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The Cumbria Mire Survey

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Acknowledgements

I would like to thank Dr Henry Adams for all his hard work during the three years of this project and to acknowledge his considerable survey expertise, insight into mire systems and boundless enthusiasm.

The work of Miss Tratt has proved invaluable and I would like to thank her for her hard work.

I gratefully acknowledge the contribution of Lake District National Park to the project.

Last, but not least my thanks to my regional colleagues for all their help; Mr James Marsden who helped to establish and manage the project, Miss Sarah Priest who helped to manage the project latterly and Mr Ian Taylor (LDNP) for his patience.

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1. BACKGROUND

The Lake District National Park (LDNP) contains a large number of valley and basin mires, which though long thought to be of high nature conservation value, have not been surveyed beyond Phase 1 level. The characteristics of these mires are therefore undescribed and were believed to be poorly represented within the Site of Special Scientific Interest (SSSI) series.

In order to assess and evaluate the valley mire resource, LDNP and North West region (known henceforward as the region) with Chief Scientist Directorate (CSD) of the Nature Conservancy Council jointly funded a one year survey project, April 1987-April 1988. The promising results of the work of Dr H. Adams led directly to funding by CSD for a further 2 years work. The project finished in April 1991, and although most of the survey work had been completed and site reports finished (a full set is available at the regional office and reports for relevant sites have been sent to LDNP), a full written report and evaluation had not been completed.

In order to analyse and summarise the floristic data, a contract was placed in 1991 with Ms R. Tratt, Sheffield University. The aim of the contract was to TWINSPAN the data and use the MATCH program to define, according to the National Vegetation Classification, the vegetation units identified from the analysis.

2. AIMS

The aims of the original project were stated to:

1. survey, classify and evaluate the full range of variation of mire sites represented in Cumbria according to mire type, form and vegetation.

2. select the 'best' examples of each mire type and vegetation community in each selection area (South and West Cumbria) and for the LDNP as a whole, according to the Guidelines for the Selection of Biological SSSI.

4. compare existing peatland SSSI with sites chosen as 'best' examples.

5. recommend which SSSI to retain or denotify; which new sites to notify as SSSI to ensure adequate representation of the full range of variation within the series; and which sites, not considered to be of SSSI status, should be given priority for safeguard by other means.

The purpose of this document is to:

1. summarise the project

2. present the floristic data

3. comment upon the national significance of the sites as determined from the floristic information

4. identify possible ways forward

3. METHOD

3.1 Selection of sites for survey

Potential sites for survey were identified using the following sources of information:

1. Phase 1 target notes and maps

2. CSD upland survey reports

3. Biological Surveys of the National Trust

4. The Flora of Cumbria data base was interrogated by Lancaster University to give dot maps showing tetrads containing joint occurrences of indicator* species of NVC mire communities known to occur within the county.

3. The same method was employed to identify tetrads of the location of uncommon mire species believed to be indicative of undisturbed or potentially high value mires. This is incomplete.

All mire sites identified in this way were included within the 'Cumbria Mire Site Register' and this is kept in the Blackwell office. This register lists the identified sites ordered according to 5 and 10km grid squares and includes details on; site location, mire type (from a desk assessment unless confirmed by previous field work), size and known uncommon or important* species or features.

The relative priority of sites for survey was determined by applying Nature Conservation Review (NCR) criteria to each site. Sites containing valley and / or basin mires were allocated highest priority for survey for the reasons outlined in section 1.

* undefined terms

3.2 Types of field survey

Three types of field survey were undertaken:

1. *Full survey* which involved recording quadrats

2. *Intermediate level of survey* where no quadrats were recorded

3. *Reconnaissance survey* where a brief assessment of the character of the site and its quality was made.

The decision as to the level of survey to be applied was determined by a subjective assessment of the 'quality' of the site in the field.

The following will concentrate upon the method used by the full survey approach.

3.2.1 Full survey approach

3.2.1.1 Scope of the survey

The fieldwork methods employed were a modified version of those used by the NCC Wales Field Unit (Ratcliffe and Hattey 1982) and with reference to the SSSI selection guidelines.

An average of 2 days fieldwork was spent on each site during which the following data were obtained:

1. A species list (vascular and bryophytes) with DAFOR ratings for the whole site was made during an initial traverse.

2. A large scale site map (1:2500, air-photo tracing or sketch map as appropriate) showing identified vegetation communities, quadrat locations, water courses and other features of interest.

3. Quadrat information (3.2.1.2).

4. Other relevant site details.

This information, plus a summary of the initial classification of vegetation quadrats is summarised within a site proforma (Appendix 1).

Therefore, the complete site report consisted of the survey proforma to which were appended a summary sheet of community types present and their abundance, a site description and map, quadrat proformae, site species list, plus any target notes describing significant features such as ditches and notable species locations plotted on the map.

3.2.1.2 Quadrat recording

Vegetation stands were characterised by a representative quadrat, generally 2 x 2m in size. 'Representative' is defined as a quadrat containing as many of the species that appear to be 'constant' (*sensu* NVC) within the stand. Time constraints meant that usually stands were only represented by one quadrat. However, further quadrats were recorded where vegetation mosaics or variations were present within a stand.

All plant species (vascular and bryophytes) were recorded on a quadrat proforma with a DOMIN rating. Additional species present in the stand, but outside the quadrat, were noted as '+' with their DAFOR ratings for that stand.

The following physical parameters were also recorded on the quadrat proforma: altitude, slope and aspect; soil / peat depth (measured by a 2.2m cane) and its consistency; relevant geology; % cover and height of vegetation layers; % cover of open water, litter, bare substrate; depth of surface water.

3.2.1.3 Initial classification

An initial classification of the NVC (sub) community type or variant was made, largely by checking NVC constancy tables against quadrat data and by an impression of the constancy of species and preferential species present throughout the stand as a whole.

3.2.1.4 Description of the stand as a whole

A description of the stand as a whole was noted including; microtopography, situation of the site; vegetation zonation, homogeneity, quadrat representativeness and any other pertinent features.

3.2.1.5 Stand mapping

The location of quadrats and boundaries between vegetation units were plotted on the site map.

Transitions between adjacent stands identified by shared species were not sampled nor mapped (these areas were left blank on the site map). But uncommon or notable species characteristic of these transition zones were noted on the relevant quadrat proformae and/or as target notes.

3.3 Analysis of the vegetation data

The quadrat data has been copied onto computer disc and is called CMS20.dat. There are copies of this data held in Science Directorate, LDNP and the Region. These data were analysed using TWINSPAN and the end-groups were compared to NVC communities and subcommunities using MATCH. The most appropriate communities for each end-group was chosen taking these into account against raw data and environmental and geographical information.

4. RESULTS

4.1 Cumbria Mire Register

The 10km squares for which Phase 1 mire site data has been collated within the Cumbria Mire register is illustrated in Figure 1.

This work highlighted a number of particular problems associated with prioritising which sites to survey in the northern half of LDNP. These are:

1. Here, many of the valley mires are likely to occur within upland SSSI and therefore because these sites are already SSSI, they were given less priority for survey.

2. The most species rich and higher interest mires are likely to be basic and / or montane flushes. These flushes fell within the remit of the Cumbria Grassland Survey or Upland Survey and are not included here.

3. In this area valley mires are floristically less well defined and less separable from blanket mire.

4.2 Sites surveyed

The list of fully surveyed sites and relevant quadrat numbers is given in Table 1 and their location is shown in Figure 2. This listing illustrates that sites are generally widespread but there are a number of groups of sites such as Subberthwaite Common (SD 255860) which grade northwards into the complex associated with Blawith Knott (SD257872) and Blawith Fells (SD278911) and those found south of Storrs (SD 400925) and east of Winster (SD 422940).

4.3 Vegetation communities

The constancy tables for end-groups classified into NVC communities are presented in Appendix 2 and these groups are described in Appendix 3.

It was generally found that the end-groups adequately reflected the NVC classification, for example, those for M18 *Erica tetralix-Sphagnum papillosum* raised mire. The match was less good of other end-groups which consisted of quadrats intermediate in character or which represented a mixture of different communities in a mosaic. Taking the TWINSPAN classification to the 6th level has eliminated this to a certain extent, but in some cases it is not possible to subdivide the end-groups any further and these have been described and assigned to NVC communities which makes the best compromise. The classification of the quadrats which are ascribed to M9 *Carex rostrata-Calliergon cuspidatum* mire is an example where some compromise has been adopted. In this case, *Carex rostrata* is often absent and *Eleocharis multicaulis* is dominant, but all other aspects of

