‘Far from any house’ – assessing the status of doubtfully native species in the flora of the British Isles

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ABSTRACT

The question of the native or alien status of British and Irish plants was a popular subject in Victorian times, but little serious work has been undertaken for a century; instead species have been looked at individually. A recent paper has dealt with archaeophytes; this deals with neophytes, those alien plants arriving after 1500. The advances in detailed distribution mapping (by grid squares) both in the British Isles and in much of N. Europe, the new research available in the fields of archaeobotany and in the interpretation of the nomenclature of early gardening works, both in medieval times and up to 1800, now allow a broader view to be taken. This can often be coupled with recent European work on alien and native status and on archaeophytes. It is suggested that a range of criteria are examined for each species, and although it is unlikely that any single one will give an answer, if several point in the same direction then a decision based on the probability is possible. The ten criteria used are: first date into cultivation; first date found in the wild; presence in semi-natural habitats; spatial distribution in Britain; trends in frequency; persistence; use; European range; archaeological evidence; genetic diversity. A range of species, all except one treated as alien or native or alien in the *New Atlas of the British & Irish Flora*, is examined illustrating the use of those criteria. Conservation considerations are discussed.

KEYWORDS: Alien species; neophytes; European work; archaeobotany; medieval gardening; criteria; conservation considerations.

INTRODUCTION

The question of the status of British plants, whether a species is native or alien in the country as a whole, or whether it is native in one area but not in another, is bedevilled with uncertainty and optimism, especially the latter. The position in Ireland is usually, but not always, clearer. A recurring theme in very many County Floras is the sentiment that distance from habitation over-rules all other considerations, including common sense. Whilst we were assembling the data from the recent *New Atlas of the British & Irish Flora* (Preston, Pearman & Dines 2002) it became apparent that for many species there was considerable divergence over views on their nativeness, even within the last 50 years, and that there had been no rigorous investigation, covering the whole of the flora, for well over a century, let alone any attempt to apply the same criteria to all the species in question.

We therefore prepared a list of about 300 species (about 20% of the possibly native flora) where we felt there were questions to be raised over their origin, omitting many species whose status as aliens has never been questioned. We were inspired by the seminal paper by Webb (1985), where, briefly, he discussed eight criteria that could be used to produce a more objective assessment of native status than that currently used, and where he suggested examples of native species possibly requiring reconsideration. We subsequently used all those criteria except that on reproductive pattern, together with three others that we considered relevant.

We analysed our list of 300 against the assignment of “nativeness” in the post-war standard floras and checklists, none of whom gave other than the most cursory reasons for their decisions. In fact there has been no comprehensive study work since the earlier work on the origins of plants by Watson (1832, 1847–1859, 1870) and Dunn (1905), and none at all that takes into account recent developments that might be relevant in the world of horticulture and archaeology, or even of advances in mapping in Europe other than on a very few individual species.

Our work was stimulated by the need to provide sound assessments for a complication which researchers did not have to face until comparatively recently, namely the fixation of the conservation industry with “nativeness”; that is the unwillingness to conserve something that might be “alien”, and therefore the pressure on commentators to label as native those plants that conservationists want to conserve or for which they have established S.S.S.I.s.

We felt then that whilst it is difficult or even impossible to attain certainty in the field of origin, the issues were best served by setting out as many of the facts and dealing with as many of the facets as we could, and making a judgement based on all of those, and in repeating this same process, using the same criteria, for all the species in question. Obviously some criteria might be more important than others, not only as a generality, but for particular species, but that would only become clear in discussion.

On this basis about 150 of these 300 species qualified as archaeophytes (that is plants which were brought to Britain by man, intentionally or unintentionally, and became naturalized there between the start of the Neolithic period [c.4000 BC], and AD 1500), and these are dealt with in Preston, Pearman & Hall (2004), where we set out instances from as many archaeo-botanical, horticultural and phytogeographical sources as we could.

Of the remaining 150 we decided, again using as many criteria as possible,

I. that 74 were neophytes (that is, species brought by man after 1500) or almost certainly so
II. that another 44 were probably neophytes, though there were enough uncertainties to categorize them as either native or alien, and
III. that the rest, though we had doubts over many, were left as natives in the hope that further work would assist in forming a more definite view.

We are pleased that the conservation agencies have decided (Cheffings & Farrell 2005) that all the archaeophytes and all the species that we categorised as native or alien are to be treated as "honorary" natives for conservation purposes.

In this paper I attempt to show the criteria that we used in coming to these decisions, supplemented by other sources which we have become aware of since 2000, especially from studies in Europe on alien species (based on ecological work to predict invasiveness) which introduce views on status there which are very often at odds with those given in standard floras.

PREVIOUS TREATMENTS OF STATUS IN BRITAIN

The knowledge of the total number of species in the British and Irish native flora grew steadily from the 16th century and was almost complete (over 90%, excluding critical species) by the mid 19th century. Interest in the origins of this "native" flora arose in a more piecemeal way, and is well covered in Preston (2002). There was certainly understanding of the difference between the wild and the cultivated flora in the works of Turner and some, but rather less, in Gerard, Goodyer, Tradescent, Parkinson and Ray, up to 1700, and in Martyn, Withering and Hudson in the eighteenth century. These authors reported a plant was in the wild with only rare comments on whether they thought it might be other than a native plant, together with some cases of deliberate or accidental introductions.

But Smith (1800–1804, 1828), both in his own works and in conjunction with Sowerby in their illustrated *English Botany* (Smith & Sowerby 1790–1814), complicated the study of nativeness by admitting into those works (possibly because they were suitable subjects for illustration) a host of species that were little more than garden escapes and even deliberate plantings or errors. Despite not putting forward any rigorous evidence he had a considerable and lasting influence on his contemporaries. For instance the distinguished Henry Aiton, in his first edition of the plants cultivated at Kew (Aiton 1789), gave the origin of many plants we now call alien as from overseas, with details of who had introduced them and often the date of this. But by the second edition (Aiton 1810–1813), that is after Smith's first works, he had altered the country of origin to "Britain", and this was followed by the all the subsequent enumerators of plants grown in Britain (Loudon, Sweet, Paxton *et al.*). In Druce's paper on the *Extinct and Dubious Plants of Britain* (1919) over 50 of the 147 species covered had their origin in Smith & Sowerby.

An example of the text in Smith & Sowerby is too apposite to omit in this paper. Having discussed *Leucojum aestivum*, which a lady from Suffolk described as a troublesome weed in old pastures that had never been broken up, he passes to Fritillary, where he writes "If we can allow the *Leucojum* a place in a work on British plants we cannot hesitate about the *Fritillaria*, which although not noticed by Ray or Dillenius, is very common in parts of Middlesex, as well as Suffolk and other counties. Mrs Cobbald sent it from Little Stoneham (Suffolk) with *Leucojum aestivum*, *Ornithogalum umbellatum* and *Colchicum*". None of these is in a native site, other than possibly the *Colchicum*! Again and again the

species in question is described as "far from any house", "not the slightest doubt of its being indigenous" or "the situation seems to preclude the idea of an escape from gardens" and the like.

It was not until Watson, in the second quarter of the nineteenth century, that there was any serious attempt to stand back and consider whether there was any evidence on the likely origin of particular species in the British flora. Only four years after the publication of Smith's *English Flora*, Watson began this process of more critically assessing the origin of species, in his *Outlines of the Geographical Distribution of British Plants* (Watson 1832), a process elaborated and refined in his major work, *Cybele Britannica* (Watson 1847–1859). Here he divided alien species into three categories, using the following names for them:

Alien: "now more or less established, but either presumed or certainly known to have been originally introduced from other countries".
Denizen: "at present maintaining its habitats, as if a native, without the aid of man, yet liable to some suspicion of having been originally introduced".
Colonist: "a weed of cultivated land or about houses, and seldom found except in places where the ground has been adapted for its production by the operations of man".

