Contents

What Does MAVIS Do?

Ellenberg Scores

Biogeographic Elements

Bibliography – Ellenberg Scores

CSR Plant Strategy and Model

CSR Model – Bibliography

The Countryside Vegetation System (CVS)

CVS Vegetation Class Names

Bibliography – Countryside Vegetation System

The National Vegetation Classification

Floristic

Acceptable Data Formats

Numeric Code System Used in MAVIS

User Instructions

Storing Data and Results
What Does MAVIS Do?

Plant species by sample data constitute the basic information used by ecologists, vegetation scientists and nature reserve managers to answer a range of questions about vegetation. These questions are often answered by locating field data within various classifications that attempt to provide an explanatory or descriptive framework for understanding and evaluating the distribution of plant species at different scales. This program enables links to be made between botanical field data and a number of widely used classifications of plant species. The result is a standard description of the entered data in terms of each classification. Because the classifications remain static and only the field data changes clearly many different sorts of plant community can all be expressed in the same standard language allowing comparison from site to site, region to region, biogeographic zone to biogeographic zone.

The classification systems available are as follows:

- Ellenberg scores for Light, Fertility, Wetness and Ph
- Preston and Hill’s (1997) classification of the British Flora into biogeographic elements
- Grime’s (1979) triangular CSR model classifying British vegetation in terms of three established strategies; Competitors, Stress-tolerators and Ruderal species
- The wider countryside classification of ITE Countryside Survey data for 1978 and 1990 known as the Countryside Vegetation System (CVS)
- The National Vegetation Classification (NVC) developed at the Unit of Vegetation Science, Lancaster University

The program accepts data in the form of single species lists with or without abundance codes but also handles frequency (sometimes called constancy) tables which are species lists with each taxon coded in terms of its frequency of occurrence within a group of individual samples recorded in stands of usually floristically similar vegetation.

The output depends upon the classification system. See topic files for each classification for further details.
Ellenberg Scores

Introduction

The late Heinz Ellenberg published lists of species in the European flora and attached to each an indicator score from 1 to 10, conveying the optimum position typically occupied by a species along a number of different gradients. The scores were based on a synthesis of experimental work, field observation and descriptive analyses. However, because Ellenberg's studies concentrated upon central European populations his scores may not be appropriate as a robust summary of a species performance in Britain. To address this problem Hill et al (in press) recalculated scores for each species using weighted averaging applied to the Countryside Survey (CS) botanical dataset. This exercise has effectively re-calibrated the original scores for the British situation as represented by CS data.

Independent validation of the robustness and accuracy of the original Ellenberg scores in Britain and northern Europe has also come from work comparing values along environmental gradients predicted by Ellenberg scores with observed values. See bibliography.

List of Ellenberg scores available in MAVIS:

1. Fertility (low scores = low fertility)
2. pH (low scores = low pH)
3. Wetness (low scores = drier conditions)
4. Light (low scores = more shade tolerant)
5. Temperature (low scores = low temperatures)

Computation of scores

At present scores are only computed for individual plots, not for constancy tables. If cover values have been entered for each species the resulting score is cover-weighted, if not then the score is weighted by presence only as follows:

\[
E = \text{Ellenberg score for each species}
\]
\[
c = \text{cover value for each species}
\]
\[
n = \text{number of species in the plot}
\]

\[
\text{Cover-weighted score} = \frac{\sum (E \cdot c)}{\sum c}
\]

\[
\text{Unweighted scores} = \frac{\sum E}{N}
\]

Thus all scores range from 1 to 10.
**Biogeographic Elements**

1481 native British and Irish vascular plants were classified based on their occurrence in one or more major biomes (Arctic, Boreal, Temperate, Southern) and their longitudinal distribution (Oceanic, Suboceanic, European, Eurosiberian, Eurasian, Circumpolar). A complete account is given in Preston and Hill (1997).

Output from MAVIS gives the percentage of the total species in each plot attributable to each biogeographic element.

<table>
<thead>
<tr>
<th>Code</th>
<th>Element name</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>European Arctic-montane</td>
</tr>
<tr>
<td>14</td>
<td>Eurosiberian Arctic-montane</td>
</tr>
<tr>
<td>15</td>
<td>Eurasian Arctic-montane</td>
</tr>
<tr>
<td>16</td>
<td>Circumpolar Arctic-montane</td>
</tr>
<tr>
<td>21</td>
<td>Oceanic Boreo-arctic Montane</td>
</tr>
<tr>
<td>23</td>
<td>European Boreo-arctic Montane</td>
</tr>
<tr>
<td>24</td>
<td>Eurosiberian Boreo-arctic Montane</td>
</tr>
<tr>
<td>26</td>
<td>Circumpolar Boreo-arctic Montane</td>
</tr>
<tr>
<td>34</td>
<td>Eurosiberian Wide-boreal</td>
</tr>
<tr>
<td>35</td>
<td>Eurasian Wide-boreal</td>
</tr>
<tr>
<td>36</td>
<td>Circumpolar Wide-boreal</td>
</tr>
<tr>
<td>41</td>
<td>Oceanic Boreal-montane</td>
</tr>
<tr>
<td>42</td>
<td>Suboceanic Boreal-montane</td>
</tr>
<tr>
<td>43</td>
<td>European Boreal-montane</td>
</tr>
<tr>
<td>44</td>
<td>Eurosiberian Boreal-montane</td>
</tr>
<tr>
<td>45</td>
<td>Eurasian Boreal-montane</td>
</tr>
<tr>
<td>46</td>
<td>Circumpolar Boreal-montane</td>
</tr>
<tr>
<td>51</td>
<td>Oceanic Boreo-temperate</td>
</tr>
<tr>
<td>52</td>
<td>Suboceanic Boreo-temperate</td>
</tr>
<tr>
<td>53</td>
<td>European Boreo-temperate</td>
</tr>
<tr>
<td>54</td>
<td>Eurosiberian Boreo-temperate</td>
</tr>
<tr>
<td>Number</td>
<td>Climate Zone</td>
</tr>
<tr>
<td>--------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>61</td>
<td>Oceanic Wide-temperate</td>
</tr>
<tr>
<td>63</td>
<td>European Wide-temperate</td>
</tr>
<tr>
<td>64</td>
<td>Eurosiberian Wide-temperate</td>
</tr>
<tr>
<td>65</td>
<td>Eurasian Wide-temperate</td>
</tr>
<tr>
<td>66</td>
<td>Circumpolar Wide-temperate</td>
</tr>
<tr>
<td>71</td>
<td>Oceanic Temperate</td>
</tr>
<tr>
<td>72</td>
<td>Suboceanic Temperate</td>
</tr>
<tr>
<td>73</td>
<td>European Temperate</td>
</tr>
<tr>
<td>74</td>
<td>Eurosiberian Temperate</td>
</tr>
<tr>
<td>75</td>
<td>Eurasian Temperate</td>
</tr>
<tr>
<td>76</td>
<td>Circumpolar Temperate</td>
</tr>
<tr>
<td>81</td>
<td>Oceanic Southern-temperate</td>
</tr>
<tr>
<td>82</td>
<td>Suboceanic Southern-temperate</td>
</tr>
<tr>
<td>83</td>
<td>European Southern-temperate</td>
</tr>
<tr>
<td>84</td>
<td>Eurosiberian Southern-temperate</td>
</tr>
<tr>
<td>85</td>
<td>Eurasian Southern-temperate</td>
</tr>
<tr>
<td>86</td>
<td>Circumpolar Southern-temperate</td>
</tr>
<tr>
<td>91</td>
<td>Mediterranean-Atlantic</td>
</tr>
<tr>
<td>92</td>
<td>Submediterranean-Subatlantic</td>
</tr>
<tr>
<td>93</td>
<td>Mediterranean-montane</td>
</tr>
<tr>
<td>55</td>
<td>Eurasian Boreo-temperate</td>
</tr>
<tr>
<td>56</td>
<td>Circumpolar Boreo-temperate</td>
</tr>
</tbody>
</table>
Bibliography – Ellenberg Scores


**CSR Plant Strategy Model (Grime, 1979)**

This model assumes that constraints on the accumulation of plant biomass can be classified into two categories. Firstly stress, which refers to resource shortages that limit photosynthetic production such as drought, shade, low temperature and nutrient limitation. The second constraint is disturbance associated with partial or total destruction of biomass resulting from phenomena such as fire, trampling, cultivation, flooding and herbivore activity. Thus three primary strategies are suggested to have evolved in response to stress (stress-tolerators) or disturbance (ruderals) or an absence of both (competitors). The three extremes define a theoretical space within which the established as opposed to the regenerative phase of plant species can be located depending upon the importance of each constraint as it has impinged upon their evolutionary history.

