed
Luzula multiflora subsp. multiflora	LC													Assumed to be LC as species, not analysed
Luzula pallidula	CR		B1ab(v)+2ab(v)	C2a(i)	D				1	<50				
Luzula pilosa	LC													
Luzula spicata	LC													
Luzula sylvatica	LC													
Lychnis alpina	VU				D2				2					
Lychnis flos-cuculi	LC													
Lychnis viscaria	NT				D					2200				
Lycopodiella inundata	EN	A2c						Trend						
Lycopodium annotinum	LC													Patchy recording in Scotland in 1987-1999
Lycopodium clavatum	LC													
Lycopus europaeus	LC													
Lysimachia nemorum	LC													
Lysimachia nummularia	LC													
Lysimachia thyrsiflora	LC													
Lysimachia vulgaris	LC													
Lythrum hyssopifolium	EN	A2c					Trend	Trend						
Lythrum portula	LC													
Lythrum salicaria	LC													
Maianthemum bifolium	VU				D2				3					
Malus sylvestris sens.lat.	LC													
Malva moschata	LC													
Malva neglecta	LC													
Malva sylvestris	LC													
Marrubium vulgare	LC													Apparent trend not real

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Matricaria recutita	LC													
Matthiola sinuata	VU			C2a(i)										
Meconopsis cambrica	LC													
Medicago arabica	LC													
Medicago lupulina	LC													
Medicago minima	VU	A2c					Trend							
Medicago polymorpha	LC													
Medicago sativa subsp. falcata	LC													
Melampyrum cristatum	VU	A2c					Trend	Trend						
Melampyrum pratense	LC													
Melampyrum sylvaticum	EN	A2c					Trend							Montane and under-recorded
Melica nutans	LC													
Melica uniflora	LC													
Melilotus altissimus	LC													
Melittis melissophyllum	VU	A2c				Trend								
Mentha aquatica	LC													
Mentha arvensis	LC													
Mentha pulegium	EN	A2c					Trend							
Mentha spicata	LC													
Mentha suaveolens	DD													Native/alien unclear
Menyanthes trifoliata	LC													
Mercurialis annua	LC													
Mercurialis perennis	LC													
Mertensia maritima	NT	A				Trend								
Mespilus germanica	LC													
Meum athamanticum	NT	A				Trend								
Mibora minima	LC													
Milium effusum	LC													
Minuartia hybrida	EN	A2c				Trend								

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Minuartia rubella	VU			C2a(i)										
Minuartia sedoides	VU	A2c				Trend								Montane and under-recorded
Minuartia stricta	VU				D1				1	300				
Minuartia verna	NT	A						Trend						
Misopates orontium	VU	A2c				Trend								
Moehringia trinervia	LC													
Moenchia erecta	LC													
Molinia caerulea	LC													
Molinia caerulea subsp. caerulea	LC													Assumed to be LC as species, not analysed
Moneses uniflora	VU			C2a(i)						3500				
Monotropa hypopitys	EN	A2c				Trend								
Monotropa hypopitys subsp. hypophegea	EN	A2c					Trend							
Monotropa hypopitys subsp. hypopitys	EN	A2c					Trend							
Montia fontana	LC													
Montia fontana subsp. chondrosperma	LC													
Montia fontana subsp. fontana	LC													Assumed to be LC as species, not analysed
Muscari neglectum	VU			C2a(i)										
Mycelis muralis	LC													
Myosotis alpestris	NT		B						16					
Myosotis arvensis	LC													
Myosotis discolor	LC													
Myosotis laxa	LC													
Myosotis ramosissima	LC													
Myosotis scorpioides	LC													
Myosotis secunda	LC												Possibly	
Myosotis stolonifera	LC												Possibly	

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Myosotis sylvatica	LC													
Myosoton aquaticum	LC													
Myosurus minimus	VU	A2c				Trend								
Myrica gale	LC													
Myriophyllum alterniflorum	LC													
Myriophyllum spicatum	LC													
Myriophyllum verticillatum	VU	A2c						Trend						
Najas flexilis	LC													
Najas marina	VU				D2				4					
Narcissus pseudonarcissus subsp. pseudonarcissus	LC													
Nardus stricta	LC													
Narthecium ossifragum	LC													
Neotinea ustulata[15]	EN	A2c				Trend	Trend	Trend						
Neottia nidus-avis	NT	A				Trend								
Nepeta cataria	VU	A2c				Trend	Trend							
Nuphar lutea	LC													
Nuphar pumila	LC													
Nymphaea alba	LC													
Nymphoides peltata	LC													Situation completely confused by planting
Odontites vernus	LC													
Odontites vernus subsp. serotinus	LC													
Odontites vernus subsp. vernus	LC													Assumed to be LC as species, not analysed

[15] Formerly *Orchis ustulata*.

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Odontites vernus subsp. litoralis	LC													
Oenanthe aquatica	LC													
Oenanthe crocata	LC													
Oenanthe fistulosa	VU	A2c				Trend								
Oenanthe fluviatilis	LC												Possibly	
Oenanthe lachenalii	LC													
Oenanthe pimpinelloides	LC													
Oenanthe silaifolia	NT	A					Trend							
Onobrychis viciifolia	NT	A				Trend	Trend	Trend						
Ononis reclinata	LC													
Ononis repens	LC													
Ononis spinosa	LC													
Onopordum acanthium	LC													
Ophioglossum azoricum	LC												Yes	
Ophioglossum lusitanicum	VU				D2				1					
Ophioglossum vulgatum	LC													
Ophrys apifera	LC													
Ophrys fuciflora	VU				D1					500				
Ophrys insectifera	VU	A2c				Trend	Trend							
Ophrys sphegodes	LC													
Orchis anthropophora[16]	EN	A2c				Trend								
Orchis mascula	LC													
Orchis militaris	VU				D2				4	2000				
Orchis purpurea	EN	A2c						Trend						
Orchis simia	VU	A2c			D1		Trend			300				

[16] Formerly *Aceras anthropophorum*.

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Oreopteris limbosperma	LC													
Origanum vulgare	LC													
Ornithogalum pyrenaicum	LC													
Ornithopus perpusillus	LC													
Ornithopus pinnatus	LC													
Orobanche alba	LC													
Orobanche artemisiae-campestris	EN		B1ab(v)+2ab(v)	C2a(i)					4?	<100				
Orobanche caryophyllacea	NT				D					<10000				
Orobanche elatior	LC													
Orobanche hederae	LC													
Orobanche minor	LC													
Orobanche purpurea	VU				D1					<1000				
Orobanche rapum-genistae	NT	A						Trend						
Orobanche reticulata	NT				D					<10000				
Orthilia secunda	LC													
Osmunda regalis	LC													
Otanthus maritimus	EX													
Oxalis acetosella	LC													
Oxyria digyna	LC													
Oxytropis campestris	VU				D2				3					
Oxytropis halleri	LC													
Papaver argemone	VU	A2c				Trend	Trend	Trend						
Papaver dubium	LC													
Papaver dubium subsp. dubium	LC													
Papaver dubium subsp. lecoqii	LC													
Papaver hybridum	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Papaver rhoeas	LC													
Papaver somniferum	LC													
Papaver somniferum subsp. somniferum	LC													Assumed to be LC as species, not analysed
Parapholis incurva	LC													
Parapholis strigosa	LC													
Parentucellia viscosa	LC													
Parietaria judaica	LC													
Paris quadrifolia	LC													
Parnassia palustris	LC													
Pastinaca sativa	LC													
Pedicularis palustris	LC													
Pedicularis sylvatica	LC													
Pedicularis sylvatica subsp. sylvatica	LC													Assumed to be LC as species, not analysed
Pedicularis sylvatica subsp. hibernica	LC													
Persicaria amphibia	LC													
Persicaria bistorta	LC													
Persicaria hydropiper	LC													
Persicaria lapathifolia	LC													
Persicaria maculosa	LC													
Persicaria minor	VU	A2c					Trend							
Persicaria mitis	VU	A2c				Trend	Trend	Trend						
Persicaria vivipara	LC													
Petasites hybridus	LC													
Petrorhagia nanteuilii	VU				D2				?3					
Petroselinum crispum	LC													
Petroselinum segetum	LC												Possibly	
Peucedanum officinale	LC													
Peucedanum ostruthium	NT	A						Trend						
Peucedanum palustre	VU	A2c												