In his *Compendium* (Watson 1870) he later added a fourth category,

Casual, for "chance stragglers .... such alien species as are uncertain in place or persistence".

The subject, and its principle relevance to the treatment of archaeophytes, is discussed in more detail in Preston *et al.* (2004).

His treatment of neophytes was much simpler. Of the 74 species selected by us from our list as neophytes, Watson covered 48, and of these he categorised only four as native without any caveats. Of the 44 species we selected as native or alien, he covered 34, and called 17 native with no caveats.

Watson's work was followed in virtually every county flora and national check-list for the next 100 years, including Druce's check-lists (1908, 1928) and his *Comital Flora* (1932). Certainly there were local exceptions and special pleadings, but the general framework was either accepted or deferred to. The problem, which affects too many local flora writers, is the lack of experience of the flora of Britain and Ireland as a whole, a problem we found still endemic when preparing the *New Atlas* (Preston *et al.* 2002) where adjacent counties assigned different statuses to the same species. Watson, and later Druce, by looking at the flora as a whole, was able to see the inconsistencies and comment on them.

Another work of that period was that of Dunn (1905) on the alien flora of Britain, where he covered in short accounts all the species that he considered alien. He dealt with 924 species, together with a further 170 that he had some doubts over, but accepted as probably native. In his book he described the habitat, mentioned the first date in the wild if he thought it relevant and discussed the wider distribution. His introduction covers many of the points covered in Preston *et al.* (2004) and is still relevant. He suggests that "it is a general experience, and one that is to be expected, that two areas inhabited by a given native species are seldom known to be separated by a large tract of similar, and apparently suitable ground, devoid of that species". He qualifies this by agreeing that it was not impossible that such a gap might occur in the truly native range, for instance as a consequence of approaching extinction, but recounts the study of geographical distribution to shed light on these conundrums – an approach we tried to bring together in the *New Atlas* (Preston *et al.* 2002). Dunn's work, other than in the context of the general acceptance of Watson's works, received little attention at the time, though advances in the studies covered by my criteria have largely supported his conclusions.

Watson's position held sway until after World War II and Lousley (1953), in a review of the classification of alien plants, espoused his main points with only minor modifications. However, for reasons I cannot really pin down, Watson's system was falling out of favour by then, though a few local floras after 1960 have used it.

It would be difficult to say that Watson's tenets had been replaced by fresh reasoning in the post-war British floras and check-lists, because there is no discussion in any of them of the reasons behind their categorization of statuses, which are limited to "native" or "introduced" with qualifiers. In the *Flora of the British Isles* (Clapham *et al.* 1952) there is only a reference in the glossary, where "introduced" is defined (in the appendix, p. 1521) as plants

"known to have been, or strongly suspected of having been, brought into the British Is. accidentally or intentionally by man within historic times". Later editions (Clapham *et al.* 1962, 1987) modify the status of some of the treatments of individual species, but still shed no light on the reasons. Dandy (1958) gives no explanations, merely mentioning the difficulty of differentiating native and long-established aliens. I cannot find a rationale or explanation in Stace (1991, 1997), though I am fully aware that he not only has a huge personal experience but also many active correspondents. Kent (1992) gives no explanations at all; Clement & Foster (1994) and Ryves, Clement & Foster (1996) treat ancient introductions as native and for other species either deal with them as aliens, or, if in doubt, square bracket the species with the comment "accepted, with reservations, as native". So, whilst it is possible to see there, for instance, that *Pentaglottis sempervirens* is treated as a native or an ancient introduction, it is not possible to see why.

I have also consulted Reynolds (2002) for the treatment of Ireland. Every plant on our draft list of neophytes and of native or alien was treated by her as alien in Ireland other than three instances where, in following the Irish Census Catalogue, the status in Ireland was not further questioned by her.

It is not altogether surprising that the above dealt so summarily with aliens or doubtful aliens as their works were all fulfilling many other purposes and status was only one, and a mixed one at that. But the real point is that I cannot trace any attempt since Watson and Dunn to examine a range of species, using as many criteria as possible, and to present that information, and this is the purpose of this paper.

CRITERIA USED AND THEIR RELEVANCE

1. FIRST DATE IN CULTIVATION

The main sources of summarised information are Aiton (1810–1813) and Loudon (1855). The second is later but omits the invaluable details on sources contained in the former. Elucidation of early sources (Turner and his predecessors, Gerard *et al.*) usually but not always contained in Aiton and Loudon, has been made much clearer by the recent works of John Harvey and his colleagues, covering both interpretation of nomenclature and previously unknown or inaccessible works. More background is contained in the introductory chapter in Preston *et al.* (2002).

Work on species introduced since Loudon has been hampered by the fact that nothing comprehensive has been attempted since his last edition, possibly because there were so many, so information has had to have been assembled from a great variety of sources. The other most significant missing link in our researches is the history of grass seed and fodder crop introductions, together with the impurities that these might have brought with them (see Rich & Karran 2003) for a rare illustration).

I consider that a date in cultivation for a species that is considerably earlier than the first date for the wild is very relevant for garden species. (e.g. *Aconitum napellus, Allium sphaerocephalum, Daphne mezereum, Fritillaria meleagris, Galanthus nivalis*) but, of course, is less relevant for a species that might have been grown for curiosity but never entered mainstream gardening (e.g. *Linaria supina, Hypericum canadense, Serapias lingua)*. Note, as discussed earlier, that once a species was shown, particularly by Smith & Sowerby, as native in Britain, then Aiton, Loudon and others no longer showed its source and introduction date.

2. FIRST DATE IN THE WILD

The information to support the first dates of discovery comes principally from Clarke (1900), Dunn (1905) and Druce (1932), and as we said in the *New Atlas*, we regard the first two as more reliable than the last. More background is contained in the introductory chapter in Preston *et al.* (2002). As with work on introductions into cultivation, so any research on first dates in the wild has similarly lapsed, with virtually no work taking place in the last 70 years, despite the increased interest in alien plants generally. Since the *New Atlas* further work has seen the emendation of about 15% of the dates given there, but little further herbarium work, which is potentially the main remaining source of better data, has been undertaken.

For species other than those that are critical or really insignificant, I consider the first date in the wild as of very great importance, in helping to assess possible arrival dates, particularly in well-worked areas of British Isles. Of the 74 species in our initial selection that we decided were probably neophytes, 44 had first dates in the wild in the 19th and 20th centuries, with a further 19 in the 18th century, mostly after 1750.

3. PRESENCE IN SEMI-NATURAL HABITATS AND IN PLANT COMMUNITIES

We collected information for these for the paper on archaeophytes (Preston *et al.* 2004), but because the species covered by this paper are such an eclectic mix compared with those we selected as archaeophytes their occurrence or not in semi-natural habitats is of less relevance, and probably of more importance for the non-garden and annual plants. Nonetheless, there must be a reasonable hypothesis to suggest how species have survived from their arrival in the British Isles (usually earlier in post-glacial times) and this is often very difficult for species in man-made habitats. Thus if a plant grows only in man-made habitats it is likely to be alien.

In each case Rodwell (1991–2000) has been consulted for the habitats of species, and has been supplemented by the information in Hill, Preston & Roy (2004), from county floras and by personal knowledge. It would be no surprise that many of the species illustrated in the following case studies did not appear in Rodwell, as almost all are rare.