A large number of British plant species have been placed within the CSR triangle (Grime et al, 1988, 1995). MAVIS uses this database to compute for each entered plot a percentage Competitor, Stress-tolerator and Ruderal score based upon the proportion of each species attributable to different parts of the CSR triangle. See bibliography for further information.

**CSR Model - Bibliography**


The Countryside Vegetation System (CVS)

Introduction

MAVIS allocates plots and groups of plots to one of the 100 vegetation classes that make up the CVS. Each vegetation class is made up of varying numbers of Countryside Survey vegetation plots recorded in 1978 and 1990. The two major strengths of the CVS are firstly, that the vegetation classes provide an impartial classification of the wider countryside in which the vegetation of linear features such as hedrows, streamsides and road verges has been included. Secondly, via MAVIS, links can be made between new field data, CVS class and a higher level grouping of CVS classes used to stratify Countryside Survey data for statistical analyses of stock and change in plant biodiversity.

The CVS vegetation classes were created by a TWINSPAN classification of vegetation data for each individual sample plot in both 1978 and 1990 (11,557 in total). A further cluster analysis of DECORANA scores for each of the 100 vegetation classes was carried out to create eight larger aggregate classes. At the aggregate class level between-group differences in overall species composition are much more sharply expressed resulting in floristically well defined units whose links to different parts of the GB landscape can be easily understood. Since the eight aggregate classes encompass all recorded plots they also provide larger sample sizes than each of the 100 plot classes and so provided a convenient and meaningful way of stratifying vegetation data for the analyses of stock and change in vegetation in the British countryside reported in Bunce et al (1997). The descriptive information for each vegetation class is available as a published volume or on the world-wide web (Bunce et al) and provides the parent aggregate class for each vegetation class. Via the vegetation class, new field data entered into MAVIS can be located within an aggregate class at which level analyses of stock and change in British vegetation are available.

Allocation of plots and groups to CVS plot classes

The original TWINSPAN classification of plots generated a hierarchical grouping of CS quadrats, at the lowest level of which the 100 CVS plot classes were defined. The route taken by any quadrat as it passed through the original classification was determined by its species composition which may have varied from plot to plot. However, all quadrats classified on either side of a nodal point were identified by a binary code indicating membership of one of two mutually exclusive groups; membership being based upon the joint presence or absence of species. This binary decision tree is implemented in MAVIS as a rule set for allocation of new data to the original classification. The algorithm is deterministic in the sense that new plots are allocated to one plot class only without any estimation of the degree of fit to the destination class or probability of belonging to other classes. The classification procedure uses the presence and absence of species only. No cover or constancy information is required even though this may have been entered.

For further information see Scott et al and bibliography.
CVS Vegetation Class Names

1. Almost weed free wheat/other crops
2. Scattered weeds in various crops
3. Grassy weeds in cereal crops
4. Broadleaved weeds in mixed crops
5. Mixed weeds in cereal groups
6. Weedy leys/undersown cereal crops
7. Crop hedges/boundaries
8. Eutrophic hedges/boundaries
9. Boundaries/open crop hedges
10. Tall grass boundaries
11. Streamside banks within crops
12. Lowland eutrophic roadsides
13. Lowland mesotrophic roadsides
14. Lowland roadsides/crop boundaries
15. Lowland river banks
16. Shady eutrophic streamsides
17. Lowland wetlands/water edges
18. Eutrophic shaded ditches
19. Eutrophic riverside/wetland tall herb
20. Grassy roadside verges
21. Diverse lowland hedgerows
22. Nutrient rich riverbanks
23. Eutrophic mixed grassland
24. Dry base rich woodland
25. Shaded grassland/hedges
26. Tall grassland/scrub
27  Rye grass roadsides
28  Eutrophic tall herb/grassland
29  Rye grass swards
30  Mixed eutrophic grassland
31  Rye grass/clover grassland
32  Gravel reedbeds
33  Marshy grassland
34  Mixed grassland scrub
35  Diverse base rich woodland/hedgerows
36  Shaded moist stream banks
37  Diverse mesotrophic grassland/scrub
38  Enriched mesotrophic grassland
39  Eutrophic streamsides/woodlands
40  Ryegrass/Yorkshire fog grassland
41  Riverside silts/wetlands
42  Woodland on heavy soils
43  Rye grass/bent grass swards
44  Calcareous grassland
45  Shaded grassy streamsides
46  Shaded nutrient rich streamsides
47  Diverse mesotrophic pasture
48  Marshy riversides
49  Acidic woodland fragments
50  Acidic woodlands
51  Wet rushy grasslands
52  Mesotrophic grasslands
53  Diverse mesotrophic/acid grasslands
54 Marshes/wet tall herb
55 Rushy mesotrophic/acid grasslands
56 Mesotrophic diverse moist grasslands
57 Enriched moorland flushes
58 Rushy diverse streamside/flushes
59 Upland semi shaded acidic streamsides
60 Streamsides/flushes within acidic grasslands
61 Herb rich upland grassland
62 Acidic lowland woodland
63 Diverse upland streamsides/grasslands
64 Agrostis/Fescue/Bracken
65 Acidic herbrich grass/heath
66 Streamsides/flushes in moorland vegetation
67 Moorland grass
68 Acidic oak/birch woodland
69 Open acidic heathy birch woodland
70 Shady acidic streamside
71 Herbrich moorland grass/heath
72 Acid peaty streamsides/flushes
73 Moorland grass on wet peat
74 Streamsides/flushes in wet moorland grass
75 Upland coniferous plantations on moorland/upland grassland
76 Diverse streamsides/flushes in moorland vegetation
77 Dense Sitka spruce
78 Complex montane/moorland grass
79 Mountain streamsides and slightly enriched moorland grass
80 Moorland grass/heath on peaty gleys
81  Heath/montane acidic grasslands
82  Wet moorland heath vegetation
83  Heather moorland on peats
84  Heather moorland
85  Streamsides/flushes on peats
86  Moorland/streamside on peaty gleys
87  Moorland/bog on peats
88  Montane moorland/heath
89  Montane heather moorland
90  Wet heathland
91  Upland heather moor
92  Ombotrophic bog
93  Montane heath vegetation class
94  Sphagnum bogs
95  Species poor blanket bog
96  Wet bogs
97  Northern blanket bog vegetation class
98  Cotton grass bog
99  Saturated bog vegetation class
100 Inundated bog/wetland peat
Bibliography – Countryside Vegetation System


Scott, A.W., Jones, M., Watkins, J.W., Bunce, R.G.H., Smart, S.M. A method for deterministic classification of floristic data based upon a TWINSPLAN dendrogram.
The National Vegetation Classification

This is a widely used phytosociological classification of semi-natural vegetation in Britain fully documented in the volumes of British Plant Communities (Rodwell, 1991a,b, 1992).

For groups of plots entered into MAVIS as constancy tables or for groups created within the program, matching coefficients are computed between the published synoptic tables and the new field data. The top 10 coefficients are displayed. Matching follows the same application of the Czekanowski coefficient as MATCH (Malloch, 1996) with the same downweighting to 0.1 of species not present in the input data but present at constancy I (1-20%) in the NVC tables.

See NVC unit names for a full listing of community and sub-community names.

The National Vegetation Classification


MATCH


Match Version 2.0: A computer program to aid assignment of vegetation data to the communities and subcommunities of the National Vegetation Classification. Unit of Vegetation Science, Lancaster University.
Floristic Units of the National Vegetation Classification