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Phalaris arundinacea	LC													
Phegopteris connectilis	LC													
Phleum alpinum	LC													
Phleum arenarium	LC													
Phleum bertolonii	LC													
Phleum phleoides	LC													
Phleum pratense	LC													
Phleum pratense sens.lat.	LC													
Phragmites australis	LC													
Phyllitis scolopendrium	LC													
Phyllodoce caerulea	VU				D1					<300				
Physospermum cornubiense	LC													
Phyteuma orbiculare	LC													
Phyteuma spicatum	EN	A2c		C2a(i)				Trend		400				
Picris echioides	LC													
Picris hieracioides	LC													
Pilosella flagellaris subsp. bicapitata	VU				D1 +2						Yes		Yes	
Pilosella officinarum	LC													
Pilosella peleteriana	NT	A	B					Trend	18?					
Pilularia globulifera	NT	A						Trend						
Pimpinella major	LC													
Pimpinella saxifraga	LC													
Pinguicula lusitanica	LC												Possibly	
Pinguicula vulgaris	LC													
Pinus sylvestris	LC													
Plantago coronopus	LC													
Plantago lanceolata	LC													
Plantago major	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Plantago major subsp. major	LC													Assumed to be LC as species, not analysed
Plantago major subsp. intermedia	LC													
Plantago maritima	LC													
Plantago media	LC													
Platanthera bifolia	VU	A2c					Trend	Trend						AOO trend an over-estimate due to lack of recording in 1987-99
Platanthera chlorantha	NT	A				Trend								
Poa alpina	LC													
Poa angustifolia	LC													
Poa annua	LC													
Poa bulbosa	LC													
Poa compressa	LC													
Poa flexuosa	VU				D1				12	300				
Poa glauca	VU	A2c				Trend								Montane and under-recorded
Poa humilis	LC													
Poa infirma	LC													
Poa nemoralis	LC													
Poa pratensis sens.lat.	LC													
Poa pratensis sens.str.	LC													
Poa trivialis	LC													
Polemonium caeruleum	LC													
Polycarpon tetraphyllum	LC													
Polygala amarella	LC													
Polygala calcarea	LC													
Polygala serpyllifolia	LC													
Polygala vulgaris	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Polygonatum multiflorum	LC													
Polygonatum odoratum	LC													
Polygonatum verticillatum	VU		B1ab(iv)+2ab(iv)	C2a(i)					9	1400				
Polygonum arenastrum	LC													
Polygonum aviculare	LC													
Polygonum aviculare agg.[17]	LC													
Polygonum boreale	LC													
Polygonum maritimum	VU				D1					<1000				
Polygonum oxyspermum	LC												Yes	
Polygonum rurivagum	LC													
Polypodium cambricum	LC													
Polypodium interjectum	LC												Yes	
Polypodium vulgare	LC													
Polypodium vulgare sens.lat.	LC													
Polypogon monspeliensis	LC													
Polystichum aculeatum	LC													
Polystichum lonchitis	VU	A2c				Trend								Montane and under-recorded
Polystichum setiferum	LC													
Populus nigra subsp. betulifolia	LC													
Populus tremula	LC													
Potamogeton acutifolius	CR	A2c						Trend						

[17] Includes *P. aviculare*, *P. arenastrum*, *P. boreale* and *P. rurivagum*.

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Potamogeton acutifolius x berchtoldii (P. x sudermanicus)	VU				D2				3					
Potamogeton alpinus	LC													
Potamogeton alpinus x crispus (P. x olivaceus)	VU				D2				4					
Potamogeton berchtoldii	LC													
Potamogeton coloratus	LC												Possibly	
Potamogeton coloratus x gramineus (P. x billupsii)	VU				D2				1					
Potamogeton compressus	EN	A2ac					Trend							
Potamogeton crispus	LC													
Potamogeton crispus x praelongus (P. x undulatus)	VU				D2				1					
Potamogeton crispus x trichoides (P. x bennettii)	VU				D2				1					
Potamogeton epihydrus	VU				D2				5				Yes	
Potamogeton filiformis	LC													
Potamogeton friesii	NT	A				Trend	Trend							
Potamogeton gramineus	LC													
Potamogeton lucens	LC													
Potamogeton lucens x natans (P. x fluitans)	VU				D2				5					
Potamogeton natans	LC													
Potamogeton natans x nodosus (P. x schreberi)	VU				D2				1					

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Potamogeton natans x polygonifolius (P. x gessnacensis)	VU				D2				4					
Potamogeton nodosus	VU				D2				3					
Potamogeton obtusifolius	LC													
Potamogeton pectinatus	LC													
Potamogeton pectinatus x vaginatus (P. x bottnicus)	VU				D2				1					
Potamogeton perfoliatus	LC													
Potamogeton perfoliatus x praelongus (P. x cognatus)	VU				D2				1					
Potamogeton polygonifolius	LC													
Potamogeton praelongus	NT	A						Trend						
Potamogeton pusillus	LC													
Potamogeton rutilus	LC												Possibly	
Potamogeton trichoides	LC													
Potentilla anglica	LC													
Potentilla anserina	LC													
Potentilla argentea	NT	A				Trend	Trend							
Potentilla crantzii	LC													
Potentilla erecta	LC													
Potentilla erecta subsp. erecta	LC													Assumed to be LC as species, not analysed
Potentilla erecta subsp. strictissima	LC													
Potentilla fruticosa	NT				D					>3500				
Potentilla neumanniana	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Potentilla palustris	LC													
Potentilla reptans	LC													
Potentilla rupestris	EN		B1ab(v)+2ab(v)	C2a(i)					4	176				
Potentilla sterilis	LC													
Primula elatior	NT	A						Trend						
Primula farinosa	VU	A2c				Trend								
Primula scotica	LC										Yes		Yes	
Primula veris	LC													
Primula vulgaris	LC													
Prunella vulgaris	LC													
Prunus avium	LC													
Prunus cerasus	LC													
Prunus domestica	LC													
Prunus domestica subsp. domestica	LC													Assumed to be LC as species, not analysed
Prunus domestica subsp. institia	LC													Assumed to be LC as species, not analysed
Prunus domestica subsp. italica	LC													Assumed to be LC as species, not analysed
Prunus padus	LC													
Prunus spinosa	LC													
Pseudorchis albida	VU	A2c						Trend						
Pteridium aquilinum	LC													
Puccinellia distans	LC													
Puccinellia distans subsp. distans	LC													Assumed to be LC as species, not analysed
Puccinellia distans subsp. borealis	LC													
Puccinellia fasciculata	VU	A2c				Trend								
Puccinellia maritima	LC													
Puccinellia rupestris	LC												Possibly	
Pulicaria dysenterica	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Pulicaria vulgaris	CR	A2c						Trend						
Pulmonaria longifolia	LC												Possibly	
Pulmonaria obscura	EN		B1ab(v)+2ab(v)	C2a(i)					3	600				
Pulsatilla vulgaris	VU	A2ac					Trend		Trend					
Pyrola media	VU	A2c				Trend	Trend							Montane and under-recorded
Pyrola minor	LC													
Pyrola rotundifolia subsp. maritima	LC													
Pyrola rotundifolia subsp. rotundifolia	NT	A				Trend								
Pyrus communis sens.lat.	LC													
Pyrus cordata	VU				D1				7	600-700				
Quercus petraea	LC													
Quercus robur	LC													
Radiola linoides	NT	A				Trend								
Ranunculus acris	LC													
Ranunculus aquatilis	LC													
Ranunculus arvensis	CR	A2c				Trend								
Ranunculus auricomus	LC													
Ranunculus baudotii	LC													
Ranunculus bulbosus	LC													
Ranunculus circinatus	LC													
Ranunculus ficaria	LC													
Ranunculus ficaria subsp. bulbilifer	LC													
Ranunculus ficaria subsp. ficaria	LC													
Ranunculus flammula	LC													
Ranunculus flammula subsp. flammula	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Ranunculus flammula subsp. minimus	DD													
Ranunculus flammula subsp. scoticus	DD													
Ranunculus fluitans	LC													
Ranunculus hederaceus	LC												Yes	
Ranunculus lingua	LC													
Ranunculus omiophyllus	LC												Yes	
Ranunculus ophioglossifolius	VU				D2				2	>1000				
Ranunculus parviflorus	LC													
Ranunculus peltatus	LC													
Ranunculus penicillatus	LC													
Ranunculus penicillatus subsp. penicillatus	LC													
Ranunculus penicillatus subsp. pseudofluitans	LC													
Ranunculus repens	LC													
Ranunculus reptans	VU				D2				3					
Ranunculus sardous	LC													
Ranunculus sceleratus	LC													
Ranunculus trichophyllus	LC													
Ranunculus tripartitus	EN	A2c						Trend						
Raphanus raphanistrum subsp. maritimus	LC													
Raphanus raphanistrum subsp. raphanistrum	LC													Cannot use trend statistics as many VCs did not record at subsp. level
Reseda lutea	LC													
Reseda luteola	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Rhamnus cathartica	LC													
Rhinanthus minor	LC													
Rhinanthus minor subsp. borealis	DD													
Rhinanthus minor subsp. calcareus	DD													
Rhinanthus minor subsp. lintonii	DD													
Rhinanthus minor subsp. monticola	DD													
Rhynchospora alba	LC													
Rhynchospora fusca	LC													
Ribes alpinum	LC													
Ribes rubrum	LC													
Ribes spicatum	LC													
Romulea columnae	VU				D2				2					
Rorippa amphibia	LC													
Rorippa amphibia x palustris (R. x erythrocaulis)	VU				D2				3					
Rorippa islandica sens.str.	LC													
Rorippa microphylla	LC												Yes	
Rorippa nasturtium-aquaticum	LC													
Rorippa nasturtium-aquaticum agg.[18]	LC													
Rorippa palustris	LC													
Rorippa sylvestris	LC													
Rosa agrestis	NT				D					<10000				