4. SPATIAL COHERENCE IN BRITAIN AND IRELAND

This is an interpretation of the actual range in Britain and Ireland, compared with the available habitat. Thus *Stachys alpina*, restricted to two copses when it could occur anywhere, has no coherence whatsoever, and *Galanthus nivalis*, omnipresent, has. In itself, of course, a limited range, when there is plenty of other suitable habitat, is not conclusive to a decision on alien status or not, but it is indicative. Where a species, such as *Euphorbia serrulata*, has a core "native" range and other more scattered records elsewhere, only that alleged "native" range is taken into account.

5. TRENDS IN FREQUENCY (DYNAMISM)

In our original selection we looked also at dynamism in Britain (whether a species was increasing or decreasing, and if so, how fast). Rapid increase is frequently one of the hallmarks of a neophyte, whereas natives and archaeophytes, in general, show slow declines. Furthermore if the environment changes, then the range of natives tend to change too, whereas the range of aliens is changing even if the environment stays the same.

A further subject for research on which some progress has been made in Europe, but as yet little here, is the time-lag between the arrival of an alien plant in cultivation, and its appearance, if it makes that transition, in the wild. Recent work in Germany (Kowarik 1995) (only one of a number of recent papers) gives a surprisingly long time-lag for woody plants, so we might only now being seeing the rapid spread of plants introduced 100 to 200 years ago.

6. PERSISTENCE

This covers whether the recorded sites were long-lasting or ephemeral. As a generalisation many aliens are ephemeral, their presence characterised by a number of different sites, each short-lived.

7. USE

This covers whether the species was grown in gardens, as an herbal or medicinal plant, or as a crop, and thus whether it is more likely that it has escaped into the wild. Of course a native plant may be used by man – there are very many medical and culinary examples – but if there is a use, then there is a better chance of it becoming established in the wild, and, again, this is just one of a range of criteria.

8. EUROPEAN RANGE

Most of our standard floras give distribution in Europe, or in the rest of the world, or both. The information will have been obtained from foreign national floras, and from regional and local floras, and more recently atlases such as Meusel *et al*. (1965, 1978, 1992) and Hultén & Fries (1986), Bolòs & Vigo (1984–2001), and others where the distribution maps have the range shaded could have been used. Whilst this last enables the total range to be seen, it often fails to differentiate between the core range and outliers. Webb (1965) recognised this as a problem, writing that "the elegant loops and curves which we see in so many maps conceal ambiguities and ignorance"!

However since Perring & Walters (1962), and the earlier work by Hultén (1950) a few countries have started to produce grid-based atlases which enable the real distribution to be seen much more clearly, and to better allow us (or more easily than a text can) to evaluate our flora with its distribution elsewhere.

As my survey of these works is new and perforce incomplete, in that either I am still unaware of the existence of data, or, more likely, the data that I consider necessary is not available, this must be considered work-in-progress, but it is of such major assistance to this paper that it will surely be used more and more.

There are recent grid-based Atlases, all at a scale of 10 × 10 km or larger, for Germany (one each for the former West and East) (Haupler & Schonfelder 1988; Benkert *et al*. 1996), for Holland (Mennema *et al.* 1980, 1985; Meijden *et al.* 1989) and an incomplete series (covering about 900 species) for N.E. France, covering an area from Cherbourg in Normandy to the German border, down to Paris, and including Luxemburg, most of Belgium and much of Holland (Institut Floristique Franco-Belge 1978–2001). There is also available a volume of maps for the Breton department of Finistaire (Hardy 2002), useful for Atlantic species.

Atlas Florae Europaeae (Jalas *et al*. 1972–1994, 1996, 1999) covers all species in Vol. 1 in *Flora Europaea* (roughly, up to *Saxifragaceae*) and the latest (Kurtto *et al.* 2004) volume starts the Rosaceae. These are, of course, invaluable, but since they are at the scale of 50 × 50 km, show less detail than the country atlases listed above.

A further source of research, which is sometimes not available from the sources cited above, is information on how European national and regional floras describe the status of our flora in their countries. Often of course, their statements have been as vacillatory as ours, and though, again, I feel that I have barely explored this subject, I have been able to consult interesting lists for countries which, like ours, could well be at the edge of the range of Mediterranean species. In particular, I have used the recent checklists for Germany (FloraWeb – http:/ice.zadi.de/floraweb), for Poland (Mirèk *et al.* 1995) and the Czech Republic (Pyšek *et al.* 2002). This whole subject, linked to work exploring and predicting the ecology of plant invasions, is developing apace, and Pysak *et al.* (2002) make the interesting point of the "remarkable difference they found between the data drawn from the standard floras and (that from) checklists commenting on species immigration status and studies focussing specifically on alien plants". In other words a study of work in other countries is often essential to a better understanding of the origin of our own flora, in the same way as a national Atlas might see a broader picture than a county Flora.

9. ARCHAEOLOGICAL EVIDENCE

Of major importance in the paper on archaeophytes (Preston *et al.* 2004) was the information available on archaeological evidence, almost all of it gathered in the last 30 years. For neophytes the evidence is, not surprisingly, almost entirely absent. Of all the species investigated for this paper the only evidence found was for the currants, *Ribes nigrum* and *R. uva-crispa*, where post-Norman remains were identified.

10. GENETICS

There has been relatively little relevant work here. Nevertheless there has been research on *Draba aizoides* (John 1992) which seemed to support its claim to nativeness and for *Leucojum aestivum* where David Coombe was able do demonstrate differences between the native and alien subspecies (FitzGerald, in Gillam 1993).

CASE STUDIES

For our work for the *New Atlas* (Preston *et al.* 2002) we looked at all the criteria for each species before coming to a decision, using a "score" by which we decided the probable status of each. A spreadsheet, showing all the species we covered in the categories that I have described (neophyte, native or alien and others) and using the criteria outlined above, is available from the author. Rather than produce that very large table it seems more appropriate to try and give a selection of examples to illustrate the use of the criteria.

Each study is prefaced by a heading and condensed paragraph setting out the information available on the relevant criteria, though the information on the European distribution is dealt with in the main text that follows. In this paragraph "NVC" refers to the information in Rodwell (1991–2000); "Watson" to Watson (1847–1859, 1870), "Dunn" to Dunn (1905), "Stace" to Stace (1991), "Kent" to Kent (1992), "Clement & Foster" to Clement & Foster (1994), "*Fl Europaea*" to Tutin *et al.* (1968–1980, 1993), and "VCCC" to Stace *et al.* (2003).

A garden plant, long cultivated here, but with late first records, and uncertain native range

EUPHORBIA CYPARISSIAS

In cultivation by 1640, first record in wild 1796 (Earl of Stamford's woods at Enville, Staffs). It is not included in the NVC and is invariably a species of open ground. The records are very scattered; it is increasing, and it is persistent in its sites. It is grown as a garden plant. It was

treated by Watson as alien, and by Dunn as native. The treatment in recent floras has varied, with some showing as native, some alien, and *Fl Europaea* and the VCCC as alien.

This species is frequent in continental Europe, up to, but not within 20 miles of, the Channel coast, so a first glance at a world distribution map would not arouse many doubts on nativeness, though Mennema *et al.* (1980) say it has been extending northwards for some centuries. Yet a combination of all the above criteria points decisively against this. Even Dunn's decision is not what it appears. He says… "not, the only natural locality is on the downs near Dover" (Dunn 1905). Yet this is presumably based on the entry in the Flora of Kent (Hanbury & Marshall 1899) which actually says … "perhaps native in one station…..chalky hill-slope near Dover. ..it may be indigenous here; the continental distribution of the species rather favours this view." Druce (1908) considered it an alien and Clement & Foster (1994) report, *inter alia*, that it was formerly brought in with racehorses.