<table>
<thead>
<tr>
<th>NVC unit</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Lemna gibba community</td>
</tr>
<tr>
<td>A2</td>
<td>Lemna minor community</td>
</tr>
<tr>
<td>A2a</td>
<td>typical subcommunity</td>
</tr>
<tr>
<td>A2b</td>
<td>Lemna trisulca subcommunity</td>
</tr>
<tr>
<td>A2c</td>
<td>Riccia fluitans-Ricciocarpus natans subcommunity</td>
</tr>
<tr>
<td>A3</td>
<td>Spirodela polyrhiza-Hydrocharis morsus-ranae community</td>
</tr>
<tr>
<td>A4</td>
<td>Hydrocharis morsus-ranae-Stratiotes aloides community</td>
</tr>
<tr>
<td>A5</td>
<td>Ceratophyllum demersum community</td>
</tr>
<tr>
<td>A5a</td>
<td>Ranunculus circinatus subcommunity</td>
</tr>
<tr>
<td>A5b</td>
<td>Lemna minor subcommunity</td>
</tr>
<tr>
<td>A6</td>
<td>Ceratophyllum submersum community</td>
</tr>
<tr>
<td>A7</td>
<td>Nymphaea alba community</td>
</tr>
<tr>
<td>A7a</td>
<td>species-poor subcommunity</td>
</tr>
<tr>
<td>A7b</td>
<td>Juncus bulbosus-Potamogeton polygonifolius subcommunity</td>
</tr>
<tr>
<td>A8</td>
<td>Nuphar lutea community</td>
</tr>
<tr>
<td>A8a</td>
<td>species-poor subcommunity</td>
</tr>
<tr>
<td>A8b</td>
<td>Callitrichie stagnalis-Zannichellia palustris subcommunity</td>
</tr>
<tr>
<td>A8c</td>
<td>Nymphaea alba subcommunity</td>
</tr>
<tr>
<td>A8d</td>
<td>Potamogeton obtusifolius-Juncus bulbosus subcommunity</td>
</tr>
<tr>
<td>A9</td>
<td>Potamogeton natans community</td>
</tr>
<tr>
<td>A9a</td>
<td>species-poor subcommunity</td>
</tr>
<tr>
<td>A9b</td>
<td>Elodea canadensis subcommunity</td>
</tr>
<tr>
<td>A9c</td>
<td>Juncus bulbosus subcommunity</td>
</tr>
<tr>
<td>A10</td>
<td>Polygonum amphibium community</td>
</tr>
<tr>
<td>A11</td>
<td>Potamogeton pectinatus-Myriophyllum spicatum community</td>
</tr>
</tbody>
</table>
A11a Potamogeton pusillus subcommunity
A11b Elodea canadensis subcommunity
A11c Potamogeton filiformis subcommunity
A12 Potamogeton pectinatus community
A13 Potamogeton perfoliatus-Myriophyllum alterniflorum community
A13a Potamogeton berchtoldii subcommunity
A13b Potamogeton filiformis subcommunity
A14 Myriophyllum alterniflorum community
A15 Elodea canadensis community
A16 Callitriche stagnalis community
A16a Callitriche spp. subcommunity
A16b Potamogeton pectinatus subcommunity
A17 Ranunculus penicillatus ssp. pseudofluitans community
A18 Ranunculus fluitans community
A19 Ranunculus aquatilis community
A20 Ranunculus peltatus community
A21 Ranunculus baudotii community
A22 Littorella uniflora-Lobelia dortmanna community
A22a Littorella uniflora subcommunity
A22b Myriophyllum alterniflorum subcommunity
A23 Isoetes lacustris/setacea community
A24 Juncus bulbosus community
A24a Utricularia vulgaris subcommunity
A24b Sphagnum auriculatum subcommunity
H1 Calluna vulgaris-Festuca ovina heath
H1a Hypnum cupressiforme subcommunity
H1b Hypogynmia physodes-Cladonia impexa subcommunity
H1c Teucrium scorodonia subcommunity
H1d Carex arenaria subcommunity
H1e species-poor subcommunity
H2 Calluna vulgaris-Ulex minor heath
H2a typical subcommunity
H2b Vaccinium myrtillus subcommunity
H2c Molinia caerulea subcommunity
H3 Ulex minor-Agrostis curtisii heath
H3a typical subcommunity
H3b Cladonia spp. subcommunity
H3c Agrostis curtisii subcommunity
H4 Ulex gallii-Agrostis curtisii heath
H4a Agrostis curtisii-Erica cinerea subcommunity
H4b Festuca ovina subcommunity
H4c Erica tetralix subcommunity
H4d Scirpus cespitosus subcommunity
H5 Erica vagans-Schoenus nigricans heath
H5a typical subcommunity
H5b Eleocharis multicaulis subcommunity
H6 Erica vagans-Ulex europaeus heath
H6a typical subcommunity
H6b Festuca ovina subcommunity
H6c Agrostis curtisii subcommunity
H6d Molinia caerulea subcommunity
H7 Calluna vulgaris-Scilla verna heath
H7a Armeria maritima subcommunity
H7b Viola riviniana subcommunity
H7c Erica tetralix subcommunity
H7d Empetrum nigrum subcommunity
H7e Calluna vulgaris subcommunity
H8 Calluna vulgaris-Ulex gallii heath
H8a species-poor subcommunity
H8b Danthonia decumbens subcommunity
H8c Sanguisorba minor subcommunity
H8d Scilla verna subcommunity
H8e Vaccinium myrtillus subcommunity
H9 Calluna vulgaris-Deschampsia flexuosa heath
H9a Hypnum cupressiforme subcommunity
H9b Vaccinium myrtillus-Cladonia spp. subcommunity
H9c species-poor subcommunity
H9d Galium saxatile subcommunity
H9e Molinia caerulea subcommunity
H10 Calluna vulgaris-Erica cinerea heath
H10a typical subcommunity
H10b Racomitrium lanuginosum subcommunity
H10c Festuca ovina-Anthoxanthum odoratum subcommunity
H10d Thymus praecox-Carex pulicaris subcommunity
H11 Calluna vulgaris-Carex arenaria heath
H11a Erica cinerea subcommunity
H11b Empetrum nigrum nigrum subcommunity
H11c Species-poor subcommunity
H12 Calluna vulgaris-Vaccinium myrtillus heath
H12a Calluna subcommunity
H12b Vaccinium vitis-idaea-Cladonia impexa subcommunity
H12c  Galium saxatile-Festuca ovina subcommunity
H13  Calluna vulgaris-Cladonia arbuscula heath
H13a  Cladonia arbuscula-Cladonia rangiferina subcommunity
H13b  Empetrum hermaphroditum-Cetraria nivalis subcommunity
H13c  Cladonia crispata-Loiseleuria procumbens subcommunity
H14  Calluna vulgaris-Racomitrium lanuginosum heath
H14a  Festuca ovina subcommunity
H14b  Empetrum nigrum hermaphroditum subcommunity
H14c  Arctostaphylos uva-ursi subcommunity
H15  Calluna vulgaris-Juniperus communis ssp. nana heath
H16  Calluna vulgaris-Arctostaphylos uva-ursi heath
H16a  Pyrola media-Lathyrus montanus subcommunity
H16b  Vaccinium myrtillus-Vaccinium vitis-idaea subcommunity
H16c  Cladonia spp. subcommunity
H17  Calluna vulgaris-Arctostaphylos alpina heath
H17a  Loisleuria procumbens-Cetraria glauca subcommunity
H17b  Empetrum nigrum nigrum subcommunity
H18  Vaccinium myrtillus-Deschampsia flexuosa heath
H18a  Hylocomium splendens-Rhytidiadelphus loreus subcommunity
H18b  Alchemilla alpina-Carex pilulifera subcommunity
H18c  Empetrum nigrum-Racomitrium lanuginosum subcommunity
H19  Vaccinium myrtillus-Cladonia arbuscula heath
H19a  typical subcommunity
H19b  Racomitrium lanuginosum subcommunity
H19c  Empetrum nigrum-Cladonia rangiferina subcommunity
H20  Vaccinium myrtillus-Racomitrium lanuginosum heath
H20a  Viola riviniana-Thymus praecox subcommunity
H20b  Cetraria islandica subcommunity
H20c  Bazzania tricrenata-Mylia taylori subcommunity
H20d  Rhytidadelphus loreus-Hylocomnium splendens subcommunity
H21  Calluna vulgaris-Vaccinium myrtillus-Sphagnum capillifolium heath
H21a typical subcommunity
H21b  Mastigophora woodsii-Herberta aduncus hutchinsiae subcommunity
H22  Vaccinium myrtillus-Rubus chamaemorus heath
H22a  Polytrichum commune-Galium saxatile subcommunity
H22b  Plagioteicum undulatum-Anastrepta orcadensis subcommunity
M1  Sphagnum auriculatum bog pool community
M2  Sphagnum cuspidatum/recurvum bog pool community
M2a  Rhynchospora alba subcommunity
M2b  Sphagnum recurvum subcommunity
M3  Eriophorum angustifolium bog pool community
M4  Carex rostrata-Sphagnum recurvum mire
M5  Carex rostrata-Sphagnum squarrosum mire
M6  Carex echinata-Sphagnum recurvum/auriculatum mire
M6a  Carex echinata subcommunity
M6b  Carex nigra-Nardus stricta subcommunity
M6c  Juncus effusus subcommunity
M6d  Juncus acutiflorus subcommunity
M7  Carex curta-Sphagnum russowii mire
M7a  Carex bigelowii-Sphagnum lindbergii subcommunity
M7b  Carex aquatilis-Sphagnum recurvum subcommunity
M8  Carex rostrata-Sphagnum warnstorffii mire
M9  Carex rostrata-Calliergon cuspidatum/giganteum mire
M9a  Campylium stellatum-Scorpidium scorpioides subcommunity
M9b Carex diandra-Calliergon giganteum subcommunity
M10 Carex dioica-Pinguicula vulgaris mire
M10a Carex demissa-Juncus bulbosus subcommunity