[18] Includes *R. nasturtium-aquaticum*, *R. microphylla* and *R.* x *sterilis*.

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Rosa arvensis	LC													
Rosa caesia subsp. caesia	LC													
Rosa caesia subsp. vosagiaca	LC													
Rosa canina sens.str.	LC													
Rosa micrantha	LC													
Rosa mollis	LC													
Rosa obtusifolia	LC													
Rosa pimpinellifolia	LC													
Rosa rubiginosa	LC													
Rosa sherardii	LC													
Rosa stylosa	LC													
Rosa tomentosa	LC													
Rubia peregrina	LC													
Rubus caesius	LC													
Rubus chamaemorus	LC													
Rubus fruticosus agg.[19]	LC													
Rubus idaeus	LC													
Rubus saxatilis	LC													
Rumex acetosa	LC													
Rumex acetosa subsp. acetosa	LC													Assumed to be LC as species, not analysed
Rumex acetosa subsp. hibernicus	DD											Yes		
Rumex acetosella	LC													
Rumex acetosella subsp. acetosella	LC													Assumed to be LC as species, not analysed
Rumex acetosella subsp. pyrenaicus	LC													

[19] Includes all taxa in *Rubus* subgenus *Rubus* except *R. caesius*.

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Rumex aquaticus	VU			C2a(i)										
Rumex conglomeratus	LC													
Rumex crispus	LC													
Rumex crispus subsp. crispus	LC													Assumed to be LC as species, not analsyed
Rumex crispus subsp. littoreus	LC													
Rumex crispus subsp. uliginosus	LC													
Rumex hydrolapathum	LC													
Rumex longifolius	LC													
Rumex maritimus	LC													
Rumex obtusifolius	LC													
Rumex palustris	LC													
Rumex pseudoalpinus	NT	A				Trend								
Rumex pulcher	LC													
Rumex rupestris	EN			C2a(i)									Yes	
Rumex sanguineus	LC													
Ruppia cirrhosa	NT	A						Trend						
Ruppia maritima	LC													
Ruscus aculeatus	LC													
Sagina apetala	LC													
Sagina apetala subsp. apetala	LC													
Sagina apetala subsp. erecta	LC													
Sagina maritima	LC													
Sagina nivalis	VU	A2c					Trend							Montane and under-recorded
Sagina nodosa	LC													
Sagina procumbens	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Sagina saginoides	EN	A2c						Trend						Montane and under-recorded
Sagina subulata	LC													
Sagittaria sagittifolia	LC													
Salicornia dolichostachya	LC													
Salicornia europaea	LC													
Salicornia fragilis	LC													
Salicornia nitens	DD													
Salicornia obscura	DD													
Salicornia pusilla	LC												Yes	
Salicornia ramosissima	LC													
Salix alba	LC													
Salix arbuscula	LC													
Salix aurita	LC													
Salix caprea	LC													
Salix caprea subsp. caprea	LC													Assumed to be LC as species, not analysed
Salix caprea subsp. sphacelata	LC													
Salix cinerea	LC													
Salix cinerea subsp. cinerea	LC													
Salix cinerea subsp. oleifolia	LC													
Salix fragilis	LC													
Salix herbacea	LC													
Salix lanata	VU			C2a(i)										
Salix lapponum	VU	A2c				Trend								Montane and under-recorded
Salix myrsinifolia	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Salix myrsinites	EN	A2c						Trend						Montane and under-recorded
Salix pentandra	LC													
Salix phylicifolia	LC													
Salix purpurea	LC													
Salix repens	LC													
Salix reticulata	LC													
Salix triandra	LC													
Salix viminalis	LC													
Salsola kali subsp. kali	VU	A2c				Trend								
Salvia pratensis	NT	A			D	Trend	Trend		22	<10000				
Salvia verbenaca	LC													
Sambucus ebulus	LC													
Sambucus nigra	LC													
Samolus valerandi	LC													
Sanguisorba minor subsp. minor	LC													
Sanguisorba officinalis	LC													
Sanicula europaea	LC													
Saponaria officinalis	LC													
Sarcocornia perennis	LC													
Saussurea alpina	LC													
Saxifraga aizoides	LC													
Saxifraga cernua	VU				D2				5	*c.* 2000				
Saxifraga cespitosa	EN			C2a(i)										
Saxifraga granulata	LC													
Saxifraga hirculus	VU	A2c					Trend							
Saxifraga hypnoides	VU	A2c				Trend							Yes	Montane and under-recorded
Saxifraga nivalis	LC													Montane and under-recorded
Saxifraga oppositifolia	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Saxifraga rivularis	LC													
Saxifraga rosacea subsp. rosacea	EW													
Saxifraga stellaris	LC													
Saxifraga tridactylites	LC													
Scabiosa columbaria	LC													
Scandix pecten-veneris	CR	A2c				Trend								
Scheuchzeria palustris	LC													
Schoenoplectus lacustris	LC													
Schoenoplectus lacustris x triqueter (S. x carinatus)	VU				D2				1					
Schoenoplectus tabernaemontani	LC													
Schoenoplectus tabernaemontani x triqueter (S. x kuekenthalianus)	VU				D2				3					
Schoenoplectus triqueter	CR		B1ab(v)+2ab(v)	C2a(i)	D				1	1				
Schoenus ferrugineus	LC													
Schoenus nigricans	LC													
Scilla autumnalis	LC													Genetic responsibility for hexaploid race
Scilla verna	LC												Yes	
Scirpoides holoschoenus	EN		B1ab(v)+2ab(v)						2					
Scirpus sylvaticus	LC													
Scleranthus annuus	EN	A2c				Trend	Trend							
Scleranthus annuus subsp. annuus	EN	A2c												Assumed to be EN as species, not analysed