It is a very persistent garden plant, spreading through its rhizomes on light soils.
Decision: alien (neophyte).

A garden plant, long cultivated here, but with late first records, and uncertain native range

FRITILLARIA MELEAGRIS

In cultivation at least by 1597, and possibly by 1578, with first record in wild 1736 (Middlesex, Harefield). NVC MG4, and widely naturalised elsewhere. Spatially it is fairly widespread, but in most sites it has declined though it can multiply quickly given appropriate conditions. A well-known garden plant, treated by Watson as a denizen and not covered in Dunn. All recent floras other than Kent and Stace (1997) have treated it as native, as has *Flora Europaea* and the VCCC.

More has been written about the nativeness or otherwise of this species than any other. The case for was recently summarised in Oswald (1992) and that against by Harvey, the expert on medieval plants (1996), and I refer readers to those papers for the case in full (and in Harvey's case for much more besides – endlessly provoking and utterly fascinating). A summary for nativeness (Oswald) might be:

1. Near-continental distribution makes extension into southern England possible.
2. Late discovery possibly due to very short early flowering time and restricted range.
3. Habitat often waterlogged in winter and not the sort of countryside a 17th century botanist might have felt exploring.
4. A reference in the 17th century naturalist John Aubrey to a plant called 'crow-bells' might represent a very much earlier record.

To these should be added, of course, the fact that many of the sites are first-rate examples of neutral grassland and that aliens are very rare in this habitat.

Harvey's points include:

1. Late date for such a colourful and obvious flower, and a dismissal of any connection with the plant described by Aubrey.
2. Unlikely to have been overlooked by Turner, Gerard, Parkinson, Johnson, Ray, Morison and Dillenius.

Since the publication of those two papers more has come to light regarding the continental distribution. Preston *et al.* (2004) point out that it is treated as native in Poland, but an archaeophyte in Germany, a neophyte in Finland and a casual in the Czech Republic. In Demark, cited by Harvey, it is treated as a neophyte, arriving in 1647, and in Sweden (Zhang 1983) a neophyte, arriving in 1742 or 1743, having been grown in Uppsala Botanic Garden since at least 1658. Here it has spread into flower-rich meadows, behaving like a native if one did not know its source. Finally, it is absent from N.E. France (Institut Floristique Franco-Belge 1978–2001) and in Brittany is found only in the south (des Abbayes *et al.* 1971). So the European distribution militates strongly against it being a native here.

In England the first date in the wild is 1736, from a site where it had been known for "forty years". We have always ignored these feats of memory as being unreliable, but the next wild record I can trace is not until 1776 (Hind 1889), where it was described as abundant in meadows. Then, for the 29 counties where it was mapped as native in the New Atlas (and some of those are very recent discoveries indeed), it was found in another twelve in the next 30 years, ranging from Stafford to Suffolk and down to Dorset, and another nine in the next 25 years. It was not discovered until 1862 in the county possibly most celebrated for its display, Wiltshire, and the Herefordshire and Huntindon "native" sites are both twentieth century finds.

What happened either to account for collective myopia all over southern England, or

to explain why is was discovered in twelve out of 29 supposedly native counties within 30 years? I can offer no explanation. Its propensity to multiply very fast is well-recorded (e.g. Zhang 1983), and Kevin Walker (*in litt*) tells me of his experiences at Portholme in Hunts. At that site there was very little in the years 1925 to 1980, and then a vast increase in the period 1980 to date. It seemed to be helped by winter flooding (spreading the seeds) and by hay cuts (seeds dispersed).

How could it arrive within a very few years other than by repeated introductions?
Decision: alien (neophyte).

A garden plant, long cultivated here, but with late first records, and uncertain native range

RIBES UVA-CRISPA
In cultivation by 1275, first record in wild 1763 (Cambs, though both Babington (1860) and Perring *et al.* (1964) considered it doubtfully native there). In NVC (W8 (*Fraxinus-Acer campestre* woods) but only as a very incidental constituent and elsewhere a species of varied habitats. The records are widespread, increasing (possibly as a result of better recording of aliens), and persistent. It has been grown for centuries and was treated by Watson as a denizen, and by Dunn as a native. All recent floras treat as native, with some doubts in Stace, but the VCCC treats as alien.

There is archaeological evidence from medieval times (1225–1400) (Tomlinson & Hall 1996). Roach (1985) recorded a pale (i.e. green) form arriving from Flanders in 1509. Turner (1548) has it growing only in gardens, though he mentions that in Germany it grows in the fields amongst other bushes. Gerard (1597) describes it as well-established (in gardens) but said it had no name amongst old writers who either knew it not or esteemed it not. Smith & Sowerby (1790–1814) say "nothing can be more difficult than to say whether this plant can be truly a native of Britain. It is so far naturalised as to be common everywhere. Mr Robson finds it plentifully in woods and hedges around Darlington, which may be its native country". Dunn (1905) describes it as common in damp woods in perfectly natural habitats, though undoubtedly alien in many places.

It seeds very easily and as with *R. rubrum*, it might always have existed in a wild and weedy form but if so it is odd that it was ignored by all the early botanists.

Decision: alien (neophyte, though possible archaeophyte).

A species once grown in gardens, and capable of being spread by seeds, long-established in one site seemingly as a component of semi-natural vegetation

LONICERA XYLOSTEUM
In cultivation 1596, first record in wild 1770 (Northumberland, but by 1801 in Sussex, nr Arundel). It is not included in the NVC, but occurs in ancient woodland and hedgerows at one site. Older records particularly were fairly widespread, but these were mainly casual records, and it is only locally persistent. It was formerly grown as a garden plant, but now rarely as more floriferous species have been introduced. Watson decided as probably alien, Dunn as a native. Recent floras and *Fl Europaea* have been equally divided between native and alien status.

It is widely distributed in Europe, principally in higher areas away from the coastal plains, as far north and west as just above Paris, and in Germany up to Hanover. Elsewhere, as in Brittany (des Abbayes *et al.*), it is as a casual or introduction. In Wigginton (1999) much is made of the habitat in species-rich woodland or hedgerows, often near to old trackways, and ancient woodland herbaceous associates are given. In particular the presence of stools of *Tilia platyphyllos* is stressed, and paralleled with similar woods in France.

Webb (1985) singles this species out for special attention under his criteria of "frequency of known naturalization". After pointing out that if a plant claimed to be native in one locality is becoming more and more widely naturalised in similar habitats elsewhere then some reconsideration is called for, he points out that the claim for nativeness in one station near Arundel "can be traced back to a statement by Borrer, published by Smith in 1801, that it was "growing plentifully and certainly wild". But Borrer was only 19 at the time…..Smith admitted at the time that it was frequent in gardens and that he had previously regarded it as an escape……..I cannot believe that the statement of the youthful Borrer, copied uncritically from one book to another, outweighs the mass of evidence in the opposite direction".

It is still in the Arundel site, but the evidence (late discovery, use as garden plant and frequency of introduction elsewhere) sides with

Webb (and Watson before him, whom Webb used but did not acknowledge!).
Decision: alien (neophyte).

A well-known garden plant, with a very late discovery date, with an allegedly native endemic subspecies

ACONITUM NAPELLUS
In cultivation by 1596, first record in wild 1819 (Herefords, "in a truly wild state"). It is not included in the NVC but often forms an integral part of riparian vegetation. Spatially it is limited as a presumed native and its dynamism is confused by escapes; it is very persistent. It has been grown as a garden plant for centuries. Watson treated it as a probable denizen and Dunn as an alien. Recent floras all treat it as a native, possibly influenced by the suggestion of an endemic subspecies.