M10b Briza media-Primula farinosa subcommunity
M10c Gymnostomum recurvirostrum subcommunity
M11 Carex demissa-Saxifraga aizoides mire
M11a Thalictrum alpinum-Juncus triglumis subcommunity
M11b Cratoneuron commutatum-Eleocharis quinqueflora subcommunity
M12 Carex saxatilis mire
M13 Schoenus nigricans-Juncus subnodulosus mire
M13a Festuca rubra-Juncus acutiflorus subcommunity
M13b Briza media-Pinguicula vulgaris subcommunity
M13c Caltha palustris-Galium uliginosum subcommunity
M14 Schoenus nigricans-Narthecium ossifragum mire
M15 Scirpus cespitosus-Erica tetralix wet heath
M15a Carex panicea subcommunity
M15b typical subcommunity
M15c Cladonia subcommunity
M15d Vaccinium myrtillus subcommunity
M16 Erica tetralix-Sphagnum compactum wet heath
M16a typical subcommunity
M16b Succisa pratensis-Carex panicea subcommunity
M16c Rhynchospora alba-Drosera intermedia subcommunity
M16d Juncus squarrosus-Dicranum scoparium subcommunity
M17 Scirpus cespitosus-Eriophorum vaginatum blanket mire
M17a Drosera rotundifolia-Sphagnum spp. subcommunity
M17b Cladonia subcommunity
M17c  Juncus squarrosus subcommunity
M18   Erica tetralix-Sphagnum papillosum raised & blanket mire
M18a  Sphagnum. magellanicum-Andromeda polyfolia subcommunity
M18b  Empetrum nigrum-Cladonia subcommunity
M19   Calluna vulgaris-Eriophorum vaginatum blanket mire
M19a  Erica tetralix subcommunity
M19b  Empetrum nigrum subcommunity
M19c  Vaccinium vitis-idaea-Hylocomium splendens subcommunity
M20   Eriophorum vaginatum blanket & raised mire
M20a  species-poor subcommunity
M20b  Calluna vulgaris-Cladonia subcommunity
M21   Narthecium ossifragum-Sphagnum papillosum valley mire
M21a  Sphagnum auriculatum-Rhynchospora alba subcommunity
M21b  Sphagnum recurvum-Vaccinium oxycoccus subcommunity
M22   Juncus subnodulosus-Cirsium palustre fen-meadow
M22a  typical subcommunity
M22b  Briza media-Trifolium spp. subcommunity
M22c  Carex elata subcommunity
M22d  Iris pseudacorus subcommunity
M23   Juncus effusus/acutiflorus-Galium palustre rush-pasture
M23a  Juncus acutiflorus subcommunity
M23b  Juncus effusus subcommunity
M24   Molinia caerulea-Cirsium dissectum fen-meadow
M24a  Eupatorium cannabinum subcommunity
M24b  typical subcommunity
M24c  Juncus acutiflorus-Erica tetralix subcommunity
M25   Molinia caerulea-Potentilla erecta mire
M25a Erica tetralix subcommunity
M25b Anthoxanthum odoratum subcommunity
M25c Angelica sylvestris subcommunity
M26 Molinia caerulea-Crepis paludosa mire
M26a Sanguisorba officinalis subcommunity
M26b Festuca rubra subcommunity
M27 Filipendula ulmaria-Angelica sylvestris tall-herb fen
M27a Valeriana officinalis subcommunity
M27b Urtica dioica-Vicia cracca subcommunity
M27c Juncus effusus-Holcus lanatus subcommunity
M28 Iris pseudacorus-Filipendula ulmaria mire
M28a Juncus spp. subcommunity
M28b Urtica dioica-Galium aparine subcommunity
M28c Atriplex prostrata-Samolus valerandi subcommunity
M29 Hypericum elodes-Potamogeton polygonifolius soakway
M30 Related vegetation of seasonally-inundated habitats
M31 Anthelia julacea-Sphagnum auriculatum spring
M32 Philonotis fontana-Saxifraga stellaris spring
M32a Sphagnum auriculatum subcommunity
M32b Montia fontana-Chrysosplenium oppositifolium subcommunity
M33 Pohlia wahlenbergii var. glacialis spring
M34 Carex demissa-Koenigia islandica flush
M35 Ranunculus omiophyllus-Montia fontana rill
M36 Lowland springs and streambanks of shaded situations
M37 Cratoneuron commutatum-Festuca rubra spring
M38 Cratoneuron commutatum-Carex nigra spring
S1 Carex elata swamp
S2  Cladium mariscus swamp
S2a  typical subcommunity
S2b  Menyanthes trifoliata subcommunity
S3  Carex paniculata swamp
S4  Phragmites australis reedbed
S4a  Phragmites australis subcommunity
S4b  Galium palustre subcommunity
S4c  Menyanthes trifoliata subcommunity
S4d  Atriplex prostrata subcommunity
S5  Glyceria maxima swamp
S5a  Glyceria maxima subcommunity
S5b  Alisma plantago-aquatica-Sparganium erectum subcommunity
S6  Carex riparia swamp
S7  Carex acutiformis swamp
S8  Scirpus lacustris ssp. lacustris swamp
S8a  Scirpus lacustris subcommunity
S8b  Sparganium erectum subcommunity
S8c  Equisetum fluviatile subcommunity
S9  Carex rostrata swamp
S9a  Carex rostrata subcommunity
S9b  Menyanthes trifoliata-Equisetum fluviatile subcommunity
S10  Equisetum fluviatile swamp
S10a  Equisetum fluviatile subcommunity
S10b  Carex rostrata subcommunity
S11  Carex vesicaria swamp
S11a  Carex vesicaria subcommunity
S11b  Veronica scutellata subcommunity
S11c Carex rostrata subcommunity
S12 Typha latifolia reedbed
S12a Typha latifolia subcommunity
S12b Mentha aquatica subcommunity
S12c Alisma plantago-aquatica subcommunity
S12d Carex rostrata subcommunity
S13 Typha angustifolia reedbed
S14 Sparganium erectum swamp
S14a Sparganium erectum subcommunity
S14b Alisma plantago-aquatica subcommunity
S14c Mentha aquatica subcommunity
S14d Phalaris arundinacea subcommunity
S15 Acorus calamus swamp
S15a Acorus calamus subcommunity
S15b Lemna minor-Sparganium erectum subcommunity
S16 Sagittaria sagittifolia swamp
S17 Carex pseudocyperus swamp
S18 Carex otrubae swamp
S18a Carex otrubae subcommunity
S18b Atriplex prostrata subcommunity
S19 Eleocharis palustris swamp
S19a Eleocharis palustris subcommunity
S19b Littorella uniflora subcommunity
S19c Agrostis stolonifera subcommunity
S20 Scirpus lacustris ssp. tabernaemontani swamp
S20a Scirpus lacustris ssp. tabernaemontani subcommunity
S20b Agrostis stolonifera subcommunity
S21  Scirpus maritimus swamp
S21a Scirpus maritimus subcommunity
S21b Atriplex prostrata subcommunity
S21c Agrostis stolonifera subcommunity
S21d Potentilla anserina subcommunity
S22  Glyceria fluitans water-margin vegetation
S22a Glyceria fluitans subcommunity
S22b Sparganium erectum-Mentha aquatica subcommunity
S22c Alopecurus geniculatus subcommunity
S23  Other water-margin vegetation
S24  Phragmites australis-Peucedanum palustre tall-herb fen
S24a Carex paniculata subcommunity
S24b Glyceria maxima subcommunity
S24c Symphytum officinale subcommunity
S24d typical subcommunity
S24e Cicuta virosa subcommunity
S24f Schoenus nigricans subcommunity
S24g Myrica gale subcommunity
S25  Phragmites australis-Eupatorium cannabinum fen
S25a Phragmites australis subcommunity
S25b Carex paniculata subcommunity
S25c Cladium mariscus subcommunity
S26  Phragmites australis-Urtica dioica fen
S26a Filipendula ulmaria subcommunity
S26b Arrhenatherum elatius subcommunity
S26c Oenanthe crocata subcommunity
S26d Epilobium hirsutum subcommunity
S27 Carex rostrata-Potentilla palustris tall-herb fen
S27a Carex rostrata-Equisetum fluviatile subcommunity
S27b Lysimachia vulgaris subcommunity
S28 Phalaris arundinacea tall-herb fen
S28a Phalaris arundinacea subcommunity
S28b Epilobium hirsutum-Urtica dioica subcommunity
S28c Elymus repens-Holcus lanatus subcommunity
U1 Festuca ovina-Agrostis capillaris-Rumex acetosella grassland
U1a Cornicularia aculeata-Cladonia arbuscula subcommunity
U1b typical subcommunity
U1c Erodium cicutarium-Teesdalia nudicaulis subcommunity
U1d Anthoxanthum odoratum-Lotus corniculatus subcommunity
U1e Galium saxatile-Potentilla erecta subcommunity
U1f Hypochoeris radicata subcommunity
U2 Deschampsia flexuosa grassland
U2a Festuca ovina-Agrostis capillaris subcommunity
U2b Vaccinium myrtillus subcommunity
U3 Agrostis curtisii grassland
U4 Festuca ovina-Agrostis capillaris-Galium saxatile grassland
U4a typical subcommunity
U4b Holcus lanatus-Trifolium repens subcommunity
U4c Lathyrus montanus-Stachys betonica subcommunity
U4d Luzula multiflora-Rhytidiadelphus loreus subcommunity
U4e Vaccinium myrtillus-Deschampsia flexuosa subcommunity