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Scleranthus annuus subsp. polycarpos	DD													
Scleranthus perennis subsp. perennis	CR				D				1	32				
Scleranthus perennis subsp. prostratus	EN	A2c					Trend				Yes		Yes	Reintroductions not self-sustaining?
Scorzonera humilis	VU				D2				3					
Scrophularia auriculata	LC													
Scrophularia nodosa	LC													
Scrophularia scorodonia	LC													In *New Atlas* as neophyte
Scrophularia umbrosa	LC													
Scutellaria galericulata	LC													
Scutellaria minor	LC													
Sedum acre	LC													
Sedum album	LC													
Sedum anglicum	LC													
Sedum forsterianum	LC													
Sedum rosea	LC													
Sedum telephium	LC													
Sedum villosum	NT	A					Trend							
Selaginella selaginoides	LC													
Selinum carvifolia	VU				D2				3					
Senecio aquaticus	LC													
Senecio cambrensis	NT		B						<30		Yes		Yes	
Senecio erucifolius	LC													
Senecio jacobaea	LC													
Senecio paludosus	CR				D				<50					
Senecio sylvaticus	LC													
Senecio vulgaris	LC													
Seriphidium maritimum	LC												Possibly	
Serratula tinctoria	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Seseli libanotis	NT	A					Trend							
Sesleria caerulea	LC													
Sherardia arvensis	LC													
Sibbaldia procumbens	VU	A2c				Trend								Montane and under-recorded
Sibthorpia europaea	LC												Possibly	
Silaum silaus	LC													
Silene acaulis	LC													
Silene conica	VU	A2c					Trend							
Silene dioica	LC													
Silene gallica	EN	A2c				Trend	Trend							
Silene latifolia	LC													
Silene noctiflora	VU	A2c				Trend	Trend	Trend						
Silene nutans	NT	A				Trend								
Silene otites	EN	A2c						Trend						
Silene uniflora	LC													
Silene vulgaris	LC													
Silybum marianum	LC													
Sinapis alba	LC													
Sinapis arvensis	LC													
Sison amomum	LC													
Sisymbrium officinale	LC													
Sium latifolium	EN	A2c				Trend	Trend							
Smyrnium olusatrum	LC													
Solanum dulcamara	LC													
Solanum nigrum	LC													
Solidago virgaurea	LC													
Sonchus arvensis	LC													
Sonchus asper	LC													
Sonchus oleraceus	LC													
Sonchus palustris	LC													
Sorbus anglica	NT				D					1100		Yes	Yes	

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Sorbus aria	LC													
Sorbus arranensis	VU				D1 +2				3?	<400	Yes		Yes	
Sorbus aucuparia	LC													
Sorbus bristoliensis	EN				D				1	234	Yes		Yes	
Sorbus devoniensis	LC											Yes	Yes	
Sorbus domestica	CR				D				5	<30				
Sorbus eminens	EN				D				?12	<250	Yes		Yes	
Sorbus lancastriensis	NT				D					2000	Yes		Yes	
Sorbus leptophylla	EN				D				5	113	Yes		Yes	
Sorbus leyana	CR				D				2	17	Yes		Yes	
Sorbus minima	VU				D1 +2				4	780	Yes		Yes	
Sorbus porrigentiformis	LC										Yes		Yes	
Sorbus pseudofennica	VU				D1 +2				?3	300+	Yes		Yes	
Sorbus rupicola	LC												Possibly	
Sorbus subcuneata	VU				D1				?13	100s	Yes		Yes	
Sorbus torminalis	LC													
Sorbus vexans	EN				D				?10	<100	Yes		Yes	
Sorbus wilmottiana	CR				D				1	42	Yes		Yes	
Sparganium angustifolium	LC													
Sparganium emersum	LC													
Sparganium erectum	LC													
Sparganium natans	LC													
Spartina anglica	LC											Yes	Yes	
Spartina maritima	EN	A2c						Trend						
Spergula arvensis	VU	A2c				Trend								
Spergularia marina	LC													
Spergularia media	LC													
Spergularia rubra	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Spergularia rupicola	LC												Yes	
Spiranthes aestivalis	EX													
Spiranthes romanzoffiana	LC												Yes	
Spiranthes spiralis	NT	A						Trend						
Spirodela polyrhiza	LC													
Stachys arvensis	NT	A				Trend								
Stachys germanica	VU				D1					*c.* 500				
Stachys officinalis	LC													
Stachys palustris	LC													
Stachys sylvatica	LC													
Stellaria graminea	LC													
Stellaria holostea	LC													
Stellaria media	LC													
Stellaria neglecta	LC													
Stellaria nemorum	LC													
Stellaria nemorum subsp. nemorum	LC													Assumed to be LC as species, not analysed
Stellaria nemorum subsp. montana	DD													
Stellaria pallida	LC													
Stellaria palustris	VU	A2c						Trend						
Stellaria uliginosa	LC													
Stratiotes aloides	NT	A					Trend							
Suaeda maritima	LC													
Suaeda vera	LC													
Subularia aquatica	LC													
Succisa pratensis	LC													
Symphytum officinale	LC													
Symphytum tuberosum	LC													
Tamus communis	LC													
Tanacetum parthenium	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Tanacetum vulgare	LC													
Taraxacum	LC													
Taraxacum akteum	VU				D2				1					
Taraxacum clovense	VU				D2				1		Yes		Yes	
Taraxacum cymbifolium	VU				D2				1					
Taraxacum geirhildae	VU				D2				2		Yes		Yes	
Taraxacum nietoi	VU				D2				1					
Taraxacum xiphoideum	VU				D2				3					
Taxus baccata	LC													
Teesdalia nudicaulis	NT	A				Trend								
Tephroseris integrifolia subsp. integrifolia	EN	A2c				Trend		Trend						
Tephroseris integrifolia subsp. maritima	VU				D2				2	<10000	Yes		Yes	
Tephroseris palustris	EX													
Teucrium scordium	EN	A2c	B1ab(v)+2ab(v)				Trend		2					
Teucrium scorodonia	LC													
Thalictrum alpinum	LC													
Thalictrum flavum	LC													
Thalictrum minus	LC													
Thelypteris palustris	LC													
Thesium humifusum	LC													
Thlaspi arvense	LC													
Thlaspi caerulescens	LC													
Thlaspi perfoliatum	VU			C2a(i)					16					
Thymus polytrichus	LC													
Thymus pulegioides	LC													
Thymus serpyllum	LC													Threat may be under-estimated
Tilia cordata	LC													
Tilia platyphyllos	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Tofieldia pusilla	LC													
Torilis arvensis	EN	A2c				Trend	Trend							
Torilis japonica	LC													
Torilis nodosa	LC													
Tragopogon pratensis	LC													
Trichomanes speciosum	LC													
Trichophorum cespitosum	LC													
Trichophorum cespitosum subsp. germanicum	LC													Assumed to be LC as species, not analysed
Trichophorum cespitosum subsp. cespitosum	DD													
Trientalis europaea	LC													
Trifolium arvense	LC													
Trifolium bocconei	VU				D2									
Trifolium campestre	LC													
Trifolium dubium	LC													
Trifolium fragiferum	LC													
Trifolium glomeratum	LC													
Trifolium incarnatum subsp. molinerii	VU				D2				5					
Trifolium medium	LC													
Trifolium micranthum	LC													
Trifolium occidentale	LC												Yes	
Trifolium ochroleucon	NT	A				Trend	Trend	Trend						
Trifolium ornithopodioides	LC													
Trifolium pratense	LC													
Trifolium repens	LC													
Trifolium scabrum	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Trifolium squamosum	LC													
Trifolium striatum	LC													
Trifolium strictum	VU				D2									
Trifolium subterraneum	LC													
Trifolium suffocatum	LC													
Triglochin maritimum	LC													
Triglochin palustre	LC													
Trinia glauca	LC													
Tripleurospermum inodorum	LC													
Tripleurospermum maritimum	LC													
Trisetum flavescens	LC													
Trollius europaeus	LC													
Tuberaria guttata	NT		B						<30					
Tussilago farfara	LC													
Typha angustifolia	LC													
Typha latifolia	LC													
Ulex europaeus	LC													
Ulex gallii	LC												Possibly	
Ulex minor	LC													
Ulmus glabra	LC													
Ulmus minor sensu Stace	LC													
Ulmus procera	LC													
Umbilicus rupestris	LC													
Urtica dioica	LC													
Urtica dioica subsp. dioica	LC													
Urtica urens	LC													
Utricularia australis	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Utricularia intermedia sens.lat.	LC													
Utricularia intermedia sens.str.	DD													
Utricularia minor	LC													
Utricularia ochroleuca	DD													
Utricularia stygia	DD													
Utricularia vulgaris sens.lat.	LC													
Utricularia vulgaris sens.str.	LC													
Vaccinium microcarpum	LC													
Vaccinium myrtillus	LC													
Vaccinium oxycoccos	LC													
Vaccinium uliginosum	LC													
Vaccinium vitis-idaea	LC													
Valeriana dioica	LC													
Valeriana officinalis	LC													
Valerianella carinata	LC													
Valerianella dentata	EN	A2c				Trend								
Valerianella eriocarpa	LC													In *New Atlas* as neophyte
Valerianella locusta	LC													
Valerianella rimosa	EN	A2c					Trend							
Verbascum lychnitis	LC													
Verbascum nigrum	LC													
Verbascum pulverulentum	LC													
Verbascum thapsus	LC													
Verbena officinalis	LC													
Veronica agrestis	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Veronica alpina	LC													
Veronica anagallis-aquatica	LC													
Veronica arvensis	LC													
Veronica beccabunga	LC													
Veronica catenata	LC													
Veronica chamaedrys	LC													
Veronica fruticans	NT				D					2000				
Veronica hederifolia	LC													
Veronica hederifolia subsp. hederifolia	LC													
Veronica hederifolia subsp. lucorum	LC													
Veronica montana	LC													
Veronica officinalis	LC													
Veronica scutellata	LC													
Veronica serpyllifolia	LC													
Veronica serpyllifolia subsp. serpyllifolia	LC													Assumed to be LC as species, not analysed
Veronica serpyllifolia subsp. humifusa	NT	A						Trend						Montane and under-recorded
Veronica spicata	LC													
Veronica triphyllos	EN	A2c	B1ab(v)+2ab(v)	C2a(i)	D		Trend		5	<250				
Veronica verna	EN	A2c		C2a(i)			Trend							
Viburnum lantana	LC													
Viburnum opulus	LC													
Vicia bithynica	VU	A2c						Trend						
Vicia cracca	LC													
Vicia hirsuta	LC													
Vicia lathyroides	LC													
Vicia lutea	NT	A				Trend	Trend	Trend						
Vicia orobus	NT	A						Trend					Possibly	

