

**Axiophytes**

**Andy Amphlett**

## Axiophytes – do we need (yet) another list?

### Threat

**Red List** – Includes all taxa that have been analysed according to IUCN criteria and have been assigned an IUCN category. Assessment at GB or Country scale.

### Distribution (spatial frequency)

**Nationally Rare** 1 – 15 hectads since xxxx

**Nationally Scarce** 16 – 100 hectads since xxx

**VC Rare** 1 – 3 ‘sites’ in a vc since xxxx

**VC Scarce** 4 – 10 ‘sites’ in a vc since xxxx

## Axiophytes –

*'Axiophytes are "worthy plants" - the 40% or so of species that arouse interest and praise from botanists when they are seen. They are **indicators of habitat that is considered important for conservation**, such as ancient woodlands, clear water and species-rich meadows.'*

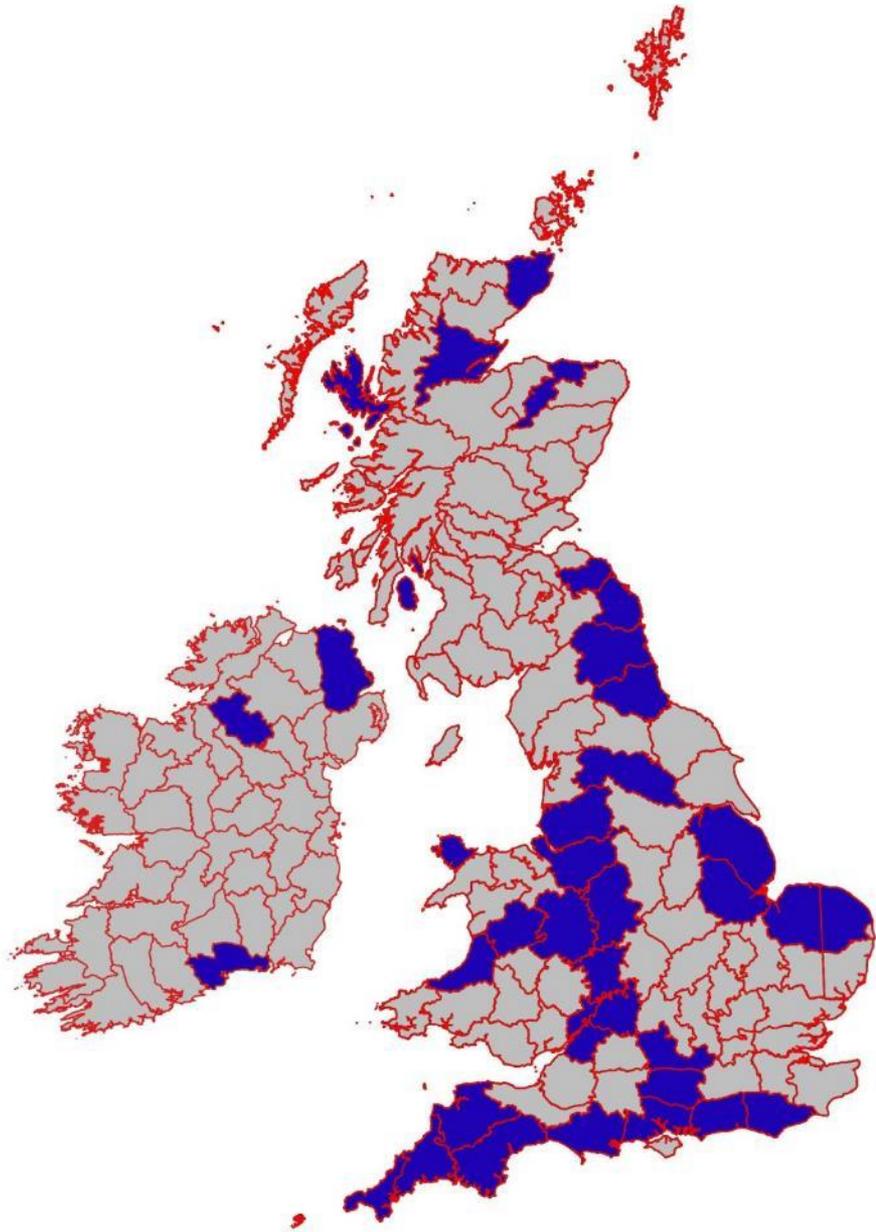
<http://bsbi.org/axiophytes>

## Axiophytes – Resolution of recording

At least at 100 m resolution - i.e. six figure grid reference - for scarcer axiophytes but lower resolutions as appropriate for the more widespread.