U5 Nardus stricta-Galium saxatile grassland
U5a species-poor subcommunity
U5b Agrostis canina-Polytrichum commune subcommunity
U5c Carex panicea-Viola riviniana subcommunity
U5d Calluna vulgaris-Danthonia decumbens subcommunity
U5e Racomitrium lanuginosum subcommunity
U6 Juncus squarrosus-Festuca ovina grassland
U6a Sphagnum subcommunity
U6b Carex nigra-Calypogeia trichomanis subcommunity
U6c Vaccinium myrtillus subcommunity
U6d Agrostis capillaris-Luzula multiflora subcommunity
U7 Nardus stricta-Carex bigelowii grass-heath
U7a Empetrum nigrum hermaphroditum-Cetraria islandica subcommunity
U7b typical subcommunity
U7c Alchemilla alpina-Festuca ovina subcommunity
U8 Carex bigelowii-Polytrichum alpinum sedge-heath
U8a Polytrichum alpinum-Ptilidium ciliare subcommunity
U8b Dicranum fuscescens-Racomitrium lanuginosum subcommunity
U9 Juncus trifidus-Racomitrium lanuginosum rush-heath
U9a Cladonia arbuscula-Cetraria islandica subcommunity
U9b Salix herbacea subcommunity
U10 Carex bigelowii-Racomitrium lanuginosum moss-heath
U10a Galium saxatile subcommunity
U10b typical subcommunity
U10c Silene acaulis subcommunity
U11 Polytrichum sexangulare-Kiaeria starkei snow-bed
U11a typical subcommunity
U11b species-poor subcommunity
U12 Salix herbacea-Racomitrium heterostichum snow-bed
U12a Silene acaulis-Luzula spicata subcommunity
U12b Gymnomitrion concinnatum subcommunity
U12c Marsupella brevissima subcommunity
U13 Deschampsia cespitosa-Galium saxatile grassland
U13a Anthoxanthum odoratum-Alchemilla alpina subcommunity
U13b Rhytidiadelphus loreus subcommunity
U14 Alchemilla alpina-Sibbaldia procumbens dwarf-herb community
U15 Saxifraga aizoides-Alchemilla glabra banks
U16 Luzula sylvatica-Vaccinium myrtillus tall-herb community
U16a Dryopteris dilatata-Dicranum majus subcommunity
U16b Anthoxanthum odoratum-Festuca ovina subcommunity
U16c species-poor subcommunity
U17 Luzula sylvatica-Geum rivale tall-herb community
U17a Alchemilla glabra-Bryum pseudotriquetrum subcommunity
U17b Geranium sylvaticum subcommunity
U17c Agrostis capillaris-Rhytidiadelphus loreus subcommunity
U17d Primula vulgaris-Hypericum pulchrum subcommunity
U18 Cryptogramma crispa-Athyrium distentifolium snow-bed
U19 Thelypteris limbosperma-Blechnum spicant community
U20 Pteridium aquilinum-Galium saxatile community
U20a Anthoxanthum odoratum subcommunity
U20b Vaccinium myrtillus-Dicranum scoparium subcommunity
U20c species-poor subcommunity
U21 Cryptogramma crispa-Deschampsia flexuosa community
W1 Salix cinerea-Galium palustre woodland
W2 Salix cinerea-Betula pubescens-Phragmites australis woodland
W2a Alnus glutinosa-Filipendula ulmaria subcommunity
W2b Sphagnum subcommunity
W3  Salix pentandra-Carex rostrata woodland
W4  Betula pubescens-Molinia caerulea woodland
W4a Dryopteris dilatata-Rubus fruticosus subcommunity
W4b Juncus effusus subcommunity
W4c Sphagnum subcommunity
W5  Alnus glutinosa-Carex paniculata woodland
W5a Phragmites australis subcommunity
W5b Lysimachia vulgaris subcommunity
W5c Chrysosplenium oppositifolium subcommunity
W6  Alnus glutinosa-Urtica dioica woodland
W6a typical subcommunity
W6b Salix fragilis subcommunity
W6c Salix viminalis/triandra subcommunity
W6d Sambucus nigra subcommunity
W6e Betula pubescens subcommunity
W7  Alnus glutinosa-Fraxinus excelsior-Lysimachia nemorum woodland
W7a Urtica dioica subcommunity
W7b Carex remota subcommunity
W7c Deschampsia cespitosa subcommunity
W8  Fraxinus excelsior-Acer campestre-Mercurialis perennis woodland
W8a Primula vulgaris-Glechoma hederacea subcommunity
W8b Anemone nemorosa subcommunity
W8c Deschampsia cespitosa subcommunity
W8d Hedera helix subcommunity
W8e Geranium robertianum subcommunity
W8f Allium ursinum subcommunity
W8g Teucrium scorodonia subcommunity
W9 Fraxinus excelsior-Sorbus aucuparia-Mercurialis perennis woodland
W9a typical subcommunity
W9b Crepis paludosa subcommunity
W10 Quercus robur-Pteridium aquilinum-Rubus fruticosus woodland
W10a typical subcommunity
W10b Anemone nemorosa subcommunity
W10c Hedera helix subcommunity
W10d Holcus lanatus subcommunity
W10e Acer pseudoplatanus-Oxalis acetosella subcommunity
W11 Quercus petraea-Betula pubescens-Oxalis acetosella woodland
W11a Dryopteris dilatata subcommunity
W11b Blechnum spicant subcommunity
W11c Anemone nemorosa subcommunity
W11d Stellaria holostea subcommunity
W12 Fagus sylvatica-Mercurialis perennis woodland
W12a Mercurialis perennis subcommunity
W12b Sanicula europaea subcommunity
W12c Taxus baccata subcommunity
W13 Taxus baccata woodland
W13a Sorbus aria subcommunity
W13b Mercurialis perennis subcommunity
W14 Fagus sylvatica-Rubus fruticosus woodland
W15 Fagus sylvatica-Deschampsia flexuosa woodland
W15a Fagus sylvatica subcommunity
W15b Deschampsia flexuosa subcommunity
W15c Vaccinium myrtillus subcommunity
W15d Calluna vulgaris subcommunity
W16 Quercus spp.-Betula spp.-Deschampsia flexuosa woodland
W16a Quercus robur subcommunity
W16b Vaccinium myrtillus-Dryopteris dilitata subcommunity
W17 Quercus petraea-Betula pubescens-Dicranum majus woodland
W17a Isothecium myosuroides-Diplophyllum albicans subcommunity
W17b typical subcommunity
W17c Anthoxanthum odoratum-Agrostis capillaris subcommunity
W17d Rhytidiadelphus triquetrus subcommunity
W18 Pinus sylvestris-Hylocomium splendens woodland
W18a Erica cinerea-Goodyera repens subcommunity
W18b Vaccinium myrtillus-Vaccinium vitis-idaea subcommunity
W18c Luzula pilosa subcommunity
W18d Sphagnum capillifolium/quinquefariurn-Erica tetralix subcommunity
W18e Scapania gracilis subcommunity
W19 Juniperus communis-Oxalis acetosella woodland
W19a Vaccinium vitis-idaea-Deschampsia flexuosa subcommunity
W19b Viola riviniana-Anemone nemorosa subcommunity
W20 Salix lapponum-Luzula sylvatica scrub
W21 Crataegus monogyna-Hedera helix scrub
W21a Hedera helix-Urtica dioica subcommunity
W21b Mercurialis perennis subcommunity
W21c Brachypodium sylvaticum subcommunity
W21d Viburnum lantana subcommunity
W22 Prunus spinosa-Pteridium aquilinum scrub
W22a Hedera helix-Silene dioica subcommunity
W22b Viola riviniana-Veronica chamaedrys subcommunity
W22c Dactylis glomerata subcommunity
W23  Ulex europaeus-Rubus fruticosus scrub
W23a  Anthoxanthum odoratum subcommunity
W23b  Rumex acetosella subcommunity
W23c  Teucrium scorodonia subcommunity
W24  Rubus fruticosus-Holcus lanatus underscrub
W24a  Cirsium arvense-Cirsium vulgare subcommunity
W24b  Arrhenatherum elatius-Heracleum sphondylium subcommunity
W25  Pteridium aquilinum-Rubus fruticosus underscrub
W25a  Hyacinthoides non-scripta subcommunity
W25b  Teucrium scorodonia subcommunity
CG1  Festuca ovina-Carlina vulgaris grassland
CG1a  Carex humilis subcommunity
CG1b  Scilla autumnalis subcommunity
CG1c  Trinia glauca subcommunity
CG1d  Helianthemum canum subcommunity
CG1e  Koeleria macrantha subcommunity
CG1f  Festuca rubra-Scilla verna subcommunity
CG2  Festuca ovina-Avenula pratensis grassland
CG2a  Cirsium acaule-Asperula cynanchica subcommunity
CG2b  Succisa pratensis-Leucanthemum vulgare subcommunity
CG2c  Holcus lanatus-Trifolium repens subcommunity
CG2d  Dicranum scoparium subcommunity
CG3  Bromus erectus grassland
CG3a  typical subcommunity
CG3b  Centaurea nigra subcommunity
CG3c  Knautia arvensis-Bellis perennis subcommunity
CG3d  Festuca rubra-Festuca arundinacea subcommunity
CG4  Brachypodium pinnatum grassland
CG4a  Avenula pratensis-Thymus praecox subcommunity
CG4b  Centaurea nigra-Leontodon hispidus subcommunity
CG4c  Holcus lanatus subcommunity
CG5  Bromus erectus-Brachypodium pinnatum grassland
CG5a  typical subcommunity
CG5b  Hieracium spp. subcommunity
CG6  Avenula pubescens grassland
CG6a  Dactylis glomerata-Briza media subcommunity
