Contents

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 = Ellenberg score for each species
c = cover value for each species
n = number of species in the plot

$$\text{Cover-weighted score} = \frac{\text{Sum } (E \,.\, c)}{\text{Sum } c}$$

$$\text{Unweighted scores} = \frac{\text{Sum } E}{N}$$

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.

Code	Element name
13	European Arctic-montane
14	Eurosiberian Arctic-montane
15	Eurasian Arctic-montane
16	Circumpolar Arctic-montane
21	Oceanic Boreo-arctic Montane
23	European Boreo-arctic Montane
24	Eurosiberian Boreo-arctic Montane
26	Circumpolar Boreo-arctic Montane
34	Eurosiberian Wide-boreal
35	Eurasian Wide-boreal
36	Circumpolar Wide-boreal
41	Oceanic Boreal-montane
42	Suboceanic Boreal-montane
43	European Boreal-montane
44	Eurosiberian Boreal-montane
45	Eurasian Boreal-montane
46	Circumpolar Boreal-montane
51	Oceanic Boreo-temperate
52	Suboceanic Boreo-temperate
53	European Boreo-temperate
54	Eurosiberian Boreo-temperate

61 Oceanic Wide-temperate

63 European Wide-temperate

64 Eurosiberian Wide-temperate

65 Eurasian Wide-temperate

66 Circumpolar Wide-temperate

71 Oceanic Temperate

72 Suboceanic Temperate

73 European Temperate

74 Eurosiberian Temperate

75 Eurasian Temperate

76 Circumpolar Temperate

81 Oceanic Southern-temperate

82 Suboceanic Southern-temperate

83 European Southern-temperate

84 Eurosiberian Southern-temperate

85 Eurasian Southern-temperate

86 Circumpolar Southern-temperate

91 Mediterranean-Atlantic

92 Submediterranean-Subatlantic

93 Mediterranean-montane

55 Eurasian Boreo-temperate

56 Circumpolar Boreo-temperate

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ter Braak, C.J.F., Gremmen, N.J.M. (1987). Ecological amplitudes of plant species and the internal consistency of Ellenbergs' indicator values for moisture. Vegetation. 69, 79-87.

Thompson, K., Hodgson, J.G., Grime, J.P., Rorison, I.H., Band, S.R. (1993). Ellenberg numbers revisited. Phytocoenologia 23, 277-289.

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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

Grime, J.P. (1974). Vegetation classification by reference to strategies. Nature, 250, 26-31.

Grime, J.P. (1979). Plant Strategies and Vegetation Processes. Wiley and Sons:

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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 stengths 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 hedgrows, 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

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Bunce, R.G.H., Smart, S.M., van de Poll, H.M., Watkins, J.W., Scott, W.A., Howard, D.C.H. The Countryside Vegetation System (CVS): Class descriptions. HMSO London.

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 TWINSPAN 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

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Rodwell, J.S. (1992). British Plant Communities. Vol 3. Grasslands and Montane Communities. CUP.

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

Floristic Units of the National Vegetation Classification

NVC unit	Name
A1	Lemna gibba community
A2	Lemna minor community
A2a	typical subcommunity
A2b	Lemna trisulca subcommunity
A2c	Riccia fluitans-Ricciocarpus natans subcommunity
A3	Spirodela polyrhiza-Hydrocharis morsus-ranae community
A4	Hydrocharis morsus-ranae-Stratiotes aloides community
A5	Ceratophyllum demersum community
A5a	Ranunculus circinatus subcommunity
A5b	Lemna minor subcommunity
A6	Ceratophyllum submersum community
A7	Nymphaea alba community
A7a	species-poor subcommunity
A7b	Juncus bulbosus-Potamogeton polygonifolius subcommunity
A8	Nuphar lutea community
A8a	species-poor subcommunity
A8b	Callitriche stagnalis-Zannichellia palustris subcommunity
A8c	Nymphaea alba subcommunity
A8d	Potamogeton obtusifolius-Juncus bulbosus subcommunity
A9	Potamogeton natans community
A9a	species-poor subcommunity
A9b	Elodea canadensis subcommunity
A9c	Juncus bulbosus subcommunity
A10	Polygonum amphibium community
A11	Potamogeton pectinatus-Myriophyllum spicatum community

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 Hypogymnia 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 Rhytidiadelphus 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 Plagiothecium 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 subccommunity

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 warnstorfii 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 nigrun 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/quinquefarium-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 columbaria grassland

CG8a Hypericum pulchrum-Carlina vulgaris subcommunity

CG8b Avenula pratensis subcommunity

CG8c Hieracium pilosella subcommunity

CG9 Sesleria albicans-Galium sterneri 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