Figure 1. 10km. squares for which Phase 1 mire site data has been collated

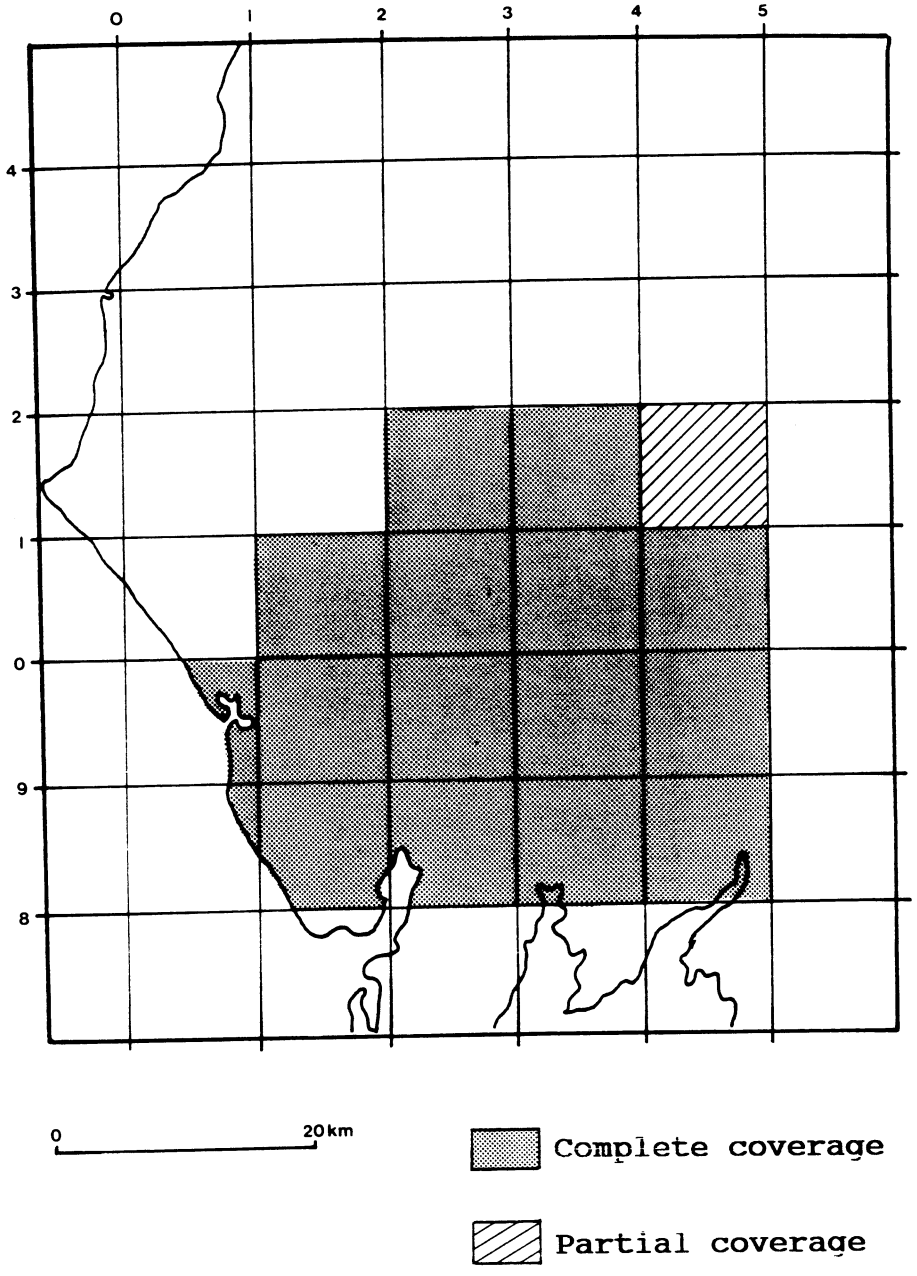


Table 1 **Cumbria Mire survey sites for which quadrat data was obtained**

Site Name	Grid Reference	Quadrat numbers	
		R Tratt	H Adams
Bootle Fell	SD 121(2)887(0)	1	1
Bootle Fell	SD 127(2)891(3)	2	2
Bootle Fell	SD 127(2)891(5)	3	3
Bootle Fell	SD 127(0)891(6)	4	4
Bootle Fell	SD 127(3)892(2)	5	5
Bootle Fell	SD 127(3)892(2)	6	6
Hooker Moss	SD 113(2)984(2)	7	135
Hooker Moss	SD 113(1)984(8)	8	136
Near Barnscar	SD 127(1)953(9)	9	214
Near Barnscar	SD 127(4)954(1)	10	215
Near Barnscar	SD 129(7)958(1)	11	210
Foxbield Moss (S of Eskdale)	SD 188(4)993(7)	12	217
Foxbield Moss (S of Eskdale)	SD 188(0)993(6)	13	218
Foxbield Moss (S of Eskdale)	SD 188(6)993(2)	14	219
Foxbield Moss (S of Eskdale)	SD 188(3)993(4)	15	220
Foxbield Moss (S of Eskdale)	SD 187(1)995(1)	16	221
Foxbield Moss (S of Eskdale)	SD 185(6)995(3)	17	222
Foxbield Moss (S of Eskdale)	SD 190(6)989(7)	18	223
Gawthwaite Moss (Subberthwaite)	SD 259(5)851(2)	19	7
Gawthwaite Moss (Subberthwaite)	SD 259(7)851(2)	20	8
Gawthwaite Moss (Subberthwaite)	SD 259(4)851(0)	21	9
Gawthwaite Moss (Subberthwaite)	SD 259(5)851(5)	22	10
Gawthwaite Moss (Subberthwaite)	SD 259(9)851(2)	23	11
Gawthwaite Moss (Subberthwaite)	SD 259(0)851(1)	24	12
Gawthwaite Moss (Subberthwaite)	SD 259(4)851(6)	25	13
Gawthwaite Moss (Subberthwaite)	SD 259(2)851(3)	26	14
Gawthwaite Moss (Subberthwaite)	SD 258(6)851(1)	27	15
Burney Tarn Mire (Subberthwaite)	SD 255(6)859(1)	28	16
Burney Tarn Mire (Subberthwaite)	SD 255(5)859(1)	29	17
Burney Tarn Mire (Subberthwaite)	SD 255(5)859(0)	30	18
Burney Tarn Mire (Subberthwaite)	SD 255(9)859(6)	31	19
Burney Tarn Mire (Subberthwaite)	SD 256(0)858(5)	32	20
Burney Tarn Mire (Subberthwaite)	SD 255(6)860(4)	33	21
Burney Tarn Mire (Subberthwaite)	SD 252(8)859(2)	34	22
Burney Tarn Mire (Subberthwaite)	SD 253(3)859(4)	35	23
Mawthwaite Moss	SD 257(4)868(7)	36	139
Mawthwaite Moss	SD 257(0)867(4)	37	138
Mawthwaite Moss	SD 256(9)867(9)	38	137
Mawthwaite Moss	SD 261(6)868(8)	39	26
Mawthwaite Moss	SD 261(0)869(6)	40	25
Mawthwaite Moss	SD 260(0)869(6)	41	24
Knott End Moss (Subberthwaite)	SD 256(1)869(6)	42	27
Knott End Moss (Subberthwaite)	SD 255(4)869(5)	43	28
Knott End Moss (Subberthwaite)	SD 254(6)869(8)	44	29
Knott End Moss (Subberthwaite)	SD 254(7)869(1)	45	30
Knott End Moss (Subberthwaite)	SD 254(6)869(1)	46	31
Knott End Moss (Subberthwaite)	SD 253(7)869(2)	47	32
Knott End Moss (Subberthwaite)	SD 254(6)869(0)	48	33
Knott End Moss (Subberthwaite)	SD 254(6)869(1)	49	34
Knott End Moss (Subberthwaite)	SD 255(3)870(3)	50	35
Knott End Moss (Subberthwaite)	SD 256(7)871(4)	51	36
Knott End Moss (Subberthwaite)	SD 255(9)870(8)	52	37
Birk Bank Moss	SD 257(7)872(0)	53	38

Site Name	Grid Reference	Quadrat numbers	
		R Tratt	H Adams
Birk Bank Moss	SD 258(1)872(7)	54	39
Birk Bank Moss	SD 258(0)872(6)	55	40
Birk Bank Moss	SD 257(9)872(5)	56	41
Birk Bank Moss	SD 258(2)873(0)	57	42
Birk Bank Moss	SD 258(2)872(8)	58	43
Birk Bank Moss	SD 258(7)873(4)	59	44
Birk Bank Moss	SD 258(1)873(3)	60	45
Birk Bank Moss	SD 257(7)874(7)	61	46
Long Rigg Moss (Subberthwaite Common)	SD 260(8)878(0)	62	140
Long Rigg Moss (Subberthwaite Common)	SD 259(4)878(6)	63	141
Long Rigg Moss (Subberthwaite Common)	SD 260(5)878(9)	64	142
Subberthwaite Common (W of Beckhead)	SD 255(9)879(3)	65	143
Tottlebank Moss	SD 263(5)888(7)	66	144
Tottlebank Moss	SD 264(6)889(7)	67	145
Tottlebank Moss	SD 263(0)886(7)	68	146
Black Moss (Blawith)	SD 276(6)879(9)	69	147
Black Moss (Blawith)	SD 277(0)880(0)	70	148
Whitestone Moss (Blawith Common)	SD 279(6)884(1)	71	149
Whitestone Moss (Blawith Common)	SD 280(4)884(4)	72	150
Tewet Moss	SD 263(1)838(2)	73	151
Tewet Moss	SD 263(8)838(6)	74	152
Blawith Common (ESE Beacon Tarn)	SD 277(8)896(9)	75	224
Blawith Common (next to footpath)	SD 281(6)899(0)	76	225
Beacon Tarn (mire adjacent to)	SD 272(9)900(8)	77	226
Beacon Tarn (mire adjacent to)	SD 272(1)900(7)	78	227
Beacon Tarn (mire adjacent to)	SD 272(8)900(5)	79	228
Beacon Tarn (mire adjacent to)	SD 273(4)902(7)	80	229
High Tarn Moss (Blawith Common)	SD 271(0)900(7)	81	230
High Tarn Moss (Blawith Common)	SD 269(8)901(3)	82	231
High Tarn Moss (Blawith Common)	SD 270(6)900(2)	83	234
High Tarn Moss (Blawith Common)	SD 270(2)900(5)	84	232
High Tarn Moss (Blawith Common)	SD 270(4)900(1)	85	233
Red Moss (Blawith Fells)	SD 275(5)908(0)	86	153
Blawith Fells (N of Beacon Tarn)	SD 278(3)911(0)	87	154
Stable Harvey Moss	SD 279(0)915(9)	88	235
Stable Harvey Moss	SD 278(5)915(5)	89	236
Stable Harvey Moss	SD 278(7)918(5)	90	237
Stable Harvey Moss	SD 278(2)918(2)	91	238
Stable Harvey Moss	SD 277(9)916(8)	92	239
Stable Harvey Moss	SD 278(0)913(6)	93	240
Stable Harvey Moss	SD 277(2)915(5)	94	241
Stable Harvey Moss	SD 279(7)916(8)	95	242
Stable Harvey Moss	SD 281(8)916(8)	96	243
Sliving Moss	SD 288(5)904(9)	97	155
Sliving Moss	SD 287(9)905(1)	98	156
Sliving Moss	SD 288(0)903(6)	99	244
Sliving Moss	SD 287(6)903(4)	100	245
Upper Beck: track side mire	SD 287(3)910(9)	101	246
Upper Beck: track side mire	SD 287(6)911(0)	102	247
Crook Moss (Newby Bridge)	SD 371(7)855(8)	103	47
Crook Moss (Newby Bridge)	SD 372(5)856(0)	104	48
Crook Moss (Newby Bridge)	SD 372(6)856(3)	105	49
Outley Mosses	SD 363(6)819(2)	106	158
Outley Mosses	SD 362(9)818(6)	107	157
Outley Mosses	SD 362(7)819(6)	108	159
Outley Mosses	SD 363(1)819(0)	109	160