Resolution of recording	10 m	100 m	1 km	2 km
Nationally rare & scarce	✓	✓		
UK Priority Species (e.g. Red List, BAP)	✓	✓		
Other threatened (e.g. Welsh Red List)	✓	✓		
County rare & scarce	✓	✓		
Axiophytes	✓	✓	(✓)	(✓)
New county or hectad records	✓	✓		
Refinds of 'extinct' species	✓	✓		
All other species			✓	✓

K.J. Walker, D.A. Pearman, R.W. Ellis, J.W. McIntosh & A. Lockton (2010).  
*Recording the British and Irish flora, 2010-2020.*



## Axiophytes

Vice-counties with axiophyte lists

- No axiophyte list
- Axiophyte list available

Lists available to use in DDb queries via:  
checklist/attributes > Axiophytes

Crawford, C.L. (2009). [Ancient woodland indicator plants in Scotland.](#)

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The concept of ancient woodland indicator species, flora and fauna more associated with ancient woodland than recent (post mid-1800s) woodland, has been used since the 1970s, initially in English regions and spreading to other countries. The subject has been little researched in Scotland therefore surveys or studies here often refer to English lists, which may not represent Scottish conditions. This paper, updating Crawford (2006):

- describes uses for ancient woodland indicator plants in Scotland
- summarises research into ancient woodland plants and compiles resultant lists
- proposes a list of Scottish ancient woodland vascular plants (AWVPs)
- discusses the ecological characteristics of AWVPs
- explains how the Scottish list should be used.

Also see list of Ancient Woodland Indicator Plants (Kirby) in

Rose, F. (2006). *The Wild Flower Key*. 2<sup>nd</sup> Edition.

## Common Standards Monitoring guidance for upland habitats

### Contents

<b>1</b>	<b>Introduction</b> .....
<b>2</b>	<b>Definitions of upland features</b> .....
2.1	Acid grassland (upland).....
2.2	Alkaline fen (upland, excluding alpine flushes) .....
2.3	Alpine dwarf-shrub heath .....
2.4	Alpine flush .....
2.5	Alpine summit communities of moss, sedge and three-leaved rush .....
2.6	Blanket bog and valley bog (upland) .....
2.7	Calaminarian grassland and serpentine heath (upland) .....
2.8	Calcareous grassland (upland) .....
2.9	Calcareous rocky slope.....
2.10	Calcareous scree.....
2.11	Fellfield .....
2.12	Fern-dominated snow-bed .....
2.13	Juniper heath and scrub (upland) .....
2.14	Limestone pavement .....
2.15	Mire grasslands and rush pastures (upland).....
2.16	Montane willow scrub .....
2.17	Moss, dwarf-herb, and grass-dominated snow-bed.....
2.18	Short sedge acidic fen (upland).....
2.19	Siliceous rocky slope.....
2.20	Siliceous scree .....
2.21	Soakway and sump (upland).....
2.22	Spring-head, rill and flush (upland) .....
2.23	Subalpine dry dwarf-shrub heath .....
2.24	Tall herbs (upland) .....
2.25	Transition mire, ladder fen and quaking bog (upland) .....
2.26	Upland habitat assemblage/mosaic of habitats or vegetation types .....
2.27	Wet heath (upland).....
2.28	Yellow saxifrage bank.....

JNCC guidance covers:

Coastal

Freshwater

Lowland grassland

Lowland heathland

Lowland wetland

Upland

Woodland

Guidance is to allow assessment of  
Condition of designated Features.

eg. The Upland habitats guidance  
covers 28 Features.

## **Axiophyte guidelines**

## **Axiophyte guidelines – 1**

Axiophytes are **indicators of habitats that are considered important for conservation.**

The Axiophyte list needs to be representative of these habitats.

Selected taxa should be **largely (about 90%) restricted to these habitats.**

Selected taxa should be reasonably well recorded and straightforward to identify.

## Axiophyte guidelines – 2

Not too rare (it is very hard to tell whether a rarity is really habitat specific or just happens to be in a nice site). Species that have only ever been recorded in one or two sites in a county are often just chance occurrences, and have little ecological (or statistical) significance.

Not too common (recorded in fewer than about 25% of tetrads in the county)

Generally declining, at least historically (with conservation efforts some might increase, and we wouldn't want to strike those off)

Do you agree with these?

## Axiophyte guidelines – 2

Not too rare (it is very hard to tell whether a rarity is really habitat specific or just happens to be in a nice site). Species that have only ever been recorded in one or two sites in a county are often just chance occurrences, and have little ecological (or statistical) significance.

Not too common (recorded in fewer than about 25% of tetrads in the county)

Generally declining, at least historically (with conservation efforts some might increase, and we wouldn't want to strike those off)

Do you agree with these?

I disagree with all of them!

### **Axiophyte guidelines – 3 (Use of axiophyte lists)**

Lists of axiophytes provide a powerful technique for determining conservation priorities.

Sites with many axiophytes are usually (but not always) of greater importance than those with fewer.

Changes in the number of axiophytes in a site over time can be used for monitoring the outcome of management practices.

## Axiophyte guidelines – **Problems**

The main problem with current Axiophyte guidelines is that two unrelated parameters are confounded:

- Axiophytes as **indicators of habitats** that are considered important for conservation (as distinct from their rarity or threat status), and
- Rarity** (ie spatial frequency), by excluding rare and common taxa.