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Vicia parviflora	VU	A2c				Trend	Trend	Trend						
Vicia sativa	LC													
Vicia sativa subsp. nigra	LC													
Vicia sativa subsp. sativa	LC													Trend statistics cannot be used as many VCs did not record at subsp. level
Vicia sativa subsp. segetalis	LC													
Vicia sepium	LC													
Vicia sylvatica	LC													
Vicia tetrasperma	LC													
Vinca minor	LC													
Viola arvensis	LC													
Viola canina	NT	A				Trend								
Viola canina subsp. canina	NT	A												Assumed to be NT as species, not analysed
Viola canina subsp. montana	EN				D					<250				
Viola hirta	LC													
Viola kitaibeliana	NT		B											
Viola lactea	VU	A2c				Trend	Trend						Possibly	
Viola lutea	LC													
Viola odorata	LC													
Viola palustris	LC													
Viola palustris subsp. palustris	LC													
Viola palustris subsp. juressi	LC													
Viola persicifolia	EN	A2c					Trend							
Viola reichenbachiana	LC													
Viola riviniana	LC													

Taxon name	Category	A Criteria	B Criteria	C Criteria	D Criteria	AOO: extrapolated	AOO: hectads	EOO	Locations	Individuals	Endemic	Near endemic	International responsibility	Notes
Viola riviniana x rupestris (V. x burnatii)	VU				D2				3					
Viola rupestris	LC													
Viola tricolor	NT	A				Trend	Trend							
Viola tricolor subsp. tricolor	NT	A												Assumed to be NT as species, not analysed
Viola tricolor subsp. curtisii	LC													
Viscum album	LC													
Vulpia bromoides	LC													
Vulpia ciliata	LC													
Vulpia fasciculata	LC													
Vulpia myuros	LC													
Wahlenbergia hederacea	NT	A						Trend						
Wolffia arrhiza	VU	A2c						Trend						
Woodsia alpina	NT				D					<10000				
Woodsia ilvensis	EN				D					*c.* 100				
Zannichellia palustris	LC													
Zostera marina	NT	A				Trend	Trend	Trend						
Zostera noltei	VU	A2c				Trend								

8 Waiting and Parking Lists

8.1 How should these lists be used?

Waiting List

There are three main reasons why taxa are placed here: 1) inadequate distributional data; 2) taxonomic uncertainties; 3) uncertainty over native, archaeophyte or neophyte status. A lack of adequate distributional data particularly affects subspecific taxa. Taxonomic problems affect a wide range of taxa, such as the subspecies of *Betula pubescens*, which are not recognised by Jonsell (2002) because they are believed to be clinal and possibly of multiple origin. Other taxonomic problems arise with genera such as *Limonium* or *Cochlearia* where DNA work is ongoing or needs to be done. Some taxa have come to our attention since the *New Atlas* and may have been placed here because there has not been enough time (25 years) for a clear understanding of their status, *e.g. Senecio eboracensis*. Some neophytes for which we may have special responsibility *e.g. Bromus hordeaceus* subsp. *longipedicellatus* are placed on the Waiting List because the UK may have the last surviving populations but data are insufficient for analysis. This list highlights what research needs to be done in order to clear up population, distributional and taxonomic problems. It is not an exhaustive listing, and it is likely that other taxa will be added in the future.

Parking List

This list consists of taxa rejected from the current analysis, the majority of which have been listed as Red Data Book plants in the past. Reasons for their exclusion include research showing incontrovertible evidence that they should be placed at a lower rank than subspecies, or data showing that they are neophytes. It is not an exhaustive list of neophytes or taxa which are no longer taxonomically supported but, rather, a list of those taxa that were discussed during the production of the Red List, and which were rejected. For example, the very late first record for a conspicuous plant like *Althaea hirsuta* (1792), and its ecology and distribution, all indicate a recent introduction, so the species is consequently redetermined as a neophyte. Some names such as *Dactylorhiza lapponica* or *D. majalis* have been 'parked' because the former is a synonym of *D. traunsteinerioides* and the latter is a misapplied name, as *D. majalis* is a continental species not found in Britain (Bateman, In press). In contrast with the Waiting List taxa, further work on the Parking List plants is not thought to be a priority.

8.2 Waiting list

Taxon name	Taxonomic studies required	Studies of native or archaeophyte status required	Further mapping data required for analysis	Reasons for appearing on the Waiting List	References
Aconitum napellus	Yes	Yes		The supposed native form (referred to as subsp. *napellus*) was only discovered in 1821. Garden forms are very widely planted and frequently escape. Taxonomic studies could help to determine whether a separate subspecies exists and which records refer to it.	
Aethusa cynapium subsp. *agrestis*			Yes	Insufficient mapping data	
Agrostemma githago	Yes	Yes		This species was believed extinct as an archaeophyte, but has recently appeared very widely. This is likely to be because of its popularity in 'wild flower' seed mixes, for which the origin is not the UK. Some occurrences may result from buried UK seed sources, but unless genetic markers can be found to distinguish UK material from non-native forms, it is not possible to determine the threat faced by the UK plant.	
Alchemilla minima	Yes			Originally described by Walters, he no longer considers it a valid taxon. Further work is required to separate this from *A. filicaulis*.	Bradshaw, 1964, Rich & Jermy, 1998.
Anthyllis vulneraria subsp. *lapponica*			Yes	Insufficient mapping data	
Arctium nemorosum			Yes	Insufficient mapping data	
Arenaria serpyllifolia subsp. *lloydii*	Yes			Accepted as a subspecies in *Flora Nordica*, but considered only a dune ecotype in Stace's Flora.	Stace, 1997; Jonsell, 2002.
Asperula cynanchica subsp. *occidentalis*			Yes	Insufficient mapping data	Tutin & Chater, 1974.