Site Name	Grid Reference	Quadrat numbers R Tratt	Quadrat numbers H Adams
Outley Mosses	SD 363(4)818(3)	110	161
Outley Mosses	SD 363(2)819(2)	111	162
Outley Mosses	SD 363(9)820(5)	112	163
Outley Mosses	SD 363(2)822(1)	113	164
Outley Mosses	SD 363(5)822(5)	114	165
Thwaite Head Fell Mires	SD 352(0)912(0)	115	50
Thwaite Head Fell Mires	SD 352(8)911(7)	116	51
Thwaite Head Fell Mires	SD 352(7)911(5)	117	152
Thwaite Head Fell Mires	SD 352(5)910(5)	118	58
Thwaite Head Fell Mires	SD 352(7)911(0)	119	54
S of Rosthwaite Heights	SD 397(2)928(3)	120	55
SW of Birks Head Plantation	SD 398(6)934(2)	121	56
SW of Birks Head Plantation	SD 398(6)934(2)	122	57
SW of Birks Head Plantation	SD 398(2)934(2)	123	166
SW of Birks Head Plantation	SD 398(4)933(9)	124	167
SW of Birks Head Plantation	SD 398(3)934(0)	125	168
Rosthwaite Allotment (Black Beck Flushes)	SD 398(6)931(4)	126	58
White Gill Moss (Yewdale Fells)	SD 306(1)997(1)	127	251
Yewdale Moss	SD 301(7)995(5)	128	252
Bethecar Moor	SD 311(0)898(3)	129	248
Bethecar Moor	SD 311(1)899(2)	130	249
Bethecar Moor	SD 310(4)899(4)	131	250
Bellart How Moss/Foulshaw Moss*	SD 458(0)836(2)	132	169
Foulshaw Moss (NE part)*	SD 461(1)841(1)	133	170
Winster Bridleway Mire	SD 425(1)933(3)	134	59
Winster Bridleway Mire	SD 425(4)933(4)	135	60
Winster Bridleway Mire	SD 425(3)933(4)	136	61
Winster Bridleway Mire	SD 425(3)933(3)	137	62
Winster Bridleway Mire	SD 425(2)933(3)	138	63
Winster Bridleway Mire	SD 425(3)933(4)	139	64
Great Ludderburn Moss	SD 401(5)919(2)	140	65
Great Ludderburn Moss	SD 401(5)919(2)	141	66
Great Ludderburn Moss	SD 402(2)919(4)	142	67
Great Ludderburn Moss	SD 402(4)920(4)	143	68
Great Ludderburn Moss	SD 403(3)920(4)	144	69
Great Ludderburn Moss	SD 402(9)918(8)	145	70
Great Ludderburn Moss	SD 402(4)919(6)	146	71
Great Ludderburn Moss	SD 401(7)918(8)	147	72
Peat Moss	SD 402(1)922(0)	148	73
Peat Moss	SD 400(9)921(1)	149	74
Peat Moss	SD 402(4)922(3)	150	75
Peat Moss	SD 401(3)921(7)	151	76
Peat Moss	SD 401(6)922(4)	152	77
Peat Moss	SD 401(3)922(2)	153	78
Great Candlestick Moss	SD 399(9)925(5)	154	79
Great Candlestick Moss	SD 400(0)926(0)	155	80
Great Candlestick Moss	SD 400(3)926(0)	156	81
Great Candlestick Moss	SD 400(3)925(5)	157	82
Great Candlestick Moss	SD 400(2)926(7)	158	83
Great Candlestick Moss	SD 400(0)926(5)	159	84
Winster Wetlands	SD 420(7)939(6)	160	85
Winster Wetlands	SD 420(7)939(6)	161	86
Winster Wetlands	SD 419(7)940(0)	162	87
Winster Wetlands	SD 421(4)938(6)	163	88
Winster Wetlands	SD 421(3)938(6)	164	89
Winster Wetlands	SD 421(4)938(0)	165	90

Site Name	Grid Reference	Quadrat numbers	
		R Tratt	H Adams
Winster Wetlands	SD 421(3)937(8)	166	91
Winster Wetlands	SD 421(2)938(7)	167	92
Winster Wetlands	SD 421(2)938(7)	168	93
Winster Wetlands	SD 421(2)938(8)	169	94
Winster Wetlands	SD 421(3)938(3)	170	95
Winster Wetlands	SD 421(3)938(4)	171	96
Winster Wetlands	SD 421(3)938(6)	172	97
Winster Wetlands	SD 421(1)939(1)	173	98
Juniper Mire	SD 424(1)941(9)	174	99
Juniper Mire	SD 423(9)942(2)	175	100
High Fairbank	SD 443(6)977(5)	176	101
High Fairbank	SD 443(6)977(5)	177	102
High Fairbank	SD 443(8)977(2)	178	103
High Fairbank	SD 443(6)977(4)	179	104
Upper Black Beck Mire	SD 400(9)928(9)	180	171
Upper Black Beck Mire	SD 401(6)928(6)	181	?
Upper Black Beck Mire	SD 401(7)928(6)	182	123
Upper Black Beck Mire	SD 400(4)928(4)	183	174
Upper Black Beck Mire	SD 401(4)929(0)	184	125
Upper Black Beck Mire	SD 402(7)929(6)	185	176
Upper Black Beck Mire	SD 402(8)929(3)	186	177
Below Rulbuts Hill (Near Rosthwaite)	SD 404(9)933(7)	187	178
High Lickbarrow/School Knott	SD 422(6)972(3)	188	179
Flushes near High Lickbarrow	SD 422(1)970(5)	189	180
High Lickbarrow	SD 421(9)969(2)	190	181
S of School Knott Tarn	SD 428(6)969(7)	191	182
Rulbuts Hill (NE side)	SD 408(4)936(9)	192	253
Hale Moss (Beetham)	SD 510(5)776(4)	193	254
Hale Moss (Beetham)	SD 510(5)776(4)	194	255
Wakebarrow Peat Mosses	SD 599(5)875(6)	195	183
Burnsbeck Moss SSSI	SD 594(2)875(6)	196	256
Burnsbeck Moss SSSI	SD 594(2)875(6)	197	257
Burnsbeck Moss SSSI	SD 594(1)878(8)	198	258
Skelsmergh Tarn mire	SD 533(1)966(9)	199	105
Brundrigg Moss	SD 569(5)922(7)	200	184
Brundrigg Moss	SD 569(5)922(6)	201	185
Brundrigg Moss	SD 569(4)923(2)	202	186
Brundrigg Moss	SD 568(9)922(5)	203	187
Killington Reservoir (N end)	SD 593(6)919(6)	204	259
Egholme Peat Moss	SD 604(0)860(0)	205	188
Tarn Moss (New Park/Killington area)	SD 605(0)910(5)	206	189
Tarn Moss (New Park/Killington area)	SD 604(6)910(4)	207	190
Frostrow Fells	SD 685(6)906(8)	208	260
Great Moss	NY 224(1)061(0)	209	106
Great Moss	NY 224(0)060(1)	210	107
Great Moss	NY 224(0)060(0)	211	108
Great Moss	NY 223(1)058(5)	212	109
Great Moss	NY 223(0)057(1)	213	110
Great Moss	NY 222(6)056(0)	214	111
Great Moss	NY 223(2)055(0)	215	112
Great Moss	NY 223(6)056(3)	216	113
Great Moss	NY 223(6)056(1)	217	114
Great Moss	NY 222(7)054(0)	218	115
Blea Moss and Flushes	NY 297(1)036(1)	219	191
Blea Moss and Flushes	NY 298(6)035(4)	220	192
Blea Moss and Flushes	NY 298(7)035(4)	221	193

Site Name	Grid Reference	Quadrat numbers R Tratt	H Adams
Blea Moss and Flushes	NY 298(0)033(7)	222	194
Langdale Combe Mire	NY 262(3)085(5)	223	261
Langdale Combe Mire	NY 262(0)083(6)	224	262
Blindtarn Moss	NY 315(8)078(1)	225	263
Blindtarn Moss	NY 315(7)079(6)	226	264
Blindtarn Moss	NY 315(1)079(2)	227	265
Blindtarn Moss	NY 315(7)079(6)	228	266
Scartufts Mire (Loughrigg Fell)	NY 352(5)052(6)	229	269
Scartufts Mire (Loughrigg Fell)	NY 353(0)052(2)	230	268
Scartufts Mire (Loughrigg Fell)	NY 352(6)052(6)	231	267
Tarn Hows SSSI (Torver Intake Valley Mire D)		232	?
Birkhouse Moor	NY 370(1)162(5)	233	?
Eycott Hill Mire	NY 389(2)298(6)	234	117
Eycott Hill Mire	NY 389(2)298(6)	235	118
Eycott Hill Mire	NY 389(7)297(5)	236	119
Eycott Hill Mire	NY 390(1)296(1)	237	120
Eycott Hill Mire	NY 388(8)298(3)	238	121
Eycott Hill Mire	NY 390(2)296(4)	239	122
Eycott Hill Mire	NY 387(4)299(1)	240	123
Eycott Hill Mire	NY 387(2)297(3)	241	124
Eycott Hill Mire	NY 387(9)297(5)	242	125
Eycott Hill Mire	NY 388(2)296(6)	243	126
Flush/mire next to Groove Beck	NY 360(2)216(9)	244	271
Bowscale Moss	NY 362(4)315(6)	245	272
Bowscale Moss	NY 361(8)315(4)	246	273
Bowscale Moss	NY 361(0)316(3)	247	274
Bowscale Moss	NY 362(3)316(7)	248	275
Bowscale Moss	NY 362(4)317(2)	249	276
Bowscale Moss	NY 364(4)315(0)	250	277
Bowscale Moss	NY 365(5)314(8)	251	278
Bowscale Moss	NY 364(6)314(4)	252	279
Bowscale Moss	NY 365(2)313(4)	253	280
White Moss (Mungrisdale)	NY 372(9)302(8)	254	195
White Moss (Mungrisdale)	NY 372(0)304(3)	255	196
White Moss (Mungrisdale)	NY 370(5)306(6)	256	197
Black Dub (ENE of Carrock Fell)	NY 352(5)341(4)	257	148
Longsleddale (W side)	NY 482(8)047(1)	258	127
Mickle Moss	NY 442(6)013(4)	259	199
Mickle Moss	NY 443(7)013(7)	260	200
Mickle Moss	NY 443(5)014(0)	261	201
Mickle Moss	NY 442(8)013(4)	262	202
Troutbeck Park	NY 424(7)065(2)	263	203
High Whinhowe	NY 593(1)050(2)	264	128
High Whinhowe	NY 593(3)050(6)	265	129
High Whinhowe/Hollin Hill	NY 593(3)050(4)	266	130
High Whinhowe	NY 593(2)051(0)	267	131
High Whinhowe	NY 593(3)050(8)	268	132
Middleholm Moss	NY 517(9)416(5)	269	204
Middleholm Moss	NY 518(2)416(7)	270	205
Middleholm Moss/Birks Moss	NY 520(6)410(3)	271	206
Middleholm Moss	NY 522(7)414(0)	272	207
Middleholm Moss	NY 520(8)414(4)	273	208
Middleholm Moss	NY 519(6)416(1)	274	210
Middleholm Moss	NY 521(7)415(0)	275	211
Middleholm Moss	NY 519(7)414(6)	276	209
Long Moss	NY 628(0)695(0)	277	133