MG1b Urtica dioica subcommunity

MG1c Filipendula ulmaria subcommunity

MG1d Pastinaca sativa subcommunity

MG1e Centaurea nigra subcommunity

MG2 Filipendula ulmaria-Arrhenatherum elatius grassland

MG2a Filipendula ulmaria subcommunity

MG2b Polemonium caeruleum subcommunity

MG3 Anthoxanthum odoratum-Geranium sylvaticum meadow

MG3a Bromus hordeaceus subcommunity

MG3b Briza media subcommunity

MG4 Alopecurus pratensis-Sanguisorba officinalis grassland

MG5 Cynosurus cristatus-Centaurea nigra grassland

MG5a Lathyrus pratensis subcommunity

MG5b Galium verum subcommunity

MG5c Danthonia decumbens subcommunity

MG6 Lolium perenne-Cynosurus cristatus grassland

MG6a typical subcommunity

MG6b Anthoxanthum odoratum subcommunity

MG6c Trisetum flavescens subcommunity

MG7 Lolium perenne leys and related grasslands

MG7A Lolium perenne-Trifolium repens leys

MG7B Lolium perenne-Poa trivialis leys

MG7C Lolium perenne-Alopecurus pratensis-Festuca pratensis flood-pasture

MG7D Lolium perenne-Alopecurus pratensis meadow

MG7E Lolium perenne-Plantago lanceolata grassland

MG7F Poa-Lolium perenne grassland

MG8 Cynosurus cristatus-Caltha palustris flood-pasture

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 helioscopa 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 helioscopa 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

OV24 Urtica dioica-Galium aparine community

OV24a typical subcommunity

OV24b Arrhenatherum elatius-Rubus fruticosus agg. subcommunity

OV25 Urtica dioica-Cirsium arvense community

OV25a Holcus lanatus-Poa annua subcommunity

OV25b Elymus repens-Artemisia vulgaris subcommunity

OV25c Lolium perenne-Papaver rhoeas subcommunity

OV26 Epilobium hirsutum community

OV26a Epilobium hirsutum subcommunity

OV26b Phragmites australis-Eupatorium cannabinum subcommunity

OV26c Filipendula ulmaria-Angelica sylvestris subcommunity

OV26d Arrhenatherum elatius-Heracleum sphondylium subcommunity

OV26e Urtica dioica-Cirsium arvense subcommunity

OV27 Epilobium angustifolium community

OV27a Holcus lanatus-Festuca ovina subcommunity

OV27b Urtica dioica-Cirsium arvense subcommunity

OV27c Rubus fruticosus agg.-Dryopteris dilatata subcommunity

OV27d Acer pseudoplatanus-Sambucus nigra subcommunity

OV27e Ammophila arenaria subcommunity

OV28 Agrostis stolonifera-Ranunculus repens community

OV28a Polygonum hydropiper-Rorippa sylvestris subcommunity

OV28b Poa annua-Polygonum aviculare subcommunity

OV29 Alopecurus geniculatus-Rorippa palustris community

OV30 Bidens tripartita-Polygonum amphibium community

OV31 Rorippa palustris-Filaginella uliginosa community

OV32 Myosotis scorpioides-Ranunculus sceleratus community

OV33 Polygonum persicaria-P. lapathifolium community

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 Ranunculuc 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.

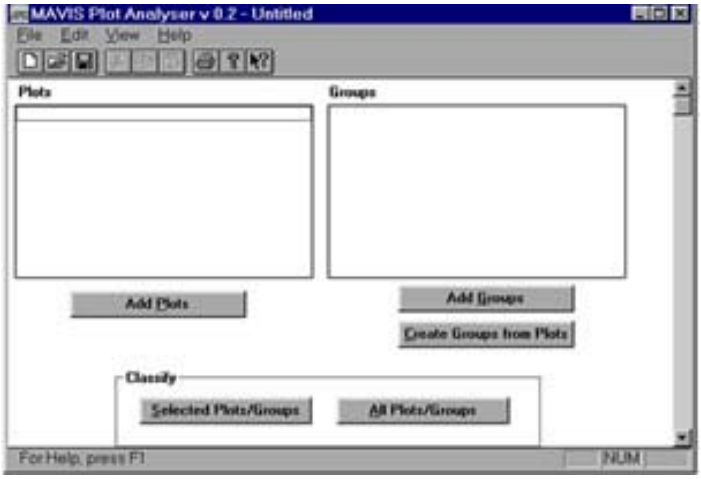
Numeric Code System Used in MAVIS

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.