The taxonomy of this species is complicated. Jalas & Suominen (1972–1994) follow one taxonomist's recent work in showing the British species as a near endemic subspecies, subsp. *napellus*, restricted to western Britain with one outlier in S.W. France. Stace (1997) seems ambivalent. The Brittany flora (des Abbayes *et al.* 1971) shows all records there as adventive. It is clear there is no consensus and that more work is needed to establish whether there actually is any endemic subspecies here.

I have traced no map of the European range, other than a shaded map in Bolòs & Vigo (1984–2001) which shows the species occurring from central and southern France across to Switzerland and northern Spain.

It was grown in Elizabethan times, and it seems inconceivable that, as a native, it was not discovered in the wild until 1819. It has many strong advocates as a native – there is a notable passage in the excellent *Flora of Bristol* (White 1912). It has the appearance of being perfectly wild along shady streams, but all the sites, some long-standing, investigated by the author in Dorset and Somerset turn out to be below gardens, old or current, and pieces of the tuberous rhizomes, washed away by floods, readily establish on open ground downstream. Incidentally White was a strong optimist over plant status – he gave the benefit of doubt to almost every relevant species covered in this paper, including the following.

The very late discovery, coupled with the large gap in the potential native range, seem to outweigh the semi-natural niche that it is now found. The taxonomy still needs to be resolved.
Decision: alien (neophyte). Work needed to clarify the taxonomy.

A species, once grown as a garden plant, with a very late date of discovery and a very odd distribution

STACHYS ALPINA
In cultivation by 1597, first record in wild 1897 (Glos, Wooton-under-Edge). It occurs in woodland and on verges. As a presumed native its distribution is extremely limited, and its dynamism is uncertain, as it is obscured by conservation action; it is persistent given favourable conditions. It has been used as a garden plant, but probably not now, and was not covered by Watson or Dunn. All recent floras describe it as native.

The European distribution is interesting – primarily around the Alps, but with a band across central Germany, Belgium and mid France, with further outliers N.W. of Paris and in S Brittany, though the most recent Belgium flora (Lambinon *et al.* 2004) remarks it is sometimes introduced. It has been closely studied by Kay & John (1995), who report that all the populations are closely related and almost monomorphic, that all the sites have nothing out of the ordinary to explain such a refuge, that it sets seed easily and spreads by this and root division, and that following the discovery of the Gloucester site, where it considerably increased in range following discovery, many botanists grew it in their gardens. As such they feel that it is very unlikely indeed to be a native plant.

Though it does seem to be a garden plant of very little value, it seems totally unlikely that its British distribution should be only three localities, in habitats that are either secondary woodland or ruderal sites. I am amazed its nativeness has not been questioned before!
Decision: alien (neophyte).

A species found in semi-natural grassland, with a coherent European distribution, but a late discovery

PRUNELLA LACINIATA
This was cultivated in 1713, but not found in the wild until 1886 (Glos). It is found in semi-natural grassland. It has been recorded in over 60 10-km squares, mainly in a broad swathe of S England, but is declining. Watson did not cover it, but Dunn treated it as an alien, as have most recent floras, though Stace treats as possibly native.

Hultén & Fries (1986) show a wide swathe of distribution across Europe, reaching N.E. France and southern England, but in fact Institut Floristique Franco-Belge (1978–2001) shows only very scattered records away from Belgium.

There are records of the species being introduced with clover seed (Preston *et al.* 2002), and very many of the remaining sites in England have populations of the hybrid with *P. vulgaris*; in fact this seems to lead to the extinction of *P. laciniata*. (e.g. Morton 1973). This lack of a long-term survival mechanism, coupled with the classic curve of a frequent repeated introduction and almost terminal decline, together with the very late date of discovery, all points conclusively to an introduction.

Decision: alien (neophyte).

A late discovery with no contiguous European range and no real semi-natural habitat

EUPHORBIA SERRULATA

There are no historic details of cultivation, and first record in wild is 1773 (Tintern). It seems to be a species of open disturbed habitats, only growing in woodlands when there is little competition and plenty of light. Its area of presumed nativeness is very restricted indeed and it has little dynamism, decreasing other than as a casual. It is usually persistent in open habitats. It is certainly grown as a garden plant, but possibly only recently. It was treated by Watson as a native in the Wye Valley, it is not included in Dunn, and all recent floras all treat it as native, other than Kent.

Due to past confusion with *E. platycarpos* its history as a garden plant is not recorded. It is a weed species, responding very well to disturbance and light. In garden conditions, both in alkaline Dorset (pH 8·1) and acid Cornwall (pH 4·5) it seeds and spreads prolifically. But it is confined as a presumed native to around 20 historical sites in the Wye Valley, with an increasing number of escapes elsewhere.

I have not found any map of the world distribution, but map floras of West Germany (Haupler & Schonfelder 1988) and N.E. France (Institut Floristique Franco-Belge 1978–2001)) show a central European distribution with no occurrences north the Cologne area in Germany and in France from Lorraine, where it is frequent, westwards, with very scattered records to southern Brittany (Mayenne).

It is supposed to be a calcicole, and its very limited range, absence from anywhere else in Britain and northern Europe, plus its late discovery, justifies the doubt over status.

Decision: alien (neophyte).

A weedy species of open habitats, though with a Mediterranean-Atlantic distribution, and some persistence

LAVATERA CRETICA

In cultivation 1723, with first record in wild 1859 (Surrey, as a grain impurity, but 1873 in Scilly). It is a species of open disturbed ground. Its distribution shows very little spread, little dynamism, but it is persistent in Scilly and the Channel Isles. It has no use, is not covered in Watson, and is treated by Dunn as a casual. All recent floras, other than the VCCC, show it as native.

Its European range is Mediterranean (Bolòs & Vigo 1984–2001), reaching Portugal, with the French records possibly (the map is unclear) confined to the far S.W. and the far N.W. It is rare, sporadic and non-persistent in mainland Cornwall; in Scilly persistent (first discovered in 1873) and restricted to disturbed ground ("waste ground, old quarries, roadsides and bulbfields"). In Jersey it was first recorded as a casual in 1879 (Le Sueur 1984), and was then rare over the next 80 years, and in Guernsey it was found before 1886 (McClintock 1975), and has spread only in the last 50 years.

Lousley (1971) argues that failure to spread in Scilly indicates nativeness but where did it grow before the modern landscape was formed? He further claims that it occurs up the west coast of France in habits similar to those in Scilly, but this is not born out by the Brittany flora (des Abbayes *et al.* 1971) where it is described as a naturalised adventive or occasional casual.

A common Mediterranean weed, but a most unlikely native plant.

Decision: alien (neophyte).

A weedy species of open habitats, though with a Mediterranean-Atlantic distribution

ANISANTHA MADRITENSIS

Not apparently cultivated and first record in wild 1716 (Kent, Sandown Castle, but known in Avon Gorge since 1773). It is a species of open disturbed ground. Fairly widespread, with some dynamism but these are mainly casual records and it is persistent only in two core

areas. Use, none, and treated by Watson as possibly native, with caveats, but by Dunn as an alien. Recent floras are completely contradictory.

A frequent weed in the Mediterranean, and occasional up the west coast of France to southern Brittany; absent from Germany and a casual elsewhere in northern Europe. Perring & Walters (1962) claim "native or long established" in Pembrokeshire and Glamorgan, together with the Avon Gorge, but Ellis (1983) regards it as colonist from England, with all the older records from there being from around ports or ancient buildings. The case for the Avon Gorge is certainly more convincing but is more likely to be an early introduction in view of the European distribution, the commercial importance of area and subsequent spread, a view endorsed by Lovatt (1982).
Decision: alien (neophyte).