Site Name	Grid Reference	Quadrat numbers	
		R Tratt	H Adams
Long Moss	NY 629(5)696(3)	278	134
Midgeholm Moss	NY 607(0)666(3)	279	212
Midgeholm Moss	NY 606(2)666(1)	280	213
Spadeadam Mires: Sheeprigg Moss	NY 642(0)706(0)	281	281
Spadeadam Mires: Sheeprigg Moss	NY 640(0)706(0)	282	282
Spadeadam Mires: Sheeprigg Moss	NY 641(0)706(0)	283	283
Spadeadam Mire E of Berry Hill	NY 655(1)730(7)	284	284

*Known raised mires

Key to Figure 2. Location of surveyed Cumbrian mires

Numbers refer to numbered locations

1. Bootle Fell Moss
2. Hooker Moss
3. Near Barnscar
4. Foxbield Moss
5. Gawthwaite Moss
6. Burney Tarn Mire
7. Mawthwaite Moss
8. Knott End Moss
9. Birk Bank Moss
10. Long Rigg Moss
11. Subberthwaite Common
12. Tottlebank Moss
13. Black Moss
14. Whitestone Moss
15. Tewet Moss
16. Blawith Common (ESE Beacon Tarn)
17. Blawith Common (next to footpath)
18. Beacon Tarn
19. High Tarn Moss
20. Red Moss
21. Blawith Fells
22. Stable Harvey Moss
23. Sliving Moss
24. Upper Beck
25. Crook Moss
26. Outley Moss
27. Thwaite Head Fell Mires
28. South of Rosthwaite Heights
29. SW of Birks Head Plantation
30. Rosthwaite Allotment
31. White Gill Moss
32. Yewdale Moss
33. Bethecar Moor
34. Winster Bridleway Mire
35. Great Ludderburn Moss SSSI (with 37)
36. Peat Moss
37. Great Candlestick Moss SSSI (with 35)
38. Winster Wetlands SSSI
39. Juniper Mire
40. High Fairbank
41. Upper Black Beck Mire
42. Rulbutts Hill
43. High Lickbarrow Flushes
44. South of School Knott Tarn
45. Rulbutts Hill (NE)
46. Hale Moss
47. Wakebarrow Peat Mosses
48. Burnsbeck Moss SSSI
49. Skelsmergh Tarn Mire SSSI
50. Brundrigg Moss
51. Killington Reservior
52. Egholme Peat Moss
53. Tarn Moss
54. Frostrow Fells
55. Great Moss
56. Blea Mosses & Flushes
57. Langdale Combe Mire
58. Blindtarn Mire
59. Scartufts Mire
60. Birkhouse Moor
61. Eycott Hill Mire SSSI
62. Groove Beck
63. Longsleddale
64. Mickle Moss
65. Troutbeck Park
66. High Whinhowe
67. Bowscale Moss
68. White Moss
69. Black Dub

Sites in NE Cumbria not shown:

Middleholme Moss
Long Moss
Midgeholme Moss
Spadeadam Mires SSSI (Sheeprigg Moss)
Spadeadam Mires SSSI (E of Berry Hill)

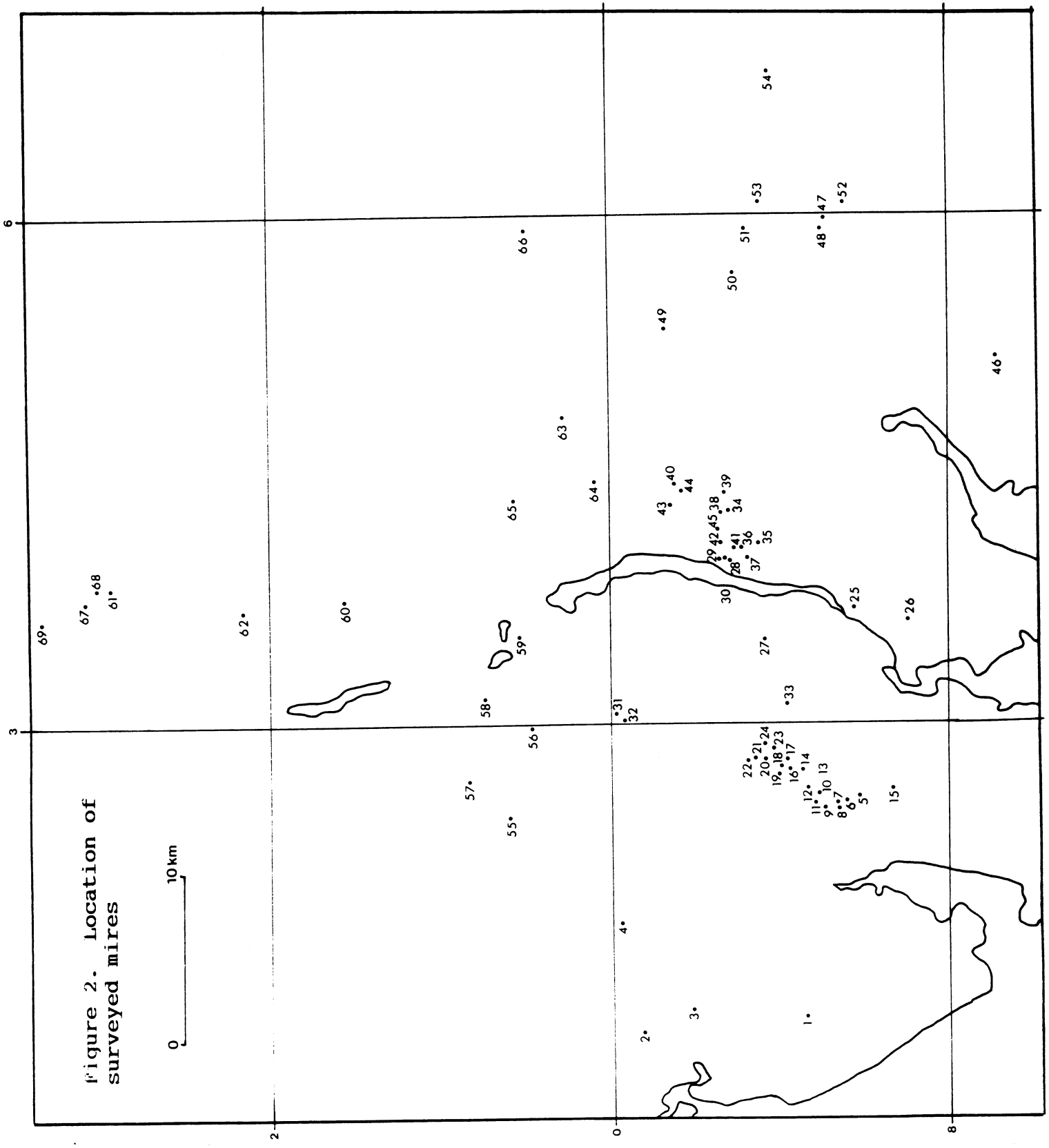


Figure 2. Location of surveyed mires

the vegetation correspond. In general, the level of correspondence between the floristics of the end-groups and NVC communities is felt to be good. This can be partly illustrated by a comparison of the mean species richness and range of values between the end-groups and the NVC communities to which they have been assigned (Table 2). The mean species richness of those quadrats ascribed to M23 *Juncus acutiflorus/J. effusus-Galium palustre* rush-pasture are much greater than the mean given for this community in the NVC and although the maximum species richness is similar, the minimum is much higher for the Cumbrian samples. Essentially, Cumbrian Mire Survey examples of this vegetation type are more species-rich.

4.4 Vegetation communities and sites

A range of 22 community types (excluding sub-communities) has been identified from the 75 sites for which quadrat data was available (Table 3). The most frequently recorded communities (Fig. 3) are the flush communities M10 *Carex dioica-Pinguicula vulgaris* mire and M6 *Carex echinata-Sphagnum recurvum* mire and often associated with the latter, located within basin bottoms, M9 *Carex rostrata-Calliergon cuspidatum* mire. These communities may form a complex with wet heath, which are themselves flushed with water. The community M15 *Scirpus cespitosus-Erica tetralix* wet heath, particularly the *Carex panicea* sub-community, was frequently recorded. Although these figures only refer to the frequency with which communities were recorded within the survey, rather than the frequency of presence of these communities within the soligenous mires of Cumbria, it is suggested that these figures still indicate the relative frequency of the communities in the mires of LDNP.

Fen meadow communities were not frequently recorded. This could reflect the general infrequency of these vegetation types in this part of Cumbria where many of the mires occur within moorland which is upland in character. However, M25a and M23 is found in some sites where there is lower-lying ground and M26 is found where wetter ground abuts hay meadows.