CG6b  Potentilla reptans-Tragopogon pratensis subcommunity
CG7  Festuca ovina-Hieracium pilosella-Thymus praecox/pulegioides grassland
CG7a  Koeleria macrantha subcommunity
CG7b  Cladonia spp. subcommunity
CG7c  Ditrichum flexicaule-Diploschistes scruposus var. bryophilus subc
CG7d  Fragaria vesca-Erigeron acer subcommunity
CG7e  Medicago lupulina-Rumex acetosa subcommunity
CG8  Sesleria albicans-Scabiosa columaria grassland
CG8a  Hypericum pulchrum-Carlina vulgaris subcommunity
CG8b  Avenula pratensis subcommunity
CG8c  Hieracium pilosella subcommunity
CG9  Sesleria albicans-Galium sternerii grassland
CG9a  Helianthemum canum-Asperula cynanchica subcommunity
CG9b  typical subcommunity
CG9c  Carex pulicaris-Carex panicea subcommunity
CG9d  Carex capillaris-Kobresia simpliciuscula subcommunity
CG9e  Saxifraga hypnoides-Cochlearis alpina subcommunity
CG10  Festuca ovina-Agrostis capillaris-Thymus praecox grassland
CG10a  Trifolium repens-Luzula campestris subcommunity
CG10b  Carex pulicaris-Carex panicea subcommunity
CG10c  Saxifraga aizoides-Ditrichum flexicaule subcommunity
CG11  Festuca ovina-Agrostis capillaris-Alchemilla alpina grassland
CG11a  typical subcommunity
CG11b  Carex pulicaris-Carex panicea subcommunity
CG12  Festuca ovina-Alchemilla alpina-Silene acaulis community
CG13  Dryas octopetala-Carex flacca heath
CG13a  Hieracium pilosella-Ctenidium molluscum subcommunity
CG13b  Salix repens-Carex flacca subcommunity
CG14  Dryas octopetala-Silene acaulis ledge community
MC1  Crithmum maritimum-Spergularia rupicola maritime crevice community
MC1a  typical subcommunity
MC1b  Inula crithmoides subcommunity
MC1c  Aster tripolium subcommunity
MC2  Armeria maritima-Ligusticum scoticum rock crevice community
MC3  Rhodiola rosea-Armeria maritima maritime cliff-ledge community
MC4  Brassica oleracea maritime cliff-ledge community
MC4a  Beta vulgaris ssp. maritima subcommunity
MC4b  Ononis repens subcommunity
MC5  Armeria maritima-Cerastium diffusum ssp. diffusum maritime therophyte community
MC5a  Desmazeria maritima subcommunity
MC5b  Anthyllis vulneraria subcommunity
MC5c  Aira praecox subcommunity
MC5d  Arenaria serpyllifolia subcommunity
MC6  Atriplex hastata-Beta vulgaris ssp. maritima sea-bird cliff community
MC7  Stellaria media-Rumex acetosa sea-bird cliff community
MC8  Festuca rubra-Armeria maritima maritime grassland
MC8a  typical subcommunity
MC8b  Crithmum maritimum subcommunity
MC8c  Ligusticum scoticum subcommunity
MC8d  Holcus lanatus subcommunity
MC8e  Plantago coronopus subcommunity
MC8f  Anthyllis vulneraria subcommunity
MC8g  Armeria maritima dominated subcommunity
MC9  Festuca rubra-Holcus lanatus maritime grassland
MC9a  Plantago maritima subcommunity
MC9b  Dactylis glomerata subcommunity
MC9c  Achillea millefolium subcommunity
MC9d  Primula vulgaris subcommunity
MC9e  Anthoxanthum odoratum subcommunity
MC10  Festuca rubra-Plantago spp. maritime grassland
MC10a  Armeria maritima subcommunity
MC10b  Carex panicea subcommunity
MC10c  Schoenus nigricans subcommunity
MC11  Festuca rubra-Daucus carota maritime grassland
MC11a  Bromus hordeaceus ferronii subcommunity
MC11b  Ononis repens subcommunity
MC11c  Sanguisorba minor subcommunity
MC12  Festuca rubra-Hyacinthoides non-scripta maritime cliff community
MC12a  Ranunculus ficaria subcommunity
MC12b  Silene maritima subcommunity
MG1  Arrhenatherum elatius coarse grassland
MG1a  Festuca rubra subcommunity
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MG1b</td>
<td>Urtica dioica subcommunity</td>
</tr>
<tr>
<td>MG1c</td>
<td>Filipendula ulmaria subcommunity</td>
</tr>
<tr>
<td>MG1d</td>
<td>Pastinaca sativa subcommunity</td>
</tr>
<tr>
<td>MG1e</td>
<td>Centaurea nigra subcommunity</td>
</tr>
<tr>
<td>MG2</td>
<td>Filipendula ulmaria-Arrhenatherum elatius grassland</td>
</tr>
<tr>
<td>MG2a</td>
<td>Filipendula ulmaria subcommunity</td>
</tr>
<tr>
<td>MG2b</td>
<td>Polemonium caeruleum subcommunity</td>
</tr>
<tr>
<td>MG3</td>
<td>Anthoxanthum odoratum-Geranium sylvaticum meadow</td>
</tr>
<tr>
<td>MG3a</td>
<td>Bromus hordeaceus subcommunity</td>
</tr>
<tr>
<td>MG3b</td>
<td>Briza media subcommunity</td>
</tr>
<tr>
<td>MG4</td>
<td>Alopecurus pratensis-Sanguisorba officinalis grassland</td>
</tr>
<tr>
<td>MG5</td>
<td>Cynosurus cristatus-Centaurea nigra grassland</td>
</tr>
<tr>
<td>MG5a</td>
<td>Lathyrus pratensis subcommunity</td>
</tr>
<tr>
<td>MG5b</td>
<td>Galium verum subcommunity</td>
</tr>
<tr>
<td>MG5c</td>
<td>Danthonia decumbens subcommunity</td>
</tr>
<tr>
<td>MG6</td>
<td>Lolium perenne-Cynosurus cristatus grassland</td>
</tr>
<tr>
<td>MG6a</td>
<td>typical subcommunity</td>
</tr>
<tr>
<td>MG6b</td>
<td>Anthoxanthum odoratum subcommunity</td>
</tr>
<tr>
<td>MG6c</td>
<td>Trisetum flavescens subcommunity</td>
</tr>
<tr>
<td>MG7</td>
<td>Lolium perenne leys and related grasslands</td>
</tr>
<tr>
<td>MG7A</td>
<td>Lolium perenne-Trifolium repens leys</td>
</tr>
<tr>
<td>MG7B</td>
<td>Lolium perenne-Poa trivialis leys</td>
</tr>
<tr>
<td>MG7C</td>
<td>Lolium perenne-Alopecurus pratensis-Festuca pratensis flood-pasture</td>
</tr>
<tr>
<td>MG7D</td>
<td>Lolium perenne-Alopecurus pratensis meadow</td>
</tr>
<tr>
<td>MG7E</td>
<td>Lolium perenne-Plantago lanceolata grassland</td>
</tr>
<tr>
<td>MG7F</td>
<td>Poa-Lolium perenne grassland</td>
</tr>
<tr>
<td>MG8</td>
<td>Cynosurus cristatus-Caltha palustris flood-pasture</td>
</tr>
</tbody>
</table>
MG9  Holcus lanatus-Deschampsia cespitosa grassland
MG9a  Poa trivialis subcommunity
MG9b  Arrhenatherum elatius subcommunity
MG10  Holcus lanatus-Juncus effusus rush-pasture
MG10a  typical subcommunity
MG10b  Juncus inflexus subcommunity
MG10c  Iris pseudacorus subcommunity
MG11  Festuca rubra-Agrostis stolonifera-Potentilla anserina grassland
MG11a  Lolium perenne subcommunity
MG11b  Atriplex hastata subcommunity
MG11c  Honkenya peploides subcommunity
MG12  Festuca arundinacea grassland
MG12a  Lolium perenne-Holcus lanatus subcommunity
MG12b  Oenanthe lachenalii subcommunity
MG13  Agrostis stolonifera-Alopecurus geniculatus grassland
OV1  Viola arvensis-Aphanes microcarpa community
OV2  Briza minor-Silene gallica community
OV3  Papaver rhoeas-Viola arvensis community
OV4  Chrysanthemum segetum-Spergula arvensis community
OV4a  typical subcommunity
OV4b  Ranunculus repens-Sonchus asper subcommunity
OV5  Digitaria ischaemum-Erodium cicutarium community
OV6  Cerastium glomeratum-Fumaria muralis ssp. boraei community
OV6a  Aphanes microcarpa-Ranunculus muricatus subcommunity
OV6b  Valerianella locusta-Barbula convoluta subcommunity
OV6c  Vicia hirsuta-Papaver dubium subcommunity
OV7  Veronica persica-V. polita community
OV8 Veronica persica-Alopecurus myosuroides community
OV9 Stellaria media-Polygonum aviculare community
OV9a Anagallis arvensis-Viola arvensis subcommunity
OV9b Poa annua-Galeopsis tetrahit subcommunity
OV9c Elymus repens-Potentilla anserina subcommunity
OV9d Bilderdykia convolvulus-Veronica persica subcommunity
OV10 Poa annua-Senecio vulgaris community
OV10a Polygonum persicaria-Ranunculus repens subcommunity
OV10b Polygonum aviculare-Matricaria spp. subcommunity
OV10c Agrostis stolonifera-Rumex crispus subcommunity
OV10d Dactylis glomerata-Agrostis capillaris subcommunity
OV11 Poa annua-Stachys arvensis community
OV11a Chenopodium album-Euphorbia helioscopia subcommunity
OV11b Cerastium fontanum-Pottia truncata subcommunity
OV12 Poa trivialis-Myosotis arvensis community
OV12a typical subcommunity
OV12b Dicranella staphylina-Bryum spp. subcommunity
OV13 Stellaria media-Capsella bursa-pastoris community
OV13a typical subcommunity