Taxon name	Taxonomic studies required	Studies of native or archaeophyte status required	Further mapping data required for analysis	Reasons for appearing on the Waiting List	References
Asplenium 'cuneifolium'	Yes			The serpentine form of *A. adiantum-nigrum* is considered to be an ecotype by Stace, but is referred to as subsp. *silesiacum* in *Plant Crib 1998*, and as an undescribed distinct species in *Flora Nordica*.	Stace, 1997; Rich & Jermy, 1998; Jonsell, 2002.
Betula pubescens subsp. *pubescens*	Yes		Yes	This subspecies is included in both Stace's Flora and *Flora Europaea*, but not in *Flora Nordica*. More mapping data are required for analysis.	Atkinson, 1992; Tutin *et al.*, 1993; Stace, 1997; Jonsell, 2000.
Betula pubescens subsp. *tortuosa*	Yes		Yes	This subspecies is included in both Stace's Flora and *Flora Europaea*, but not in *Flora Nordica*. More mapping data are required for analysis.	Atkinson, 1992; Tutin *et al.*, 1993; Stace, 1997; Jonsell, 2000.
Brachypodium pinnatum			Yes	The distinction between this and *B. rupestre* was not found until after the publication of the *New Atlas*, and so almost no mapping data are available.	
Brachypodium rupestre			Yes	The distinction between this and *B. pinnatum* was not found until after the publication of the *New Atlas*, and so almost no mapping data are available.	
Bromus hordeaceus subsp. *longipedicellatus*		Yes	Yes	Described after the publication of the *New Atlas*, and hence no mapping data are available. It may be a neophyte, but the UK may also have the only remaining world populations.	Spalton, 2001.
Bromus pseudosecalinus	Yes			Generally considered to be a neophyte in the UK, but the taxonomy remains uncertain. Whatever its status, the UK may now have the only remaining world populations.	Spalton, 2003.
Caltha palustris subsp. *radicans*	Yes			*Flora Nordica* lists this as a subspecies, but Akeroyd considers it a variety, as there is continuous variation between it and subsp. *palustris*.	Akeroyd in Tutin *et al.*, 1993; Jonsell, 2000.
Cochlearia atlantica	Yes			Taxonomic work ongoing.	
Cochlearia micacea	Yes		Yes	Taxonomic work ongoing.	Rich & Dalby, 1996.
Cochlearia micacea subsp. *alpina*	Yes			Taxonomic work ongoing.	

Taxon name	Taxonomic studies required	Studies of native or archaeophyte status required	Further mapping data required for analysis	Reasons for appearing on the Waiting List	References
Cochlearia micacea subsp. *micacea*	Yes			Taxonomic work ongoing.	
Cochlearia officinalis subsp. *scotica*	Yes			Taxonomic work ongoing.	
Cochlearia pyrenaica subsp. *alpina*			Yes	Insufficient mapping data.	
Cochlearia pyrenaica subsp. *pyrenaica*			Yes	Insufficient mapping data.	
Cynodon dactylon		Yes		'Native or alien' in the *New Atlas*, its status in the UK remains uncertain, with some populations being considered possibly native in W. Cornwall. It is frequently found as a casual species.	
Dactylorhiza fuchsii subsp. *hebridensis*	Yes			Bateman suggests that this is a stabilised hybrid between *D. fuchsii* and *D. maculata*. More research is required into the whole group.	
Dactylorhiza incarnata subsp. *coccinea*	Yes			No distinctive allozyme markers exist to support this as a separate subspecies. More research is required into the *incarnata* group.	Bateman (In press)
Dactylorhiza incarnata subsp. *incarnata*	Yes			More research is required into the *incarnata* group.	Bateman (In press)
Dactylorhiza incarnata subsp. *pulchella*	Yes			More research is required into the *incarnata* group.	Bateman (In press)
Dactylorhiza maculata subsp. *rhoumensis*	Yes			More research is required into the whole group.	
Euphorbia villosa		Yes		This species is extinct in the UK. It is unclear whether it was formerly native in woodland near Bath, or was an introduction. More historical research required.	
Festuca arenaria subsp. *arenaria*	Yes		Yes	This subspecies was not included in Stace's Flora, and no mapping data are available.	

Taxon name	Taxonomic studies required	Studies of native or archaeophyte status required	Further mapping data required for analysis	Reasons for appearing on the Waiting List	References
Festuca arenaria subsp. *oraria*	Yes		Yes	This subspecies was not included in Stace's Flora, and no mapping data are available.	
Festuca ovina subsp. *hirtula*			Yes	Insufficient mapping data.	
Festuca ovina subsp. *ophioliticola*			Yes	Insufficient mapping data.	
Festuca ovina subsp. *ovina*			Yes	Insufficient mapping data.	
Fumaria muralis subsp. *muralis*			Yes	An enigmatic taxon, which has not been recorded for many years. Insufficient mapping data.	
Fumaria reuteri		Yes		Possibly an archaeophyte, but late first record (1904) suggests it is a recent introduction. Critical genus, so could have been overlooked.	
Galium mollugo subsp. *erectum*			Yes	Insufficient mapping data.	
Galium mollugo subsp. *mollugo*			Yes	Insufficient mapping data.	
Gentianella anglica	Yes			Genetically very similar to *G. amarella*, but flowers early and is morphologically distinct.	Winfield *et al.*, 2003.
Geranium purpureum subsp. *forsteri*	Yes			More analysis of the distinctions is required. Yeo cites cytological and floral differences.	Yeo, 2003.
Geranium purpureum subsp. *purpureum*	Yes			More analysis of the distinctions is required. Yeo cites cytological and floral differences.	Yeo, 2003.
Geranium robertianum subsp. *celticum*	Yes		Yes	May only represent an extreme within a variable species. Insufficient mapping data.	
Geranium robertianum subsp. *maritimum*	Yes		Yes	May only represent an extreme within a variable species. Insufficient mapping data.	
Gladiolus illyricus subsp. *britannicus*	Yes			It is uncertain whether *G. illyricus* is represented by an endemic subspecies in the UK, and more work is required to determine this. However, the species has been analysed, which is equivalent to including the subspecies in the analysis.	
Heracleum sphondylium subsp. *flavescens*		Yes		May be native in E. Norfolk. More analysis required.	

Taxon name	Taxonomic studies required	Studies of native or archaeophyte status required	Further mapping data required for analysis	Reasons for appearing on the Waiting List	References
Huperzia selago subsp. *arctica*			Yes	Insufficient mapping data.	Corner *et al.* in Rich & Jermy, 1998.
Huperzia selago subsp. *selago*			Yes	Insufficient mapping data.	
Lathyrus hirsutus		Yes		A casual species in most of the UK, it may have some claim to native status in the Thames estuary. It is rare and declining in northern France, with a very scattered distribution.	F. Rumsey pers. comm.
Lavatera cretica		Yes		First recorded in the UK in 1859, a late date if it were a native plant. It is a weed in the Mediterranean region, and does not persist in most of its Cornish sites.	
Leontodon autumnalis subsp. *autumnalis*	Yes		Yes	More work required, insufficient mapping data.	
Leontodon autumnalis subsp. *pratensis*	Yes		Yes	More work required, insufficient mapping data.	
Limonium binervosum	Yes			Taxonomic work ongoing.	
Limonium binervosum subsp. *anglicum*	Yes			Taxonomic work ongoing.	
Limonium binervosum subsp. *binervosum*	Yes			Taxonomic work ongoing.	
Limonium binervosum subsp. *cantianum*	Yes			Taxonomic work ongoing.	
Limonium binervosum subsp. *mutatum*	Yes			Taxonomic work ongoing.	
Limonium binervosum subsp. *saxonicum*	Yes			Taxonomic work ongoing.	
Limonium britannicum	Yes			Taxonomic work ongoing.	
Limonium britannicum subsp. *britannicum*	Yes			Taxonomic work ongoing.	
Limonium britannicum subsp. *celticum*	Yes			Taxonomic work ongoing.	