5. DISCUSSION

5.1 Conservation evaluation

This report does not present a conservation evaluation of the surveyed sites. Dr Adams has made written recommendations to the Region for the protection of sites and these recommendations have contributed to the notification of sites such as Ludderburn and Candlestick Mires SSSI and Winster Wetlands SSSI.

The following sections concentrate upon the wider issues emerging from the survey. It presents a summary of the national context of the vegetation communities, their environmental and management characteristics and potential threats to their conservation.

Table 2 **Species richness of communities recorded in the Cumbria mire survey (CMS) in comparison with those reported in the National Vegetation Classification (Rodwell 1992 and in press)**

NVC Community	Range		Mean	
	CMS	NVC	CMS	NVC
M1	2-9	2-15	6	7
M2	2-20	3-15	6.8	8
M4	10-31	2-15	17	10
M6	18-35	2-32	25	15
M9	12-40	12-35	25.25	25
M10	12-56	10-56	36.5	25
M15	23-51	6-57	29.2	18
M17	9-25	8-38	19.8	20
M18	14-32	8-30	21.3	17
M21	6-27	8-24	17	14
M23	23-46	6-39	34.3	19
M25	21-46	*	36	*
M26	27-41	17-52	32.3	31
M29	12-27	*	19	*
S27	17-28	6-16	21.7	10**

M37, M32 - only 1 quadrat recorded

* Data not supplied

** Figures refer to *Equisetum fluviatile* sub-community

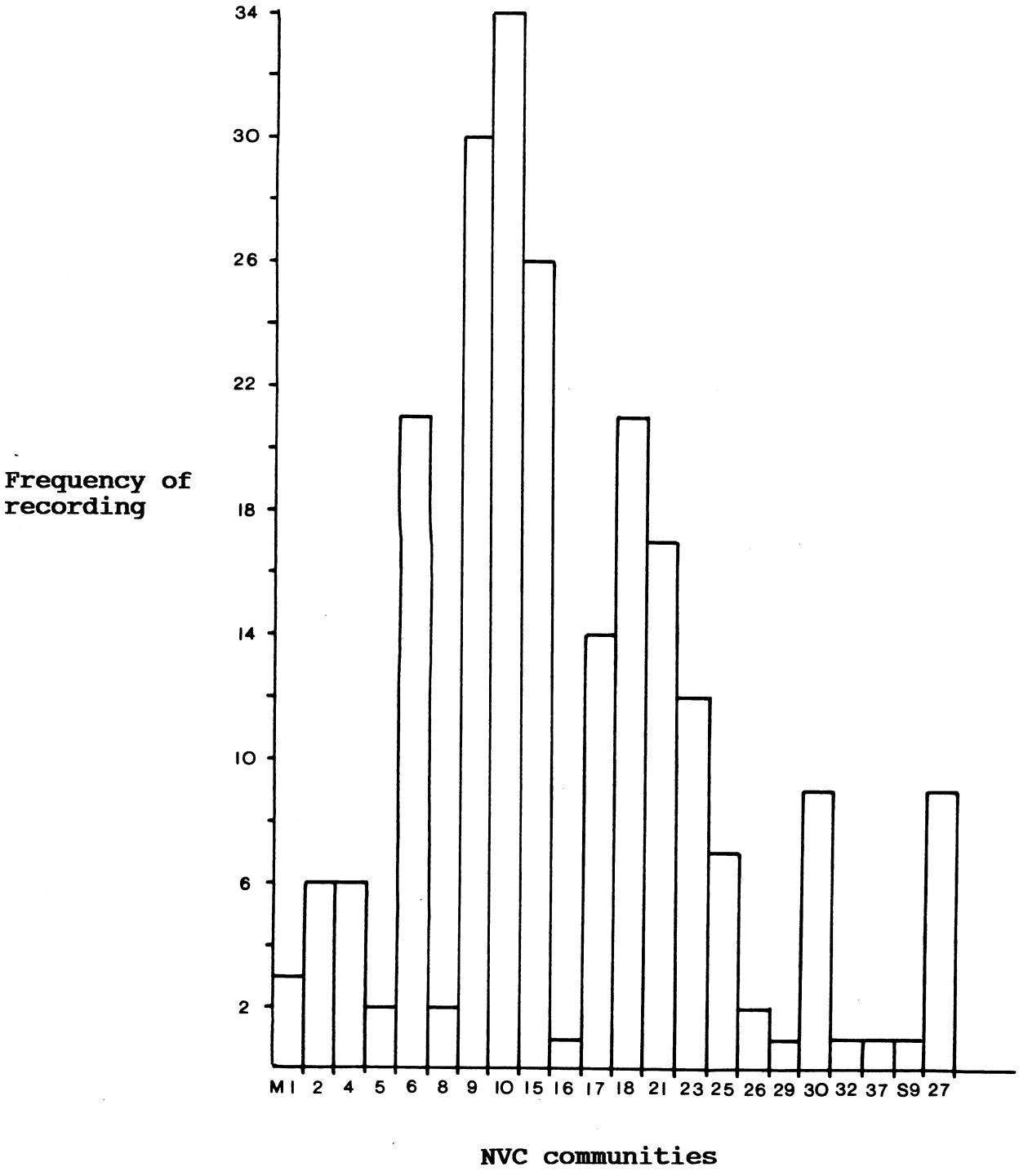
Table 3 NVC types found within surveyed Cumbrian mires (excluding Foulshaw and Bellart How Mosses which are raised bogs).
Some examples were found to be transitional between types; both types have been included here.

NVC Communities

M1	*Sphagnum auriculatum* bog pool
M2	*Sphagnum cuspidatum* bog pool
M2a	*Rhynchospora alba* sub-community
M2b	*Sphagnum recurvum* sub-community
M4	*Carex rostrata-Sphagnum recurvum* mire
M5	*Carex rostrata-Sphagnum squarrosum* mire
M6	*Carex echinata-Sphagnum recurvum/auriculatum* mire
M6d	*Juncus acutiflorus*
M8	*Carex rostrata-Sphagnum warnstorfii* mire
M9	*Carex rostrata-Calliergon cuspidatum* mire
M9a	*Campylium stellatum-Scorpidium scorpioides* sub-community
M10	*Carex dioica-Pinguicula vulgaris* mire
M10a	*Carex demissa-Juncus bulbosus* sub-community
M10aiii	*Schoenus nigricans* variant
M15	*Scirpus cespitosus-Erica tetralix* wet heath
M15a	*Carex panicea* sub-community
M15b	Typical sub-community
M16c	*Erica tetralix-Sphagnum compactum* wet heath, *Rhynchospora alba-Drosera intermedia* sub-community
M17	*Scirpus cespitosus-Eriophorum vaginatum* wet heath
M18	*Erica tetralix-Sphagnum papillosum* raised and blanket mire
M18a	*Sphagnum magellanicum-Andromeda polifolia* sub-community
M21	*Narthecium ossifragum-Sphagnum papillosum* valley mire
M21b	*Vaccinium oxycoccus-Sphagnum recurvum* sub-community
M23	*Juncus effusus-Galium palustre* rush-pasture
M23a	*Juncus acutiflorus* sub-community
M23b	*Juncus effusus* sub-community
M25	*Molinia caerulea-Potentilla erecta* mire
M25c	*Angelica sylvestris* sub-community
M26	*Molinia caerulea-Crepis paludosa* mire
M29	*Hypericum elodes-Potamogeton polygonifolius* soakway
M30	Largely water track vegetation
M32b	*Philonotis fontana-Saxifraga stellaris* spring, *Montia fontana-Chrysosplenium oppositifolium* sub-community
M37	*Cratoneuron commutatum-Festuca rubra* spring
S9	*Carex rostrata* swamp
S27	*Carex rostrata-Potentilla palustris* tall-herb fen