A weedy species of open habitats

SPERGULARIA BOCCONEI
There is no record of cultivation; first record in wild 1901 (Cornwall, Par). It is a species of open disturbed ground. Spatially very limited as a presumed native, with little dynamism, declining and not persistent. Use, none, and not covered by Watson or by Dunn. Recent floras have treated it as native, with some doubts, notably in Stace, and the VCCC shows it as alien.

A predominately coastal species, found around the Mediterranean (and eastwards to Iran), and very rare in France (Jalas & Suominen 1972–1994). It is found in the Channel Isles (Guernsey 1912 and Jersey 1906), where it is considered a probable introduction (McClintock 1975; Le Sueur 1984). Its other British sites are mostly at or near ports, where its usual habitat seems to be car parks and in other weedy places; few (any?) of the populations are long-persistent.
Decision: alien (neophyte).

A weedy species of open habitats, with a coherent European distribution

PETRORHAGIA PROLIFERA
In cultivation, no record, first record in wild not known for sure due to confusion with *P. nanteuilii*, but at least by 1840 (Norfolk). It is a species of open disturbed ground. It is only currently recorded from two sites, is declining, though it has been known in its current areas for some time. There is no recorded use, and it was not covered by Watson or Dunn. Of recent floras only Kent calls it native, the rest equivocate.

This species has a coherent European distribution (Jalas & Suominen 1972–1994), reaching the Channel coast, though Lambinon *et al.* (2004) describe it as only in southern Belgium and Lorraine, often introduced elsewhere. Mennema *et al.* (1980) show its habitat in Holland as in dry open sandy places along the great rivers. It is a weed in the southern Hemisphere.

In the area of Norfolk where one of its two British sites occur, it has been known for 160 years, the remaining site is next to a concrete roadway, and, although it is in the adjacent semi-natural grassland, Petch & Swann (1968) described it as a casual there. In its other site in Bedfordshire it is by a sand pit, adjacent to a railway. Akeroyd & Beckett (1995) argue for its native status at these sites, but its late date of discovery (even allowing for confusion with *P. nanteuilii*), its single site with any claim to continuity (out of only two that have even been suggested as native) and its habitat, all have greater weight than the continental distribution.
Decision: alien (neophyte).

A weedy species of open habitats, long-known in Britain, but probably never more than a casual other than in the last century at one site

TORDYLIUM MAXIMUM
There are no records of cultivation but the first record in wild is 1670 (Middlesex, but first in Essex 1875). It is a species of open disturbed ground. Spatially very rare and scattered and declining. It has some persistence, but this is now aided and obscured by conservation intervention. It has no uses, and Watson treated it as alien or denizen and Dunn as alien. All recent floras, including *Fl Europaea* treat it as alien except Clement & Foster, possibly native, and the VCCC, which treats it as native.

Its European range is Mediterranean, reaching across France to Brittany, but not in N.E. France, Belgium or Holland (Bolòs & Vigo (1984–2001). Adams (1999) seems incorrect in stating it is considered native in northern France. Institut Floristique Franco-Belge (1978–2001) show it as a rare casual, with only a very few records, all to the south of Paris. It is also a casual in Holland and Germany.

Smith & Sowerby (1790–1814) give only an old record near Oxford, adding "but having been observed there for above a century, it cannot but be considered as a native". Adams

(1999) postulates that it might be an overlooked native that firmly established itself during (or perhaps before) the climatic optimum of the sixteenth century, and points to its presence with other continental thermophiles such as *Lactuca saligna* and *Vicia bithynica*. However, in Britain this species has always been a rare casual and nothing more, other than in Essex where it has persisted in a number of open sites adjacent to forts and other disturbed areas, though the true position is hopelessly confused by planting and gardening.
Decision: alien (neophyte).

A weedy species with coherent European distribution, but late discovery and habitat suggest a recent arrival

CERASTIUM BRACHYPETALUM

There is no record of cultivation, with the first record in the wild 1947 (Beds). Abroad, it is a species of open disturbed ground. Its distribution is extremely limited as a presumed native, with no dynamism at all, and persistent only with conservation action. It was not covered by Watson or Dunn. Some recent floras, including the VCCC, treat it as native, some as possibly native or probably alien.

This species has a coherent European distribution (Jalas & Suominen 1972–1994), reaching the Channel coast wherever there are calcareous soils, though Lambinon *et al.* (2004) describe it as rare other than in northern Picardy and sometimes occurring as an adventive. In Kent, it occurs also in adjoining semi-natural grassland, albeit in open areas caused by rabbits, but since extensive conservation action has failed to preserve it in such a habitat (T. C. G. Rich, pers comm.), it seems more likely that it has spread from the railway to the grassland, rather than the other way around.

With a first date of discovery as late as 1947, its discovery in a railway cutting in Bedfordshire, its presence in a similar habitat in Kent, together with the fact that in Europe it is described as an annual of open ground, all point overwhelmingly to a recent arrival.
Decision: alien (neophyte).

An example of the distribution being consistent with its European range, with an early date of discovery, but alien status likely

SCROPHULARIA SCORODONIA

There is no record of cultivation, with the first record in the wild 1689 (Jersey, and 1712 in Cornwall, St Ives). It is a species of open disturbed ground. Spatially fairly widespread and very dynamic, spreading fast; its persistence in any one site is not known. It has no recorded use, and Watson treated it as native, but it was not covered in Dunn. Recent floras have all treated it as native.

The distribution in Britain is a quite consistent extension of its Atlantic range (W France, Spain, Portugal, Madeira, Azores, and N.W. Morocco)

In 1950 (Clapham *et al.* 1952) it was confined to Cornwall, Devon and Jersey, and naturalised in Glamorgan. By the *New Atlas* (Preston *et al.* 2002) it had colonised the S Wales coast to Pembrokeshire, with an outlier in Cardigan, reached Dorset (3 sites) with further outliers further east. It is difficult to escape the conclusion that if one looked at its distribution now, in 2006, knowing nothing of the past, it would look like that of a native, spreading from west to east in a coherent pattern, and recent warm years may be playing a part in this spread.

Yet we know it has spread from a few sites, all ports. Davey (1909) gives many sites for Cornwall, though one has the feeling many of these are ruderal; certainly when I moved to Cornwall I was struck by the impression of a fast-colonising weed. The Cornish origin is clearly from a number of loci and even today is concentrated around four ports (see the map in French *et al.* 1999). In Devon it had, before being obscured by later records, an extraordinary clumped distribution around Kingsbridge (Ivemey-Cook 1984).

It is now spreading fast (as an alien might), and appears to have no semi-natural niche, that is, though it is a perennial, it does not occur in perennial closed communities.
Decision: alien (neophyte).

A species in every recent RDB (and protected under the Wildlife and Countryside Act), which is in fact a recent arrival

GNAPHALIUM LUTEOALBUM

In cultivation 1633, first record in wild 1690 (Jersey, but first British 1802, Cambs and first coastal in Norfolk 1882). It is a species of open disturbed ground. Spatially very rare and scattered, previously declining, but now spreading (Clement 2004); it shows little persistence unless it has continual disturbance. Watson treats it as a casual, but Dunn as a native, with caveats. All recent floras treat it as native.

It is found throughout Europe (Hultén & Fries 1986), though the few more detailed maps that I have seen show a very scattered and local distribution (e.g. Haeupler & Schonfelder 1988). In Holland it is colonising new sand-flats on the coast (Mennema *et al.* 1980). It is a widely naturalised in the world, especially in warmer climes (Clement 2004), and its true range is difficult to decide. Britten (1899) sets out the early English records, giving the first as from Cambs, reported by the finder as "indubitably wild [that is, by the conventions of the time, native], in the road, far from any house"!! He covers the now vanished Breckland sites, but does not mention the Norfolk coastal populations, which also were reported as "native, remote from houses, uninfluenced by agricultural operations and out of the track of the ordinary tourist" (Saunders 1899).