OV13b Matricaria maritima-Poa annua subcommunity
OV13c Fumaria muralis-Euphorbia helioscopia subcommunity
OV13d Urtica dioica-Galium aparine subcommunity
OV14 Stellaria media-Urtica urens community
OV15 Anagallis arvensis-Veronica persica community
OV15a Stellaria media-Convolvulus arvensis subcommunity
OV15b Euphorbia exigua-Legousia hybrida subcommunity
OV15c Agrostis stolonifera-Ranunculus repens subcommunity
OV16  Papaver rhoeas-Silene noctiflora community
OV17  Reseda lutea-Polygonum aviculare community
OV18  Polygonum aviculare-Chamomilla suaveolens community
OV18a Sisymbrium officinale-Polygonum arenastrum subcommunity
OV18b Plantago major subcommunity
OV19  Poa annua-Matricaria maritima community
OV19a basal subcommunity
OV19b Lolium perenne-Capsella bursa-pastoris subcommunity
OV19c Atriplex prostrata-Chenopodium album subcommunity
OV19d Chamomilla suaveolens-Plantago major subcommunity
OV19e Elymus repens subcommunity
OV20  Poa annua-Sagina procumbens community
OV20a typical subcommunity
OV20b Lolium perenne-Chamomilla suaveolens subcommunity
OV21  Poa annua-Plantago major community
OV21a typical subcommunity
OV21b Lolium perenne subcommunity
OV21c Polygonum aviculare-Ranunculus repens subcommunity
OV22  Poa annua-Taraxacum officinale community
OV22a Senecio vulgaris subcommunity
OV22b Cirsium vulgare-Cirsium arvense subcommunity
OV22c Crepis vesicaria-Epilobium adenocaulon subcommunity
OV23  Lolium perenne-Dactylis glomerata community
OV23a typical subcommunity
OV23b Crepis vesicaria-Rumex obtusifolius subcommunity
OV23c Plantago major-Trifolium repens subcommunity
OV23d Arrhenatherum elatius-Medicago lupulina subcommunity
OV34  Allium schoenoprasum-Plantago maritima commmunity
OV35  Lythrum portula-Ranunculus flammula community
OV36  Lythrum hyssopifolia-Juncus bufonius community
OV37  Festuca ovina-Minuartia verna community
OV37a  typical subcommunity
OV37b  Achillea millefolium-Euphrasia officinalis agg. subcommunity
OV37c  Cladonia spp. subcommunity
OV38  Gymnocarpium robertianum-Arrhenatherum elatius community
OV39  Asplenium trichomanes-Asplenium ruta-muraria community
OV39a  Trichostomum crispulum-Tortula intermedia subcommunity
OV39b  Arenaria serpyllifolia-Sedum acre subcommunity
OV40  Asplenium viride-Cystopteris fragilis community
OV41  Parietaria diffusa community
OV41a  Homalothecium sericeum-Tortula muralis subcommunity
OV41b  Daucus carota subcommunity
OV42  Cymbalaria muralis community
SD1  Rumex crispus-Glaucium flavum shingle community
SD1a  typical subcommunity
SD1b  Lathyrus japonicus subcommunity
SD2  Cakile maritima-Honkenya peploides strandline
SD3  Matricaria maritima-Galium aparine strandline
SD4  Elymus farctus ssp. boreali-atlanticus foredune community
SD5  Leymus arenarius foreshore community
SD5a  species poor subcommunity
SD5b  Elymus farctus subcommunity
SD5c  Festuca rubra subcommunity
SD6  Ammophila arenaria mobile dune community
SD6a  Elymus farctus subcommunity
SD6b  Leymus arenarius-Elymus farctus subcommunity
SD6c  Leymus arenarius subcommunity
SD6d  typical subcommunity
SD6e  Festuca rubra subcommunity
SD6f  Poa pratensis subcommunity
SD6g  Carex arenaria subcommunity
SD7  Ammophila arenaria-Festuca rubra semi-fixed dune community
SD7a  typical subcommunity
SD7b  Hypnum cupressiforme subcommunity
SD7c  Ononis repens subcommunity
SD7d  Tortula ruraliformis subcommunity
SD7e  Elymus pycnanthus subcommunity
SD8  Festuca rubra-Galium verum fixed dune community
SD8a  typical subcommunity
SD8b  Luzula campestris subcommunity
SD8c  Tortula ruraliformis subcommunity
SD8d  Ranunculus acris-Bellis perennis subcommunity
SD8e  Prunella vulgaris subcommunity
SD9  Ammophila arenaria-Arrhenatherum elatius dune grassland
SD9a  Arrhenatherum elatius subcommunity
SD9b  Geranium sanguineum subcommunity
SD10  Carex arenaria dune community
SD10a  Festuca rubra subcommunity
SD10b  Festuca ovina subcommunity
SD11  Carex arenaria-Cornicularia aculeata dune community
SD11a  Ammophila arenaria subcommunity
SD11b Festuca ovina subcommunity
SD12 Carex arenaria-Festuca ovina-Agrostis capillaris dune grassland
SD12a Anthoxanthum odoratum subcommunity
SD12b Holcus lanatus subcommunity
SD13 Salix repens-Bryum pseudotriquetrum dune-slack
SD13a Poa annua-Hydrocotyle vulgaris subcommunity
SD13b Holcus lanatus-Festuca rubra subcommunity
SD14 Salix repens-Campylium stellatum dune-slack
SD14a Carex serotina-Drepanocladus sendtneri subcommunity
SD14b Rubus caesius-Galium palustre subcommunity
SD14c Bryum pseudotriquetrum-Aneura pinguis subcommunity
SD14d Festuca rubra subcommunity
SD15 Salix repens-Calliergon cuspidatum dune-slack
SD15a Carex nigra subcommunity
SD15b Equisetum variegatum subcommunity
SD15c Carex flacca-Pulicaria dysenterica subcommunity
SD15d Holcus lanatus-Angelica sylvestris subcommunity
SD16 Salix repens-Holcus lanatus dune-slack
SD16a Ononis repens subcommunity
SD16b Rubus caesius subcommunity
SD16c Prunella vulgaris-Equisetum variegatum subcommunity
SD16d Agrostis stolonifera subcommunity
SD17 Potentilla anserina-Carex nigra dune-slack
SD17a Festuca rubra-Ranunculus repens subcommunity
SD17b Carex flacca subcommunity
SD17c Caltha palustris subcommunity
SD17d Hydrocotyle vulgaris-Ranunculus flammula subcommunity
SD18  Hippophae rhamnoides scrub
SD18a  Festuca rubra subcommunity
SD18b  Urtica dioica-Arrhenatherum elatius subcommunity
SD19  Phleum arenarium-Tortula ruralis ssp. ruraliformis dune annual community
SM1   Zostera communities
SM2   Ruppia maritima salt-marsh community
SM3   Eleocharis parvula salt-marsh community
SM4   Spartina maritima salt-marsh community
SM5   Spartina alterniflora salt-marsh community
SM6   Spartina anglica salt-marsh community
SM7   Arthrocnemum perenne community
SM8   Annual Salicornia salt-marsh community
SM9   Suaeda maritima salt-marsh community
SM10  Transitional low-marsh vegetation
SM11  Aster tripolium var. discoideus salt-marsh community
SM12  Rayed Aster tripolium stands
SM13  Puccinellia maritima salt-marsh community
SM13a Puccinellia maritima subcommunity
SM13b Glaux maritima subcommunity
SM13c Limonium vulgare-Armeria maritima subcommunity
SM13d Plantago maritima-Armeria maritima subcommunity
SM13e turf fucoid subcommunity
SM13f Spartina maritima subcommunity
SM14  Halimione portulacoides salt-marsh community
SM14a Halimione portulacoides subcommunity
SM14b Juncus maritimus subcommunity
SM14c Puccinellia maritima subcommunity
SM15  Juncus maritimus-Triglochin maritima salt-marsh community
SM16  Festuca rubra salt-marsh community
SM16a Puccinellia maritima subcommunity
SM16b Juncus gerardi subcommunity
SM16c Festuca rubra-Glaux maritima subcommunity
SM16d Festuca rubra subcommunity
SM16e Leontodon autumnalis subcommunity
SM16f Carex flacca subcommunity
SM17  Artemisia maritima salt-marsh community
SM18  Juncus maritimus salt-marsh community
SM18a Plantago maritima subcommunity
SM18b Oenanthe lachenalii subcommunity
SM18c Festuca arundinacea subcommunity
SM19  Blysmus rufus salt-marsh community
SM20  Eleocharis uniglumis salt-marsh community
SM21  Suaeda vera-Limonium binervosum salt-marsh community
SM21a typical subcommunity
SM21b Frankenia laevis subcommunity
SM22  Halimione portulacoides-Frankenia laevis salt-marsh community
SM23  Spergularia marina-Puccinellia distans salt-marsh community
SM24  Elymus pycnanthus salt-marsh community
SM25  Suaeda vera salt-marsh community
SM25a Elymus pycnanthus subcommunity
SM25b Halimione portulacoides subcommunity
SM26  Inula crithmoides salt-marsh community
SM26a Puccinellia maritima subcommunity
SM26b Elymus pycnanthus subcommunity
SM27  Ephemeral salt-marsh vegetation with Sagina maritima