NVC Vegetation Codes	M1	M2			M4	M5	M6		M8	M9		M10			M15			M16c	M17	M18		M21		M23			M25		M26	M29	M30	M32b	M37	S9	S27
		M2	M2a	M2b			M6	M6d		M9	M9a	M10	M10a	M10iii	M15	M15a	M15b			M18	M18a	M21	M21b	M23	M23a	M23b	M25	M25c							
Bootle Fell							✓					✓										✓									✓				
Hooker Moss		✓																		✓															
Near Barnscar							✓															✓													
Foxbield Moss (S. of Eskdale)																			✓	✓		✓									✓				
Gawthwaite Moss (Subberthwaite)								✓			✓		✓		✓	✓	✓					✓													
Burney Tarn Mire (Subberthwaite)										✓		✓						✓																	
Knott End Moss (Subberthwaite)	✓	✓						✓		✓					✓				✓		✓		✓										✓	✓
Mawthwaite Moss (Subberthwaite)										✓		✓			✓		✓																	
Birk Bank Moss (Subberthwaite)		✓						✓							✓		✓			✓		✓									✓			
Long Rigg Moss (Subberthwaite)										✓		✓			✓																			
Subberthwaite Common (W. of Beckhead)												✓																							
Tottlerbank Moss										✓			✓						✓	✓															
Black Moss, Blawith										✓			✓		✓																				
Whitestone Moss. Blawith																✓																			
Tewet Moss							✓								✓		✓																		
Blawith Common (ESE. Beacon Tarn)																										✓								
Blawith Common (next to footpath)																										✓								
Beacon Tarn (mire adjacent to)											✓		✓									✓									✓				
Higher Tarn Moss (Blawith Common)											✓																				✓				
Red Moss, Blawith Fells																			✓	✓															
Blawith Fells (N. of Beacon Tarn)													✓																						
Stable Harvey Moss							✓				✓	✓	✓		✓		✓		✓			✓		✓											
Sliving Moss											✓				✓																✓				
Upper Beck: track side mire																											✓							
Crook Moss (Newby Bridge)										✓		✓															✓				✓			
Outley Mosses										✓		✓				✓			✓			✓									✓		✓	✓
Thwaite Head Fell Mires										✓		✓							✓			✓		✓										
S. of Rosthwaite Heights																								✓	✓									
S.W. of Birks Head Plantation			✓		✓	✓																		✓										
Rosthwaite Allotment (Black Beck Flushes)												✓																						
White Gill Moss (Yewdale Fells)											✓																							
Yewdale Moss										✓																								
Bethecar Moor							✓								✓				✓							✓								
Winster Bridleway Mire							✓			✓		✓											✓											✓
Great Ludderburn Moss	✓										✓			✓							✓													
Peat Moss								✓											✓	✓														
Great Candlestick Moss								✓		✓		✓			✓									✓										
Winster Wetlands								✓			✓	✓			✓							✓		✓		✓			✓	✓				✓
Juniper Mire								✓					✓																					
High Fairbank										✓		✓																						✓
Upper Black Beck Mire								✓		✓	✓	✓			✓						✓	✓	✓											
Below Rulbutts Hill (Nr. Rosthwaite)													✓																					
High Lickbarrow/School Knott										✓													✓	✓				✓						✓
S. of School Knott Tarn										✓																								
High Lickbarrow																							✓											✓
Rulbuts Hill (NE. side)													✓																					
Hale Moss (Beetham)														✓																				
Wakebarrow Peat Mosses																					✓													
Burnsbeck Moss SSSI											✓															✓								✓
Skelsmergh Tarn Mire						✓			✓		✓																							
Brundrigg Moss												✓			✓				✓			✓												✓
Killington Reservoir (N. end)					✓		✓																											
Egholme Peat Moss																				✓													
Tarn Moss (New Park/ Killington area)																				✓													
Frostrow Fells							✓						✓																					
Great Moss	✓	✓					✓												✓															
Blea Moss & Flushes																✓																		
Langdale Combe Mire		✓			✓																													
Blindtarn Moss										✓		✓											✓	✓										
Scartufts Mire (Loughrigg Fell)											✓		✓																					
Birkhouse Moor																																✓	✓	
Eycott Hill Mire							✓		✓	✓					✓		✓		✓			✓												
Flush/mire next to Groove Beck									✓																									
Bowscale Moss					✓		✓	✓											✓		✓													
White Moss (Mungrisdale)				✓																✓														
Black Dub (ENE. of Carrock Fell)																✓																		
Longsleddale (W. side)												✓																						
Mickle Moss							✓			✓										✓														
Troutbeck Park												✓																						
High Whinhowe												✓																	✓					
Middleholm Moss					✓														✓	✓														
Long Moss																				✓	✓													
Midgeholm Moss																				✓														
Spadeadam Mires																					✓													
Spadeadam Mires: E. of Berry Hill																					✓													

Figure 3. Frequency of NVC communities recorded by the survey



5.2 National context

The known approximate national distribution of recorded fen communities has been obtained from Shaw and Wheeler (1991) and the National Vegetation Classification (Rodwell 1991 and in press). The distributional information, together with the known environmental and management characteristics are summarised in Table 4. This summary also refers to threats facing these communities on a national basis.

The fen communities found within the survey are representative of types characteristic of northern and western Britain, both upland areas, for example M10 *C. dioica-P. vulgaris* mire, and lowland areas, for example, M23 *J. acutiflorus/J. effusus-G. palustre* rush pasture. A notable exception is that of M21 *Narthecium ossifragum-Sphagnum papillosum* valley mire. The core of distribution of this community, and largest known stands, are found within the poor-fen valley mires of the New Forest, Dorset and Surrey with eastern outliers at the Norfolk fens of Dersingham Bog NNR and Roydon Common. Prior to this survey, M21 had not been recorded in Cumbria. Therefore, these examples are regarded as forming an important part of the national series of this community. Essentially the floristics are similar between the Cumbrian examples and those found within the NVC which are based upon southern and eastern samples. Furthermore, the context of the community is similar to that in southern and eastern England with examples of M29 *Hypericum elodes-Potamogeton polygonifolius* soakway and M1 *Sphagnum auriculatum* pools being found with M21. But there are other communities found with M21 in the surveyed Cumbrian mires which are not frequently, if at all, associated with southern and eastern examples (M10 *C. dioica-P. vulgaris* mire and M9 *C. rostrata-C. cuspidatum* mire with *E. multicaulis* water-tracks).

Sites are often characterised by a complex of community types (Table 4) as can be seen at Subberthwaite-Blawith-Torver Commons and Mawthwaite Moss. A frequently found sequence of community types includes M10 *C. dioica-P. vulgaris* mire associated with flushes, possibly occurring in a mosaic with M15a *C. panicea* sub-community of M15 *S. cespitosus-E. tetralix* mire. Within flatter, lower-lying areas, which may include cut-over raised mire, are examples of M9 *C. rostrata-C. cuspidatum* mire and / or M21 *N. ossifragum-S. papillosum* valley mire together with M1 *S. auriculatum* pools and M29 *H. elodes-P. polygonifolius* water-tracks. This type of mosaic is unusual in lowland England, and as far as is known is only approached by the basin fens of Roxboroughshire and Ettrick and Lauderdale in Scotland, which include the Whitlaw Mosses NNR.

Particularly important is the occurrence of M9 *C. rostrata-C. cuspidatum* mire within the valley and basin mires of South Cumbria. It is often found where flushes and runnels enter the basin or valley bottom and slowly flow out over deeper peat which may been peat cut. The community only forms small patches within these areas and occurs as a mosaic with other vegetation types. Because of this, the community often contains species and even features, for example *Sphagnum papillosum* hummocks with *Calluna vulgaris*, associated with the adjacent communities. Dr Adams has

Table 4: **Distribution, associated environmental factors, management and threats to fen communities sampled by the Cumbria Mire Survey and included within Shaw & Wheeler (1991)**

NB. Fen communities such as M26 were not included in Shaw & Wheeler (1991)

Terms such as low, moderate, high referring to pH, base status etc have been defined by Shaw & Wheeler (1991) and are summarised below:

	Very low	Low	Moderate	High	Very high
pH water	<4.0	4.0-5.0	5.0-6.0	6.0-7.0	>7.0
Bicarbonate (mg l^{-1})	10-20	20-50	50-150	150-250	250-400
Ca (mg l $peat^{-1}$)	200-400	400-600	600-1000	1000-1500	1500-2000
N (mg l $peat^{-1}$)	<1.0	1.1-3.0	3.1-6.0	6.1-10.0	>10.0
P (mg l $peat^{-1}$)	<0.1	0.1-0.3	0.3-0.5	0.5-1.1	>1.1
K (mg l $peat^{-1}$)	<9	9.19	19-29	92-43	>43

Fen community	Distributional characteristics	Associated environmental factors	Management/Threats
M1 *S. auriculatum* bog pool.	Found in both ombrotrophic systems and poor fens generally in oceanic parts of Britain. Catchments are generally unimproved or semi-improved.	Permanent waterlogging. Water pH, bicarbonate, calcium and fertility levels were low.	Drainage is likely to be detrimental as is much base or fertiliser enrichment.
M2 *S. cuspidatum/S. recurvum* bog pool.	Found in both ombrotrophic systems and poor fens with a less oceanic distribution than M1. Associated with a variety of catchment types including highly fertilised catchments.	pH and bicarbonate levels low. Mean water level above the surface. Substrate fertility typically low, especially P and K, less than N.	The semi-floating nature of the substrate may provide some resilience to temporary changes in water levels, permanent changes would be detrimental. It is likely that any increase in base status or fertility would cause a change in community composition.
M4 *Carex rostrata-Sphagnum recurvum* mire.	A poor fen community with a mainly northern and western distribution. Found within a variety of catchment management types.	Associated with base-poor conditions, low-very low pH, HCO_3 and Ca concentrations. N, P and K levels moderate or high, but fertility is moderate-low. This may indicate that base status is more limiting to plant growth than the availability of major nutrients.	Floristic changes may be expected with an increase in base status. Species indicative of higher base status, fertility and Ca lower water table level than average; *S. subnitens, Cirsium palustre, Angelica sylvestris, Juncus conglomeratus, Dactylorhiza incarnata* and *D. fuchsii.*

Fen community	Distributional characteristics	Associated environmental factors	Management/Threats
			There was no clear influence of management upon species richness or floristics. But overgrazing may break-up *Sphagnum* carpet, and if accompanied by partial drainage, *Juncus* invasion would be favoured. Drainage is regarded as a threat because the community is associated with a narrow range of high water levels (-10 - 0cm)
M6 *Carex echinata-Sphagnum recurvum/auriculatum* mire.	A generally widespread community; M6d more typical of oceanic western areas. Found within a variety of catchment types.	Associated with a wide range of environmental conditions therefore difficult to characterise.	Most stands are grazed and there is evidence that lack of management or heavy grazing was particularly detrimental, though latter may favour *Juncus* development. Drainage is considered to be a threat converting the community to *Juncus-Molinion* or *Nardetalia* wet grassland.
M9 *Carex rostrata-Calliergon cuspidatum* mire.	Widespread, mainly in north and west where it is characteristic of small basin fens, though can be associated with wet, base-rich flushes. Probably rare occurrence in England.	Community as a whole occupies an intermediate position with respect to most variables in particular base status and fertility. M9a is associated with wet, low fertility conditions and generally moderate base status.	Often managed by light grazing and although this may delay the progress of terrestrialisation; this process seen as a significant threat to the community.

Fen community	Distributional characteristics	Associated environmental factors	Management/Threats
			Low fertilities are important in maintaining the character of the community. Eutrophication may lead to a gentle shift in species composition and possibly a loss in rare species; higher levels of eutrophication may lead to an increase in species eg *Agrostis stolonifera* and *Phragmites australis* and though the community may persist for some time, likely to be replaced by S27 or S4.
M10 *Carex dioica-Pinguicula vulgaris* mire.	A widespread community mainly in north and west Britain where it generally occupies small, often isolated, spring fens.	In general pHs Ca values are high and very high respectively. M10a is less calcicolous sub-community, though M10a(iii) is a more calcicolous variant of M10a.	Most stands are grazed. Though heavy grazing does not appear to affect the number of species per unit area, the number of individuals may decline. Therefore light grazing is preferred. The community may persist for some time without grazing, but eventually it will become impoverished. The community is vulnerable to changes in hydrological regime brought about by drainage/gripping or even damming. Enrichment by P is considered to pose a threat to the community.
M15 *Scirpus cespitosus-Erica tetralix* wet heath. M15a *Carex panicea* sub-community.	This sub-community is commonly found in soakways and water tracks and could be described as poor fen. All studied examples were in western Britain in three types of situation flushed margins of blanket bog, within acidic spring/valley mire, or forming the transition to more ombrotrophic vegetation in recolonising basin mires. Found within a variety of catchment management types, including some moderately well fertilised areas.	Mean values of pH, Ca and bicarbonate concentration low or very low. Water levels occupied narrow range (-10 - +2cm). Substrate has low fertility, low-moderate P and K, though some examples had higher N, and moderate base status.	Stands are mainly grazed. Considered to be vulnerable to drainage/gripping.