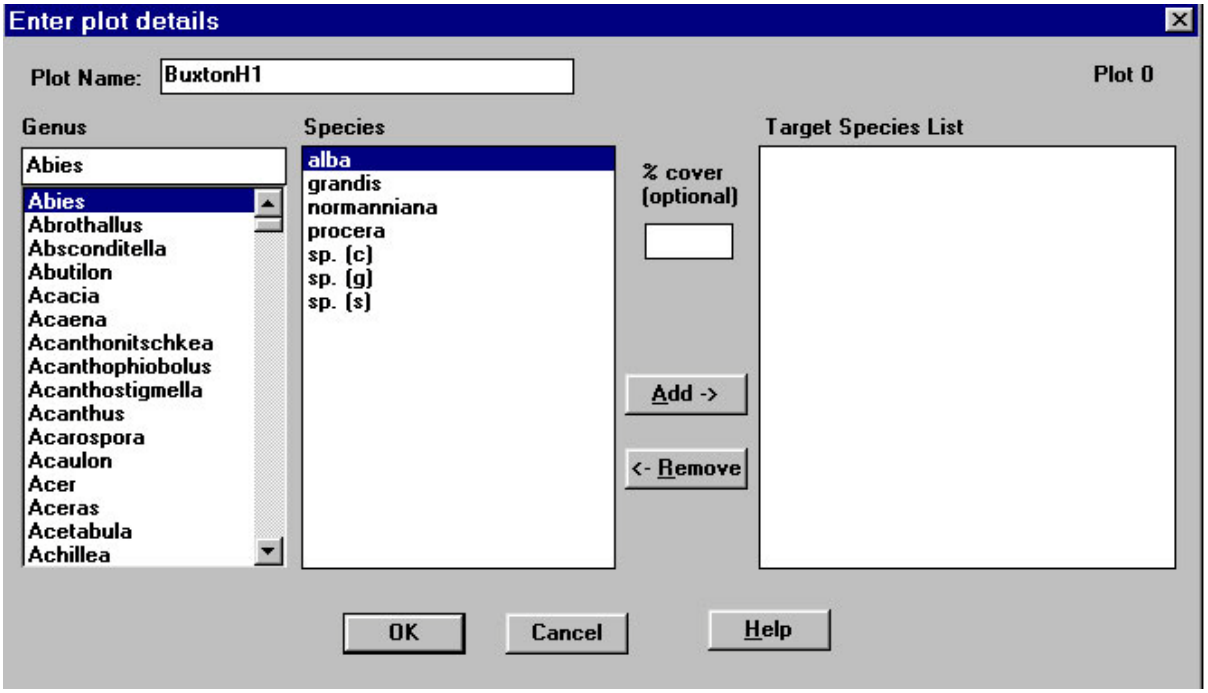


3. Plots and groups may be entered manually through the application or read in from a text file. At present, the maximum number of plots and groups that can be handled is 32767, and this is also the largest plot or group number that can be used.

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.

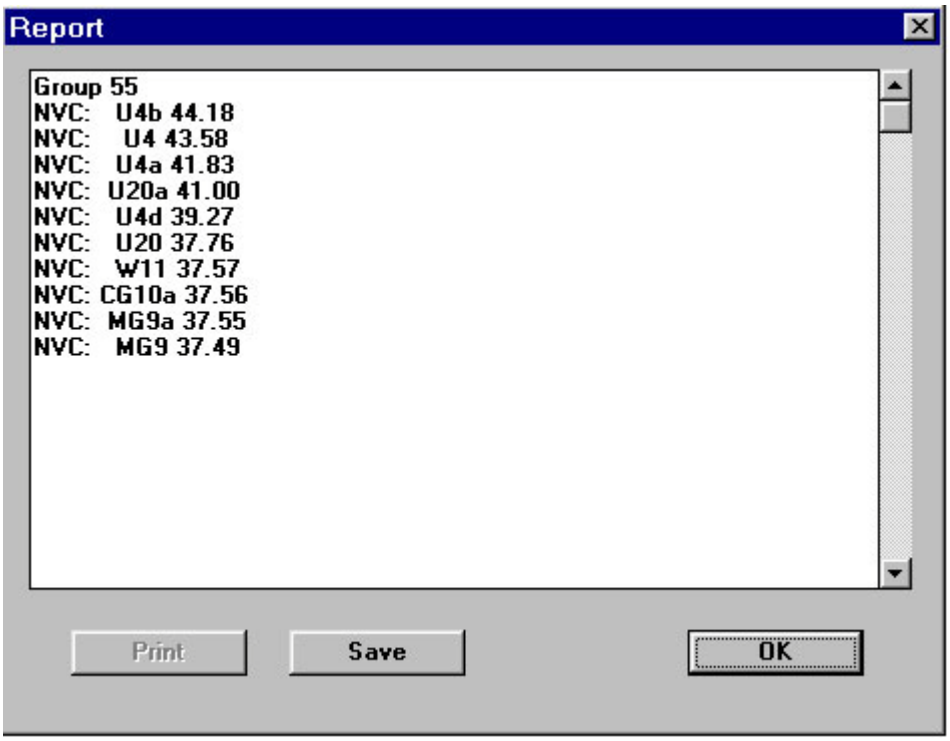
9. To view or edit any plot or group, double click the desired plot or group. Choose OK to keep changes, CANCEL to reject them.

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.



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.