SM28  Elymus repens salt-marsh community
Acceptable Data Formats

The following examples show valid formats for entering data from text files: Note that the program is underpinned by the **BRC/MAVIS numerical code system** for the British native and non-native flora.

3 9202395 1

4 92021.1 0 25

5 <Plot from Verge 163 in South Molton>

5 Agrostis castellana 4

5 Anagallis sp.

5 920239 100054 Betula pendula (g) 1

G1 92021.1 1 1

Line 1: plot number 3, BRC species number, constant value 1 (means no constant value)

Line 2: plot number 4, BRC species number, constant value 0, 25% cover

Line 3: plot number 5, title for plot in angle brackets [this is an optional title line]

Line 4: plot number 5, species name, 4% cover

Line 5: plot number 5, species name, no percentage cover given [note that system converts sp. and three other variants to [spp], as with ecofact system. This behaviour can be modified if required]

Line 6: plot number 5, BRC species number, constant value 100054, species name (for reference only, ignored by application as BRC number has been given), 1% cover [this is the default format used by MAVIS for saving data]

Line 7: group number 1, BRC species number, constant value 1 (means no value), constancy value 1

If any of the lines in the source file cannot be interpreted for any reason, a dialogue will be displayed listed all the erroneous lines and, for each line, the reason why the line could not be read.

For batch file entry many users will need to convert their numeric codes into MAVIS/BRC codes. At present conversion tables exist for Countryside Survey and NVC species lists. These can be downloaded from the MAVIS website.
Numeric Code System Used in MAVIS

MAVIS references species data by a unique numeric code number taken from a comprehensive listing of all native and non-native vascular plants, bryophytes and lichens recorded in Britain and Ireland up until Spring 1997. The species list and most codes are drawn from the Biological Record Centre database. Additions to the list include indeterminate taxa and amalgams recorded during the Countryside Surveys of 1978 and 1990, as well as multiple entries distinguished by a unique constant and added to the BRC code for the different heights of shrubs and trees which are discriminated in the NVC eg. Quercus robur (c), Q.robur (s).
User Instructions

1. The system is reasonably demanding of memory. It has been created on a Windows 95 machine with 32 Mb of RAM: whilst it has not been tested on any other machines it should work happily with 16Mb RAM. Because of the large amounts of data required to be held in memory, performance is likely to be poor when run on machines with 8Mb of memory or less; this issue will be addressed during testing. The application should also run under Windows 3.11 of course.

2. Start the application and you are presented with a form-based screen (shown below) consisting of a plots list, a groups list and some corresponding buttons. Plots are lists of species with optional cover percentages, and groups are lists of species with compulsory constancy values in the range 1 to 5.

![Application Screen](image)

3. Plots and groups may be entered manually through the application or read in from a text file. At present, the maximum number of plots and groups that can be handled is 32767, and this is also the largest plot or group number that can be used.

4. To load a set of plots and groups, choose Open from the File menu and select the text file that contains the data. Files previously saved will be in the correct format for opening. If you wish to create external files for opening they must obviously have the correct format. See help topic.

5. To create plots manually, click the Add Plots button. The form shown below is presented which enables you to select species, optionally enter a percentage cover value and add the species to the list. The system will not accept cover values outside the range 0-100%. A plot number is automatically assigned to these manually-entered plots (the lowest unused number) and listed in the top right corner of the dialogue. You can also give a name to the plot. When you have finished, click OK and the plot will be listed in the plots list box with its number and name.

To edit the species list of plots already listed, double-click the plot name.
6. The system automatically uses cover values of 1% whenever values are not entered, but it does not display these values at any stage. This may be misleading, but you can decide if you want to do anything about this. Cover values are used only for Ellenberg and CSR calculations, not CS90 plot classification and Biogeographic element search.

7. To create groups manually, click the Add Groups button: the dialogue works in the same way as the plots dialogue except that you must enter a constancy value in the range 1 to 5 for every species.

8. To create groups from plots, enter some plots first and then choose the Create Groups from Plots button to select two or more groups (form shown below). In fact you can create a group from a single plot at the moment. This will be modified to enforce a minimum of five plots for group creation. The system will create the species list for the group, assigning a constancy value to each, and the new group will be added to the groups list box. Please note that the system does not retain any knowledge of how the group was created. Any subsequent change to the plots used to create the group will have no effect on the group.

9. To view or edit any plot or group, double click the desired plot or group. Choose OK to keep changes, CANCEL to reject them.
Storing Data and Results

1. To save the set of plots and groups that you have created, choose Save As from the File menu. The plots and groups will be saved to a text file in the correct format for editing, viewing, printing or exporting to external applications.

2. To classify a single plot and group, select a plot and/or group from the boxes and choose the Classify Selected Plots/Groups button. A dialogue box will be displayed that shows the textual results of the classifications on the selected plot and/or group. You can examine this and, if you wish, save the report to a file using the Save button. The Print button has not yet been implemented, but the saved text file can easily be printed, or the data in the dialogue can be copied into the clipboard, pasted into another application and then printed.

3. The details of the report should be self-explanatory. Changes to the format of the output can easily be arranged. In particular, we may amend the output to include lists of species characteristic (or not) of NVC units that are either present or absent from field data and unit. CVS aggregate class will also be listed in addition to plot class. Example output for NVC matching of a group of plots is shown below.

![Report](image)

4. To classify all entered plots and groups, choose the Classify All Plots/Groups button. If the report is too large to be displayed in a dialogue (more than around 53 plots or 126 groups) you will be prompted for a filename and the report will be sent straight to the selected file where it can be examined, printed or exported to another application.