There seems little doubt that it is spread by winds and by birds (Clement 2004), and that the seed is persistent, for the current Norfolk sites are in the historic locality, but grow in pits dug in the 1970s and 1980s for natterjacks. There are even more recent records since the *New Atlas*. The fact that this "serious pest" (Clement 2004) might be arriving by means other than by man clouds the issue of native or alien status, though there is no doubt it is a recent and repeated arrival, and is categorically unworthy of special protection.

Decision: alien (neophyte), with some reservations over the mode of arrival.

A cornfield weed, potentially an archaeophyte, but with no evidence yet to support a long sojourn here

MELAMPYRUM ARVENSE

Never in cultivation, first record in wild 1716 (Norfolk, Norwich) It is a weed of arable habitats. Its distribution is rare and scattered, and it is declining dramatically, though this now masked by conservation actions. It is persistent only where it has spread out of its arable habitat into adjoining bare ground. Watson treats it as a casual or a colonist and Dunn as an alien. Recent floras treat it as native, with some reservations in Stace and Clement & Foster.

It is absent from much of western Europe, being frequent in central and southern Germany (Haupler & Schonfelder 1988), and widespread east and south of Paris, with outliers in the lower Seine (Institut Floristique Franco-Belge 1978–2001), but rare further west (des Abbayes 1971). Therefore England stands away from the main range.

For such a showy plant its first date in the wild is late, especially as it was locally reviled for tainting the wheat. Yet elsewhere in England, in Dorset, it was found as a constituent of smoke-blackened thatch dated to the mid-eighteenth century, suggesting a wider distribution. It is treated as an archaeophyte in the Czech Republic, Poland and Finland, and possibly so in Germany.

So there is no question, it seems, as to its status, merely whether it is an archaeophyte or a neophyte, and in the absence of any archaeological evidence and mention in the literature, it seems safer to leave as a neophyte for now.

Decision: alien (neophyte, though possible archaeophyte).

A late discovery of weedy habitats that has been espoused as a native, possibly to justify retrospectively conservation action

FUMARIA REUTERI

Never cultivated, first record in wild 1904 (Cornwall, Penryn). It is a species of open disturbed ground. No coherent range, declining, with persistence only in allotments, where it is aided by conservation action. Not covered by Watson or Dunn, but treated by all recent floras as native.

This species is almost confined to Spain and Portugal, with only one or two records for France, and an historical total of 14 widely scattered sites in England. There is a taxonomic problem here, in that some authorities attribute the English records to the almost endemic subsp. *martinii*, although Lidén (1986), in *Flora Iberica*, treats them as synonyms. It seems to be extinct in Cornwall, and as far as is known it is now found only in the Isle of Wight, but at both of these sites it occurs only in allotments.

Although it is part of a critical and inconspicuous genus, because of this totally artificial habitat and its lack of contiguous distribution, a late arrival is strongly suggested. This may be contrasted with *F. muralis* subsp. *boraei*, one of the group of species that includes *F. bastardii*, *F. capreolata*, *F. occidentalis* and *F. purpurea*. That species also has a late first date in the wild (1860, presumably reflecting the critical nature of the genus), but, like its congeners, has a niche not

only in arable fields, but also in scrub-edge, hedges and vegetated cliffs. In addition it has a coherent distribution from Spain and Portugal, up the west coast of France to Britain and Ireland. This contrasts with the strongly arable habitat of *F. officinalis* and others that we treated as archaeophytes.
Decision: alien (neophyte).

An extinct species, of uncertain status, with a possible very early first record

EUPHORBIA VILLOSA
The only record of cultivation found is 1758, and the first certain record is 1834 (see below), though both Clarke (1900) and Druce (1932) cite a record from 1576 "in sylva D. Ioannis Coates prope Batthoniam". It is a species of woods in Europe, but Bath is the only place in Britain that it was ever recorded from. Watson treated it as an alien or denizen, Dunn did not cover it, and all recent floras treated it as alien.

The European range is easterly and southerly, reaching N.W. France (Clapham *et al.* 1987), and indeed des Abbayes (1971) gives a few records from the far south of Brittany. Meusel (1965–1992) shows the records reaching the Loire in France, and these French records as isolated from the main centre, with no records in Germany or the Low Countries. The British record therefore is far divorced from any others.

I have no idea at all if the species described by Lobel in 1578 was this, though others have so claimed it. Murray (1896) cites a Mr Foster who records that the plant recorded by Lobel was gathered by Thomas Johnson in July 1634. It does not seem to have been recorded or cited by any other author in the next two centuries. However the (re)discovery by Babington, described by him in Smith & Sowerby (1790–1814) is worth citing. He describes it as "in great plenty and luxuriance in a little frequented lane to the west of Prior Park, and also in a coppice wood, far from any house, to the east. I have not the slightest doubt of it being indigenous in both of the above as there is not the least appearance of it having escaped from any garden". It was recorded, gradually diminishing, by many others, until the last record in 1941 (Roe 1981).

The answer must be academic, other than to those who tabulate the extinctions of native plants, but the evidence for native status seems extraordinarily sketchy.
Decision: alien (neophyte).

A species treated as native, though we had reservations which now look more sustainable

SYMPHYTUM TUBEROSUM
In cultivation in 1596, with the first record in wild 1777 (Edinburgh, Water of Leith). It is not included in the NVC but it seems to be a part of woodland vegetation. It is widely distributed, dynamic, increasing fast, and persistent. It is occasionally grown in gardens. Watson treats it as a native, but with caveats re England and part of Scotland; it is not covered in Dunn. Recent floras all treat it as native.

The European picture is very interesting. Meusel (1965–1992) shows its range from northern Spain, across southern France to the Black Sea. The German Atlas (Haeupler & Schonfelder 1988) shows it as present only in the farthest south. It is absent from the Low Countries, and present in France only in the centre and south – elsewhere it occurs as an adventive (e.g. des Abbayes 1971).

Perring & Walters (1962) treated this probably native only in Scotland, and we have followed this, although the recent Atlas (Preston *et al.* 2002) contains so many more records, including many more in Scotland too, though some of these may be due to past under-recording. None of the Scottish floras cover this species in any depth, and I have traced only a reference in Watson (1847–1859) citing Gordon (1839) who doubted its native status. Interestingly a later Flora of Moray (Burgess 1935) also calls it alien there. For Cumbria, Halliday (1997) mapped it as native, but mentioned doubts over native status. For Northumberland Swan (1993) also mapped it as native, with a first date of 1820, but his predecessor (Baker & Tate 1867) did not show any records, nor does Swan list any other records between 1820 and 1893.

In view of this and its rapid and recent spread in England and Wales, the hallmark of an alien species, together with its continued spread in Scotland, it seems very likely to have been an introduction in the mid-seventeenth century, a conclusion echoed in Braithwaite *et al.* (2006).
Decision: alien (neophyte).

A species treated as a native, but about which I now have strong reservations

LIMOSELLA AUSTRALIS
Never cultivated, with a first record in the wild 1897 (Glamorgan, Kenfig). It seems to have a particular niche in upper salt-marshes. Its

distribution is very limited as a presumed native, but it is stable and persistent. It was not covered in Watson or Dunn, and recent floras have all treated it as native.