## Axiophyte guidelines – **Problems**

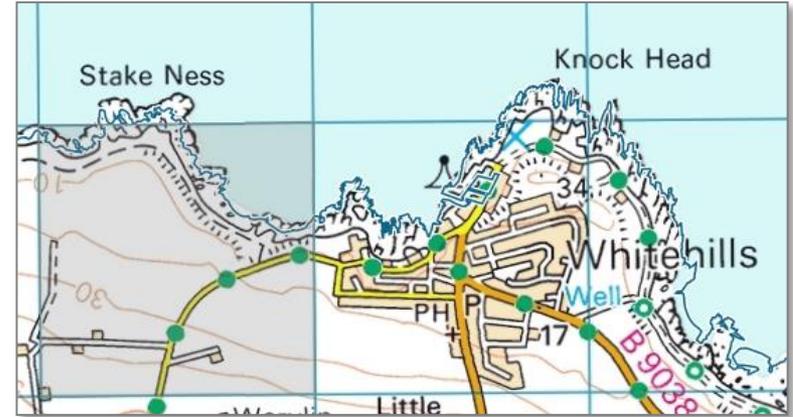
The main problem with current Axiophyte guidelines is that two unrelated parameters are confounded:

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- Rarity** (ie spatial frequency), by excluding rare and common taxa.

“... their constancy in a particular habitat in the wider world may count for more than their frequency in an arbitrary geographical area”. -

<http://www.hantsplants.org.uk/axiointro.php>

## VC Rare & VC Scarce Axiophytes in NJ6465 (vc94) since 1987



*“(Axiophytes) are not the same as rare plants: species that have only ever been recorded in one or two sites in a county are often just chance occurrences, and have little ecological (or statistical) significance.” ???*

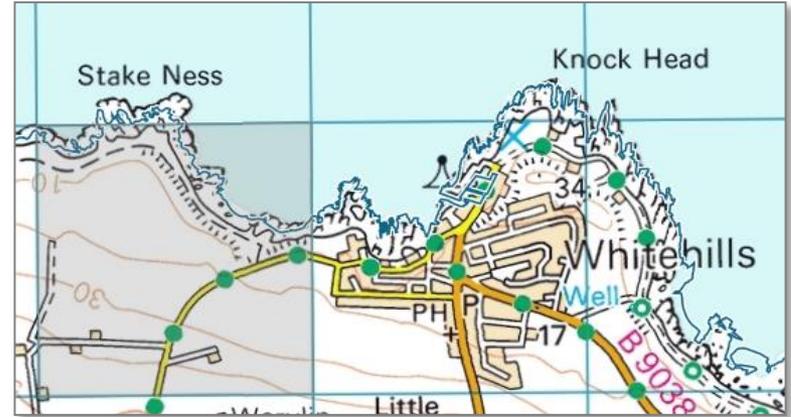
<http://bsbi.org/axiophytes>

species	Tetrads in vc94
Anagallis tenella	1
Schoenus nigricans	2
Carex otrubae	3
Carex extensa	3
Eleocharis uniglumis	3
Potamogeton berchtoldii	3
Puccinellia maritima	3
Oenanthe crocata	3
Blysmus rufus	3
Atriplex glabriuscula	4
Carex distans	5
Mertensia maritima	6
Epilobium parviflorum	6
Triglochin maritima	7
Juncus gerardii	8
Glaux maritima	9
Phragmites australis	9

Almost all of these vc rare and vc scarce species are good indicators of habitats important for conservation

Most widespread Axiophytes in  
NJ6465 (vc94) since 1987

species	Tetrads in vc94
<i>Eriophorum vaginatum</i>	95
<i>Pilosella officinarum</i>	98
<i>Viola palustris</i>	103
<i>Achillea ptarmica</i>	111
<i>Carex panicea</i>	114
<i>Galium verum</i>	126
<i>Erica cinerea</i>	132
<i>Caltha palustris</i>	139
<i>Campanula rotundifolia</i>	142
<i>Succisa pratensis</i>	149



## **Axiophyte guidelines – Suggestions** *(requiring further discussion)*

Draw up your list of Axiophytes by selecting taxa which are:

- **Native** to the vice-county. (Include archaeophytes?)
- **Indicators of habitats that are considered important for conservation**
  - In upland Scotland it may be simpler to just avoid inclusion of those taxa which are >10% associated with other habitats, eg. urban, brown field, secondary, arable etc.
- Selected taxa should be **largely (about 90% or more) restricted to these habitats.**
- Selected taxa should be **reasonably well recorded and straightforward to identify**
  - Avoid inclusion of taxa where known distribution is an artefact of recording bias, eg. *Rubus* microspecies if records only derive from a few visits by experts.
- **Do not** give any weight to rarity / frequency of taxa, or their inclusion (or not) in any other lists.
  - There is always the option to filter the list of archaeophytes, to exclude widespread species etc as required.