Taxon name	Taxonomic studies required	Studies of native or archaeophyte status required	Further mapping data required for analysis	Reasons for appearing on the Waiting List	References
Limonium britannicum subsp. *coombense*	Yes			Taxonomic work ongoing.	
Limonium britannicum subsp. *transcanalis*	Yes			Taxonomic work ongoing.	
Limonium dodartiforme	Yes			Taxonomic work ongoing.	
Limonium loganicum	Yes			Taxonomic work ongoing.	
Limonium paradoxum	Yes			Taxonomic work ongoing.	
Limonium parvum	Yes			Taxonomic work ongoing.	
Limonium procerum	Yes			Taxonomic work ongoing.	
Limonium procerum subsp. *cambrense*	Yes			Taxonomic work ongoing.	
Limonium procerum subsp. *devoniense*	Yes			Taxonomic work ongoing.	
Limonium procerum subsp. *procerum*	Yes			Taxonomic work ongoing.	
Limonium recurvum subsp. *humile*	Yes			Taxonomic work ongoing.	
Limonium recurvum subsp. *portlandicum*	Yes			Taxonomic work ongoing.	
Limonium recurvum subsp. *recurvum*	Yes			Taxonomic work ongoing.	
Limonium transwallianum	Yes			Taxonomic work ongoing.	
Limosella australis		Yes		Possibly neophyte. First recorded in 1897 in Wales, the only records in Europe. It is widespread in the southern hemisphere with a range extension up the east coast of North America. Distribution not stable, and mostly in artificial habitats.	Jones, 1991.
Lonicera xylosteum		Yes		First recorded in 1770, it was known to be a garden plant by 1600 and is easily spread by birds. However, the continental range just reaches northern France, and it occurs in semi-natural woodland.	

Taxon name	Taxonomic studies required	Studies of native or archaeophyte status required	Further mapping data required for analysis	Reasons for appearing on the Waiting List	References
Lythrum portula subsp. *longidentatum*	Yes			Apparently an ecologically distinct form, but there is much overlap in leaf sizes, and it probably only differs by a single character.	C. Preston pers. comm.
Lythrum portula subsp. *portula*	Yes			Uncertainly distinguished from preceding subspecies.	
Melampyrum arvense		Yes		First recorded in 1716, a rather late date for such a conspicuous plant if it were an archaeophyte or native. Its pattern of decline, however, is similar to that shown by archaeophytes associated with arable habitats.	
Melampyrum pratense subsp. *commutatum*			Yes	Insufficient mapping data.	Smith, 1963.
Melampyrum pratense subsp. *pratense*			Yes	Insufficient mapping data.	Smith, 1963.
Molinia caerulea subsp. *arundinacea*			Yes	Insufficient mapping data.	
Montia fontana subsp. *amporitana*	Yes		Yes	More work required, insufficient mapping data.	
Montia fontana subsp. *variabilis*	Yes		Yes	More work required, insufficient mapping data.	
Ononis repens subsp. *maritima*	Yes		Yes	More work required, insufficient mapping data.	
Ononis repens subsp. *repens*	Yes		Yes	More work required, insufficient mapping data.	
Petrorhagia prolifera		Yes		A weed throughout the world. Possible early records cannot be distinguished from *P. nanteuilii*.	Akeroyd & Beckett, 1995.
Pilosella peleteriana subsp. *peleteriana*			Yes	Insufficient mapping data.	
Pilosella peleteriana subsp. *subpeleteriana*			Yes	Insufficient mapping data.	
Pilosella peleteriana subsp. *tenuiscapa*			Yes	Insufficient mapping data.	
Polygala vulgaris subsp. *collina*			Yes	Insufficient mapping data.	
Polygala vulgaris subsp. *vulgaris*			Yes	Insufficient mapping data.	

Taxon name	Taxonomic studies required	Studies of native or archaeophyte status required	Further mapping data required for analysis	Reasons for appearing on the Waiting List	References
Pteridium aquilinum subsp. *aquilinum*	Yes		Yes	More work required, insufficient mapping data.	Page & Jermy in Rich & Jermy, 1998; Jonsell, 2000.
Pteridium aquilinum subsp. *fulvum*	Yes		Yes	Probably only an ecotype, since DNA work in Australia and USA by Sheffield does not support this subspecies.	Thomson, 2004.
Pteridium pinetorum	Yes		Yes	More work required, insufficient mapping data.	Thomson, 2004.
Rhinanthus angustifolius		Yes		First record in 1724, but not recognised in the South Downs stronghold until 1966. A critical species, poorly separated in Europe, where it was also recorded late with its population centre to the south of our area. Most populations adjacent to agricultural land.	
Rhinanthus minor subsp. *minor*			Yes	Insufficient mapping data.	
Rhinanthus minor subsp. *stenophyllus*			Yes	Insufficient mapping data.	
Rumex acetosa subsp. *biformis*			Yes	Insufficient mapping data.	Holyoak in Rich & Jermy, 1998.
Sedum telephium subsp. *fabaria*	Yes		Yes	More work required, insufficient mapping data.	
Sedum telephium subsp. *telephium*	Yes		Yes	More work required, insufficient mapping data.	
Senecio eboracensis				Described as a newly evolved species after the publication of the *New Atlas*. It was agreed to apply a '25 year rule' to newly evolved species, such that conservation status is only given after that time.	
Serapias parviflora		Yes		May be native or alien. If it is native, then it is certainly a new arrival. It was agreed that newly arrived species should be present for 25 years before a conservation status would be given.	Murphy, 1994; French *et al.* (1999).
Sparganium erectum subsp. *erectum*			Yes	Insufficient mapping data.	
Sparganium erectum subsp. *microcarpum*			Yes	Insufficient mapping data.	

Taxon name	Taxonomic studies required	Studies of native or archaeophyte status required	Further mapping data required for analysis	Reasons for appearing on the Waiting List	References
Sparganium erectum subsp. *neglectum*			Yes	Insufficient mapping data.	
Sparganium erectum subsp. *oocarpum*			Yes	Insufficient mapping data.	
Stachys alpina		Yes		First record in 1897 is late if it were supposed to be native. However, its population dynamics show short-lived appearances after long periods of dormancy, meaning that it could have been missed. In Europe it reaches Belgium and northern France, so its occurrence in the UK as a native plant is not implausible.	
Symphytum officinale subsp. *bohemicum*	Yes		Yes	More work required, insufficient mapping data.	
Symphytum officinale subsp. *officinale*	Yes		Yes	More work required, insufficient mapping data.	
Teucrium chamaedrys		Yes		A declining though persistent garden escape, with one possibly native and morphologically distinct population in coastal downland turf. This population was first detected in 1945, and its status requires clarification.	Rose, 1988.
Thalictrum minus subsp. *arenarium*	Yes		Yes	Recognised as a subspecies in *Flora Nordica*. More work required, insufficient mapping data.	Jonsell, 2000.
Ulmus glabra subsp. *glabra*	Yes		Yes	More work required, insufficient mapping data.	
Ulmus glabra subsp. *montana*	Yes		Yes	More work required, insufficient mapping data.	
Urtica dioica subsp. *galeopsifolia*	Yes		Yes	Taxonomic work ongoing. Some cytological and morphological distinctions, but unclear how well these correlate.	Geltman, 1992.
Veronica spicata subsp. *hybrida*	Yes			More work required.	Pigott & Walters, 1954.
Veronica spicata subsp. *spicata*	Yes			More work required.	