This species is one of the small group of British species that is not found elsewhere in Europe, though it is widespread elsewhere, particularly in the southern Hemisphere and there is a possibility that its arrival is a recent natural dispersal, or that its presence was overlooked before. It has a very late discovery date, but is very inconspicuous, and appears, in Britain, to be in a finite ecological niche. However Jones (1999) has written persuasively of the possibility of its arrival as a contaminant of ballast, and this seems to me the most likely explanation of its origin, though it does grow with *Eleocharis parvula*, looking just as native, and that species has only been known in Wales since 1980.

Decision: native or alien.

A plant previously considered alien where recent work has indicated a niche in semi-natural vegetation

VALERIANELLA ERIOCARPA

In cultivation 1821, first record in wild 1845 (Worcs, but first in Dorset 1874). Not included in the NVC, but see Pearman & Edwards (2002). Rare, scattered and declining as a casual but stable and confined to chalk and limestone as a presumed native, where it is persistent in open semi-natural vegetation. Use, it is meant to have been one of the species used as "Italian" cornsalad. Watson treated it as a colonist and Dunn as an alien, together with all recent floras.

It has no real continuous distribution away from the Mediterranean, or indeed a home even there. On the other hand we suspect nobody has thought about it, and it has always been a critical species! Watson and Dunn, and indeed the twentieth century floras, would probably have thought of it as another weedy species of open habitats, and not known of its cliff-top sites.

The work by Pearman & Edwards (2002) seems to show that it is a coherent part of the early-flowering cliff-verge calcareous coastal community (as is *Gastridium ventricosum*), occurring in communities CG4a, MC5d and MC11a (Rodwell 1991–2000), and work subsequent to that paper (Pearman & Edwards 2007) adds sites on the limestone in Devon and Caernarvon, in addition to those already described in Dorset and the Isle of Wight.

Decision: native or alien.

DISCUSSION

THE ROLE OF THE NATURE CONSERVATION MOVEMENT

The twentieth century growth of the nature conservation movement has brought developments that would have surprised our earlier botanists, notably the concentration of resources on species perceived to be native. Again this is dealt with in more depth in Preston *et al.* (2004), but the result has been that only species regarded as native or archaeophyte have been included in the current *Red Data List* (Cheffings & Farrell 2005), the recent *Red Data Book* (Wigginton 1999), or designated as nationally scarce (Stewart *et al.* 1994). The BAP list similarly is comprised exclusively of perceived natives, and though the country conservation organisations have now treated archaeophytes as "honorary natives" for conservation purposes, and similarly those species designated as "native or alien" in the new Atlas, this treatment has not been extended to those we designated, often for the first time in a century or more, as neophytes.

Of course resources themselves are scarce, but this, if I may describe it, obsession with native status, which extends in the opposite direction to blaming aliens for many of the ills facing our native flora, is surely misplaced and simplistic. I would like to extend the parameters of species worthy of protection to those species which are an integral part of the mosaic which is being valued and conserved – thus, amongst others, one might preserve *Fritillaria meleagris, Lonicera xylosteum, Salvia pratensis* and perhaps *Teucrium chamaedrys* as being part of a valued semi-natural habitat; *Althaea hirsuta, Anisantha madritensis, Galium parisiense, Holosteum umbellatum, Teucrium botrys* and possibly *Petrorhagia prolifera* as species very persistent in open, species-rich, therophyte communities; *Melampyrum arvense* and *Rhinanthus angustifolius* as part of the cornfield weed mosaic we now value (and possibly potential archaeophytes too). I appreciate this is more subjective than the natives "good", aliens "bad" approach, but I do feel that species that have that cultural resonance, act in harmony with other species that we value in their habitats and have a long association in those sites, could well be included in conservation efforts. This would be all the more possible since almost all conservation efforts are perforce concentrated on the management of the habitat rather than the individual species therein. Furthermore the list would not be long.

Conversely there must be some effort by the conservation movement to absorb new evidence, to review S.S.S.I.s notified for their botanical interest, and amend them if necessary. I see no need, for instance, for S.S.S.I.s for *Equisetum ramosissimum* or *Cerastium brachypetalum* on old railway sites, unless they fit the suggested guidelines above.

A PLEA FOR A MORE HOLISTIC APPROACH

There has, then, been relatively little discussion in the round on the possible status of plants in Britain in the century or more since Watson and Dunn; in fact, other than in Lousley (1953) and Webb (1985), I have been unable to find any substantial work in that period, and neither appears to have had any influence on later writers, though the latter is often cited! National floras since 1950 have tended to take a much more simple approach than Watson, for reasons I cannot pin down, though Preston *et al.* (2004) detect the influence of Godwin's work on the history of the British flora (Godwin 1956); this influence would of course extend to the treatment of archaeophytes rather to neophytes. A further interesting point might be that in Clapham *et al.* (1952 etc), there was, for the first time in well over a century, one acknowledged national flora, which was followed by all of their generation.

Local Floras have often continued to look at the position in their area, rather than stand back and look at the national or even European picture (Halliday (1997) is a notable exception). In these local floras and other papers the role of the optimist was able to flourish. In addition to White (1912) mentioned above, the illustrious names of Marshall (Hanbury & Marshall 1899), and the late Francis Rose head a list of consistent pleaders for native status for favoured species, along with a host of Flora writers. An extreme illustration of optimism comes from Cambridgeshire (Anon 1960), where the finding of a patch of *Aster salignus* [actually *A.novi-belgii*], previously under suspicion as a garden escape at Wicken Fen, at Fowlmere "many yards from the nearest house means that its status must be carefully reconsidered".

As in the concept of Archaeophytes it does not seem, in the main, that British writers have used the slowly-growing corpus of grid-based map floras from Europe and their supporting literature, and have not obviously been aware of both the developments in the world of archaeobotanical research and of interpretation of the names used in medieval gardening (or even that of the 16th, 17th and early 18th centuries), and even of the existence of European works on alien floras that are becoming available.

What case studies there have been have tended to have been restricted to individual species, which may then have been examined not only in isolation to others, but all to often to a limited range of criteria. Inevitable though this might be, it does not seem a fruitful way forward, and that is why, for the *New Atlas*, and therefore as the basis of this paper, we chose to examine a large number of species and to try and apply the same criteria to all.

Of course I appreciate that for many species there can never be certainty, though for neophytes the imponderables must usually be less than for archaeophytes. However an awareness of the sources outlined in this paper must still have more to contribute – witness the case of *Fritillaria*, fairly clear already (to those who were prepared to look), that has become clearer through examination of Scandinavian work and our own county floras.

There must be more work to do in unravelling the history both of species treated here (and in the available spreadsheet) as neophytes and of others not yet fully considered. In alphabetical order I would like to investigate, for instance, *Allium scorodoprasum*, *Crepis foetida*, *Ericas* in Ireland, *Lepidium latifolium* (at least away from the east coast), *Scrophularia umbrosa*, *Sorbus domestica* and *Stachys germanica*. Other species covered in our initial list might well turn out to be archaeophytes if more historical evidence becomes available.

Webb (1985) has the magisterial status that I am sure I lack. I was reading British Wildlife last month, and came across a comment that *Sisyrinchium bermudiana* might well be native in the Wye valley, "remote from any houses" (Peterken & Tyler 2006). It reminded me of Webb's closing comments "The various arguments must be weighed against each another as fairly as possible, and the conclusion adopted which, even if rather improbable, seems less improbable than the alternatives. Who is best qualified to do this weighing? …..Detailed local knowledge is often invaluable, but all too often its value is eroded by local patriotism. There is a curious emotional bias, which I have found very widespread (and from which I may not entirely be free myself) which favours native status for

an attractive plant or for the botanist's home county. For this reason a cool assessment by an outsider may be more reliable." I hope this paper sets the scene of that re-appraisal; what is really needed is a series of case studies on all these contentious species, to enable the criteria for each to be aired and placed in context.

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