Fen community	Distributional characteristics	Associated environmental factors	Management/Threats
M21 *Narthecium ossifragum-Sphagnum papillosum* valley mire.	A community mainly found in the valley mires of southern England, until recently unsampled from Cumbria.	Typically found in base poor conditions with a water table close to the surface in the summer. Fertility is typically low.	Management may help to maintain higher species diversity, though heavy grazing may fragment the *Sphagnum* carpets. Drainage is considered to pose a threat through the loss of *Sphagnum* and to increase the vulnerability of the community to burning and grazing. Nutrient enrichment may cause a loss in species diversity and/or encourage the establishment of some atypical species.
M23 *Juncus acutiflorus-Galium palustre* rush pasture.	This community is widespread in western Britain and may be quite frequent in catchments which have undergone little or no improvement.	M23a generally found under conditions of moderate base status. Typically water tables were at or below the surface. Substrate fertilities covered a wide range.	Stands were often managed or only recently abandoned. Lack of management may lead to a decrease in species density and diversity.
M23a *Juncus acutiflorus* sub-community. (NB. Comments are largely referable to M23a, though they are considered to have relevance to the community as a whole).			Drainage is likely to lead to an increase in grasses and promote conversion to wet grassland.
M25 *Molinia caerulea-Potentilla erecta* mire.	This community has a widespread distribution but is more on the north and west. It is found in both topogenous and soligenous situations with a variety of catchment management types.	Associated with conditions of moderately low base status and fertility.	Grazing is associated with an increase in species density (though this may not be the case if burning and insufficient grazing forms the management regime). Burning may enhance tussock-nature of community and favour *Molinia* dominance.
M29 *Hypericum elodes-Potamogeton polygonifolius* soakway.	Characteristic of soakways and shallow pools in valley mires in moderately base poor situations with substrata of generally low fertility. Found in valley mires of southern England, but more frequent in western areas.	Typically found on sites of low-moderate pH, and mean Ca and bicarbonate concentrations were very low. Summer water levels are usually above the surface. Fertility values generally low.	Often within sites open to grazing, but the very wet/unstable condition of the substrate may prevent any significant grazing.

	Fen community	Distributional characteristics	Associated environmental factors	Management/Threats
				Drainage is likely to have a significant effect on the community, not only through direct effects on the flora, but also improving access to stock. Heavy grazing will break-up the surface. Nutrient enrichment is likely to have an adverse effect on the community.
M30	Related vegetation of seasonally-inundated habitats (*Eleocharis multicaulis* water tracks). (Sampled by Shaw & Wheeler in Cumbria)	Found within spring or valley fens and in depressions left by peat cutting. Catchments largely unimproved.	Found in situation of similar base status to M29, though can extend into more base-rich situations similar to those associated with M9. Found within a narrow range of water table heights -0.5 - +7cm. Fertility values were low, with low K and P, but moderate-high N.	All stands were grazed. Vulnerable to similar threat to those featured for M29.
S27	*Carex rostrata-Potentilla palustris* tall herb fen.	Widespread community, frequent and characteristic of north and west Britain in topogenous situations.	Values moderate-low: pH, Ca and HCO_3. Generally occupies position intermediate between rich and poor fen. Mean water levels are high.	Many of stands managed by light grazing which generally benefit species diversity. The community can persist for a long time without management and is not very responsive, in the short term at least, to moderate eutrophication. But would be impoverished by high eutrophication. Drainage is also regarded as a threat.

reported that .....

> ''the central feature of the community is the *S. contortum* lawn with, on the more aquatic side, a carpet dominated by *Scorpidium scorpiodes*. Between these there is often a mixture of *Campylium stellatum*, *Drepanocladus revolvens*. *Aneura pinguis* is constantly found intermingled within all these sub-zones. Over these sub-zones there is a layer of small sedges and others, of which abundant *Eleocharis quinqueflora*, *Menyanthes trifoliata* and *Carex panicea* are constants and *Potamogeton polygonifolius* is a low cover constant.''

This community has a widespread but local distribution in Britain, and is infrequent in England where it is mainly represented by the *Carex diandra-Calliergon cuspidatum* sub-community. The main concentration of this sub-community is within old abandoned peat cuttings within the fens of Broadland. The *Campylium stellatum-Scorpidium scorpiodes* sub-community is largely north-western in it's range and is associated with more base-rich, low fertility basin mires. Therefore, the Cumbrian examples contribute to this more northern type. Although we have no data on the extent of the community in England, it is highly likely that this community is rare within England, if not Great Britain as a whole. The reason for such rarity is believed to be it's vulnerability to impact, in terms of both its hydrology (being associated usually with permanently high water table levels), and associated low fertility which helps maintain its species-richness. It is also vulnerable to change because it often features as an early stage in succession over open water and may quite rapidly succeed to other vegetation types.

5.3 Shared environmental and management characteristics

Most of the communities recorded by the survey may be classified as poor-fen. This is a type of fen where the pH of the water is less than 6.0. The mire community M10 is an exception, and this is regarded as a calcareous rich-fen vegetation type. However, the sub-community found most frequently by the survey, *Carex demissa-Juncus bulbosus/kochii*, is regarded as a less calcicolous type (Rodwell 1991, Shaw and Wheeler 1991) as shown by the presence of such species as *Erica tetralix*, *Narthecium ossifragum* and *Drosera rotundifolia*. The communities M9 *C. rostrata-C. cuspidatum* mire and S27 *Carex rostrata-Potentilla palustris* tall-herb fen have been shown to be associated with environmental conditions which are intermediate between rich and poor-fen (Shaw and Wheeler 1991).

Many of the recorded communities are characterised by substrates of low fertility; particularly low levels of P, though not necessarily low N values (Shaw and Wheeler 1991). The maintenance of the low fertility environment is important for the conservation of these communities, and especially the species richness of such communities as M10.

Many of the communities are also associated with high water table levels, for example S27 *C. rostrata-P. palustris* fen may have some surface flooding most of the time and M10 *C. dioica-P. vulgaris* mire is often irrigated by spring water which flows between tussocks. Clearly temporary periods of lower water table levels may be experienced by these communities; but sustained low levels are not usual and are considered to be potentially damaging.

Most of the communities are lightly grazed. This has an important influence, discouraging the potential dominance of *M. caerulea*. Even though these are low fertility systems, and the growth of *Molinia* is likely to be relatively slow, sustained neglect will allow *Molinia* to dominate at the expense of other species, a number of which are likely to be less common.

5.4 Threats to the communities

Four major sources of threat are identified:

1. Changes to the water regime
2. Enrichment
3. Change in management regime
4. Successional changes

5.4.1 Changes to the water regime

Changes to the water regime of a mire which lead to the net drying of the site or sustained low water table levels would be considered to be a threat.

The sorts of activities which may cause such changes would be the excavation of ditches within basin mires or grips across flushes and the lowering of the drainage outlet from a basin. The latter may occur outside the main area of nature conservation interest but can still detrimentally influence the mire.

Communities such as M9 *C. rostrata-C. cuspidatum* mire and S27 *C. rostrata-P.palustris* fen often occur as semi-floating rafts of vegetation. Therefore, these may be expected to show a degree of buffering against slight changes in hydrology. However, where the change is more drastic, and perhaps more importantly, sustained, changes to the community would be expected to occur.

The floristic changes which would be expected to happen as a result of changes in water levels largely depend upon the characteristics of the fen itself and the nature of land-use change with which the drainage may be associated. For example drainage may be associated with an increase in land-use intensity which will be aided by the addition of fertilisers and lime. Therefore, the impact of drainage may be accompanied by an increase in base status and / or fertility. In many cases the initial response is an increase in the productivity and cover of

grasses followed by, or even accompanied by, colonisation of more common species, some of which may be associated with fens such as *Filipendula ulmaria*.

5.4.2 Enrichment

The communities recorded by the survey are largely associated with conditions of low fertility. Changes in fertility, which is taken here to mean enhanced N, P and K input (particularly P), may not only increase the productivity of the more responsive species, but may also favour colonisation by more common plant species which would no longer find the nutritional environment of the mire limiting.

Changes in fertility may occur in two main ways:

1. Within the fen system itself as a result of peat oxygenation and nutrient release following drainage of peat-based systems. But it should be noted that not all fens are associated with a peaty substrate, M10 may have a mineral-based substrate.

2. Following catchment land-use changes.

The identification of the potential impact of fertilisation of slopes above a fen or adjacent to a flush is not straightforward. Enhanced nitrogen inputs are not believed to be especially problematic. Even limited enhanced P may not lead to unwanted change in calcareous spring-fed fens, such as M10, where phosphate can be trapped (partly or wholly) by precipitating calcium and rendered unavailable to the plants (Boyer and Wheeler 1983). But obviously this depends upon whether calcium is being deposited. Here, M10 is represented by the 'more acid' sub-community, and therefore it may still be susceptible to change. It is quite frequent to find a degraded periphery to flushes (noted by the presence of such species as *Deschampsia cespitosa*, *Urtica dioica*) bordered by improved land. It is also important to realise that whilst nutrient inputs themselves may not detrimentally influence the vegetation of the flushes, inputs may be detrimental to the surrounding moorland communities and may also encourage more intense grazing around and within flushes which may be potentially damaging (section 5.4.3). However, changes may also occur as a result of the deposition of eroded soil from surrounding ploughed slopes. The degree of impact of such inputs can be illustrated by the changes which have occurred to Blackpool Moss (Whitlaw Mosses NNR) where former M9 has been replaced by S4 *Phragmites australis* swamp. In this case regular maintenance of a drainage ditch located outside, but draining into the NNR, led to the erosion of a buried soil horizon. The re-deposited silt led to localised increases in fertility and encouraged the productivity and expansion of *P. australis*.