Taxon name	Taxonomic studies required	Studies of native or archaeophyte status required	Further mapping data required for analysis	Reasons for appearing on the Waiting List	References
Vulpia unilateralis		Yes		First recorded in 1903, very late if supposed to be a native species, but it is extremely inconspicuous. Habitats are either artificial or disturbed semi-natural calcicolous grassland. On the continent it reaches north to Belgium and France, suggesting that the UK distribution is plausibly native. More ecological and historical research required.	
Zannichellia palustris subsp. *palustris*	Yes		Yes	More work required, insufficient mapping data.	
Zannichellia palustris subsp. *pedicellata*	Yes		Yes	More work required, insufficient mapping data.	

8.3 Parking list

Taxon name	Reasons for appearing in the Parking List	References
Allium ampeloprasum var. *babingtonii*	Almost all authors agree that this is a variety and not a subspecies.	
Allium schoenoprasum subsp. *sibiricum*	The British plant sometimes described as this subspecies has distinctly flexuous leaves, but is apparently different from the true continental subspecies. Its status is uncertain, but it is definitely below the subspecies rank.	
Althaea hirsuta	A species of disturbed (heavily grazed) semi-natural grassland and arable habitats. First recorded in 1792, a late date for a conspicuous plant if it were presumed to be either an archaeophyte or native. It is well-established on summer-droughted soils, but the ecology and European range support a neophyte listing. No fossil evidence exists.	
Anisantha madritensis	A weedy species naturalised in the Americas, Australia and elsewhere. Ellis regarded it as a colonist from England into S. Wales. The Avon Gorge plants are more plausible as native, but are more likely to represent an early introduction, in view of the commercial importance of the area and the subsequent spread.	Ellis, 1983
Anthyllis vulneraria subsp. *corbierei*	The hair characters used to distinguish this subspecies are unreliable, and it is now considered as being within the variation of subspecies *vulneraria*.	Akeroyd in Rich & Jermy, 1998; Rich, 2001.
Athyrium flexile	Not genetically distinct from *A. distentifolium*.	McHaffie, 2001.
Botrychium matricariifolium	The only specimen in BM herbarium appears to be an abnormal *B. lunaria*, and its provenance is dubious.	F. Rumsey, pers. comm.
Bupleurum falcatum	Known to be grown in gardens, and hence potentially a garden escape. It was first recorded in 1831, which would be a late date for a presumed native plant. However, its range includes N.E. France and Belgium, and hence a British range would not be unlikely.	

Taxon name	Reasons for appearing in the Parking List	References
Cerastium brachypetalum	First recorded in 1947, an extremely late first record if it were an archaeophyte or native taxon. Its current sites are on or close to railway tracks, indicating a likely mechanism for its spread, if not its arrival. It is an annual of open ground, although it is known from semi-natural grassland at one site where some have argued that it might be native.	
Dactylorhiza fuchsii subsp. *okellyi*	Only of varietal status.	Bateman (In press)
Dactylorhiza lapponica	Included within *D. traunsteinerioides*.	Bateman (In press)
Dactylorhiza majalis	Plants which were formerly assigned to this species in the UK have now been redetermined.	Bateman (In press)
Dactylorhiza majalis subsp. *scotica*	A synonym of *D. purpurella*.	Bateman (In press)
Dactylorhiza purpurella subsp. *majaliformis*	Only of varietal status.	Bateman (In press)
Dactylorhiza traunsteineri	The true *D. traunsteineri* is a continental species. In the UK, this is a synonym of *D. traunsteinerioides*.	Bateman (In press)
Echium plantagineum	This is classified as an archaeophyte in the *New Atlas*, due to its early occurrence as an arable weed in the Channel Islands. However, it was not recorded in either Cornwall or the Isles of Scilly until the 19th century, making it more likely to be a neophyte in Great Britain. A late discovery date is unlikely for such a conspicuous plant.	
Epipactis youngiana	Self-pollinating forms of *E. helleborine* have evolved on multiple occasions to produce '*E. youngiana*'. Populations of '*youngiana*' are more similar to nearby populations of *E. helleborine* than to other populations of '*youngiana*', showing that it is within the variation of *E. helleborine*.	Harris & Abbott, 1997; Hollingsworth & Squirrell unpublished data.
Gnaphalium luteoalbum	Included in the New Atlas as 'native or alien'. Evidence for native status comes partly from the early date of discovery (1690), but this was on the Channel Islands, not in Great Britain. The first record in Great Britain was in 1882, suggesting it is more likely a recent introduction here. A widespread weed in other parts of the world.	Gurney, 2004.
Nymphaea alba subsp. *alba*	Frequent intermediates exist between the subspecies, and they are probably not worth recognising.	
Nymphaea alba subsp. *occidentalis*	Frequent intermediates exist between the subspecies, and they are probably not worth recognising.	

Taxon name	Reasons for appearing in the Parking List	References
Pinus sylvestris subsp. *scotica*	Complex clinal variation exists, and it is therefore probably not a subspecies. However, the plants previously referred to this taxon have effectively been analysed, since they are equivalent to the native records of *P. sylvestris*.	
Prunella laciniata	A very late first record (1886) suggests a recent introduction rather than a native species. It does occur in semi-natural grassland, and is found as a presumed native in Belgium, so a native range extending to Great Britain would not be inconceivable.	
Pteridium aquilinum subsp. *latiusculum*	True subsp. *latiusculum* only occurs in N. America.	Thomson, 2004.
Ranunculus acris subsp. *borealis*	Both Stace's Flora and *Flora Nordica* consider the *R. acris* subspecies to be only of varietal status. Stace equates subsp. *borealis* with var. *pumilus*.	Stace, 1997; Jonsell, 2000.
Ranunculus acris subsp. *pumilus*	Both Stace's Flora and *Flora Nordica* consider the *R. acris* subspecies to be only of varietal status.	Stace, 1997; Jonsell, 2000.
Rumex acetosella subsp. *tenuifolius*	Stace and Akeroyd consider this to be only of varietal status. It is given subspecies status in *Flora Nordica*, where it is considered that more work is needed to be done on the species.	Akeroyd in Tutin *et al.*, 1993; Stace, 1997, Jonsell, 2000.
Sagina boydii	DNA evidence suggests that this is only a form of *S. procumbens*.	Rich, pers. comm.
Schoenoplectus pungens	First collected at Ainsdale in 1909, where it is almost certainly an introduction. It may be native in the Channel Islands, but this is outside Great Britain.	Smith, 2005.
Spergularia bocconei	First recorded in 1901. Only habitat in weedy areas, and few if any long-persistent populations.	
Tetragonolobus maritimus	First recorded in 1875, a late first record for a conspicuous plant if it were to be presumed native. Previously cultivated. Presumed native records, however, in N. France have led some to argue that it might be native in Great Britain.	
Teucrium botrys	An invasive weedy species in cultivation. Cultivated from 1633, but not recorded in the wild until 1844.	
Tordylium maximum	Always a rare casual, except in Essex where populations persisted in open sites. Not native in N. France.	
Trifolium fragiferum subsp. *bonannii*	Much of the variation is said to be phenotypic. May not occur in Great Britain.	

Taxon name	Reasons for appearing in the Parking List	References
Trifolium fragiferum subsp. *fragiferum*	This is equivalent to the species if it is assumed that subsp. *bonannii* is not a good subspecies in Great Britain.	
Ulmus minor subsp. *angustifolia*	The *U. minor* subspecies represent clones rather than subspecies.	Coleman, *et al.*, 2000.
Ulmus minor subsp. *minor*	The *U. minor* subspecies represent clones rather than subspecies.	Coleman, *et al.*, 2000.
Ulmus plotii	This also represents a clone within *U. minor*.	Coleman, *et al.*, 2000.
Verbascum virgatum	A Mediterranean species, which is an alien in N. France. First record in Great Britain in 1787. Mostly casual records, so almost certainly a neophyte.	
Zostera angustifolia	Synonym of *Z. marina*.	

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