5.4.3 Changes in management

Light grazing characterises the management regime of many of the surveyed sites. It is likely that some of the communities, for

example M9 *C. rostrata-C. cuspidatum* community, are too wet to be grazed throughout the year.

Light grazing helps to maintain species-richness of many low productivity fen communities (Wheeler & Shaw 1990). This may be particularly important for those sites where mild nutrient enrichment and consequently slightly enhanced productivity has occurred. Many of the mire communities recorded by the survey have inherent low productivity and therefore their response to lack of management is likely to be slow. However, long-term neglect is likely to lead to unwanted floristic change.

Whilst the low fertility of the substrate may buffer a community against a decline or cessation of management for some time, there exist implications under a regime of heavy grazing. Research has shown (Wheeler and Shaw 1990) whilst there may not be a decrease in species diversity of examples of M10 under a regime of heavy grazing, the number of individual plants decrease. In this situation the low fertility of the substrate only enables slow recolonisation and this may be retarded further by erosion caused by irrigating springs.

Intense grazing may also be potentially damaging for those very wet communities associated with soft, peaty substrates. The impact upon the bryophtye carpet may be particularly damaging and can allow the colonisation by *Juncus* sp. This would certainly occur where there has been some drainage which has allowed increased grazing.

5.4.4 Succession

Succession will occur in most of the communities if management ceased. However, a number of the communities, M9 *C. rostrata-C. cuspidatum* mire and S27 *C. rostrata-P. palustris*, will also change as a result of terrestrialisation and may eventually be lost. Therefore, the conservation of examples of these communities may entail the periodic excavation of turf ponds in order to regenerate the hydrosere. This type of management mimics that of the peat cutting which is believed to have affected many of the mires, and in some cases provided a suitable environment for the development of M9. However, such management needs very careful consideration on a site-by-site basis.

5.4.5 The importance of the catchment

A number of the potential sources of threat described in the foregoing are derived from catchment activities. Therefore, the safeguard of these valley and basin mires requires sympathetic catchment management. In most cases this management may be summarised as one of low intensity grazing with access of the stock to the fen. This type of management may be achieved voluntarily through Stewardship schemes, as well as by scheduling of the catchment within the SSSI. The latter is the only current way of providing the opportunity for a long-term agreement.

6. THE WAY FORWARD

A number of sites identified or characterised by the Cumbria Mire Survey have already been notified. It would be valuable to compare the sites recommended for protection with those currently notified.

It would be valuable to complete the project for South Cumbria, though a less intense survey method is recommended.

Pilot survey could be undertaken within north Cumbria to assess the character and variation of valley and basin mires and the need for detailed survey.

Management of SSSIs and other forms of protection of non-SSSIs would be assisted further by the development of a strategic approach to the conservation of these systems such as the use of the ESA type of approach.

7. REFERENCES

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Appendix 1. Example of site proforma used in the Cumbria Mire Survey.

NB. A number of the catagories included within the form have not been defined and their meaning is not clear. There is also some overlap between catagories.

CUMBRIA MIRE SURVEY	SITE SURVEY FORM	SURVEY SITE CODE:
Surveyor(s):	Date(s) of survey:	Grid Ref:

Site Name/Location:	Status:					File Ref:
	NNR	SSSI	NCR	LDNP	NONE	as 1:50,000 Map No:
	Site name if different to survey site name:					

Region:	County:	AoS:	District:	VC (optional)	National Park (-if not)
Owners/Occupiers: (names/addresses etc) (if many, refer to details on attached sheet)					

Site area:	Size category:	VS	S	M	L	E	Altitude: m
Geology/Superficials beneath site & catchment: (if known) & soils (optional)							

1. SITUATION OF SITE:

Coastal flat/estuarine	Rock basin (incl corrie)	Valley floor	Valley side	Valley side bench
		Damming process (if applicable)		
Beside lake	Drift basin (eg pingo or kettlehole)	Coastal/Marine	Erosion	Artificial
Plateau	Other:			

2. MIRE TYPE/FORM:

Minerotrophic

Lentic: Basin mire: simple, kettlehole, pingo

Lotic: Flood plain, Valley fen, Spring fen, Flush fen, Sloping fen

Base status: Rich, Moderate, Poor

Trophic status: Eutrophic, Mesotrophic, Oligotrophic

Ombrotrophic (bog) & mixed mire

Raised mire: Simple, Estuarine, River flood plain, Basin, Kettle-hole, Cut-over mire

Blanket: Watershed, Valleyside, Terrace, Saddle, Smooth

Intermediate or ridge raised mire

3. SITE HYDROLOGY/DRAINAGE

Inflow	Within site	Outflow
Ombrotrophic (in part)	Lake (in/adjacent)	Evaporation only
Groundwater	Swamp	Water course
Springs - direct	Pools	Subsurface seepage: to groundwater
- adjacent	Flushing	Lateral seepage
Flushes	Soakways	Surface seepage
General seepage	Runnels	Single stream
Discrete seepage (runnels)	Lagg stream	>1 stream
Single stream	Ditches/drains	River
>1 stream	Stream	
Flooding	River	

SURFACE WATER (eg in swamp; excluding channelled water, pools and poach holes)

Present at time of survey: ☐ If yes, average depth (cm): ☐ Max depth (cm): ☐
'on average' (guestimate) ☐ If yes, average depth (cm): ☐ Max depth (cm): ☐
(if obviously different to survey time)

% or area of site with surface water at time of survey: ☐ on average (if different): ☐

Weather prior to survey (especially rain) occasional showers

WATER TABLE (WT): currently raised? (ie evidently a groundwater mound)	Y	N	Poss.

Present WT = original WT? ☐ Average depth of WT below surface (only state if meaningful)

Present WT below original WT? ☐

Present WT above original WT? ☐

Lateral water movement within mire: (DRAINAGE WORKS - next sheet)	importance:	minimal	some	great

4. MICROTOPOGRAPHY/MIRE FEATURES

Zone	Abundance (DAFOR/ % area if restricted	Dominant sp./ features present	Rarities/comments	Quad nos.
T4				
T3				
T2				
T1				
A1				
A2				
A3				
A4				

*Refer to SSSI guidelines for definition

5. FEATURES PRESENT (✓/DAFOR/area if restricted)

Peat mounds:		Pools:
Peat haggs:		Lagg/fen:
Lawn:		Schwingm:
Carpet:		Tufa:
Hummocks:		Others:
Hollows:		
Peat surface texture:	Hard	
	Firm	
	Soft	
	Very soft	
	Quaking	
	Variable	
Damage feature:	Haggs	
	Gullies	
	Bare peat	
	Other	
Evidence of drying out:		
Raised mire:		
Any original dome		
Dome - % cover	*Sphagnum*	
	Wooded	
	Scrub	
	Heath	
Natural pools/hollows:	Round/oval	lochan
	Linear	drying out
	Dendritic	% area site covered
	Orientated	
	Separate	
	Linked	

6. FLORA

Uncommon plant species:

Calcicolous species? ☐ brown mosses? ☐ as a carpet? ☐ lichens abundant? ☐

SURVEY MISC: Number of quadrats recorded: ☐

FURTHER SOURCES OF INFORMATION ON THE SITE:

7. MANAGEMENT/LAND USE/DISTURBANCE/DAMAGE

7.1 PEAT CUTTING	Current/recent	Past	None apparent
% of site affected:			

Type:	Peat Pots (small deep cuttings)	Laminar cuttings
%/-/DAFOR or)		
% of site area affected)		
Pool and/or regenerating mire in cuttings? *Sphagnum*?		

7.2 ANIMAL INFLUENCE			Light	Moderate	Heavy	Beneficial	Acceptable	Damaging
Cattle		Grazing						
Sheep		Trampling						
Horse		Poaching						
Other								
Stock*								

* unspecified

COMMENTS (eg on hypothetical optimum levels):

7.3 VEGETATION CUTTING/MOWING Evidence apparent? ☐ If yes, % of site affected: ☐ appears beneficial/acceptable/damaging

7.4 BURNING Evidence apparent? YES/NO (lichen abundance can indicate freedom from recent burning) appears planned/accidental; winter/summer

If yes, estimated last occurrence: % of site affected

V. RECENT	(no higher plant regrowth yet)	
FAIRLY RECENT (ie since last season)	(on this year's regrowth apparent)	
PAST	(several years vegetation regorwth present but evidence detectable)	
COMMENTS (eg if appears v. damaging)		

7.5 AFFORESTATION NONE	Apparent interest level of area affected (if known)			% of site affected					
Present on site	Low	Av.	High	Conifers	Broadleaves		Preparatory drainage works eg ditches		
Site edges	Low	Av.	High	Conifers	Broadleaves	Age:	Small saplings (to 4 ft high)		
Adjacent to site	Low	Av.	High	Conifers	Broadleaves		Thicket stage		
							Taller (>15ft)		

7.6 TIPPING/DUMPING	Rubbish: Absent	Not seen	Present	If present: Old	Recent	Effect on interest of current level: Negligible	Minor	Significant

(incl. slurry dumping)
If important give details and note location on map

7.7 DRAINAGE WORKS	Absent	Not seen	Present	If present: Old	Fairly recent	Recent	Apparent damaging effect on site interest: Minor	Major	Not obvious now but likely to become so

7.8 OTHER (eg scrambling, scrub control) state if damaging or potentially so; % of site affected .....

8. ADJACENT LAND USE/HABITAT TYPES (especially of catchment)

Type:	Woodland conifer
% of boundary	broadland
	Heath
	Unimproved
	Semi-improved
	Improved
	Arable
	Recently ploughed
	Stream
	Lake
	Railways/roads
	Urban
	Other

Codes:	BOUNDARY TYPES:	Wall	Fence	Hedge	Ditch	Unenclosed	Other
0 - 10%: 1	% of boundary (or code)						
10 - 50%: 2	Stockproof? (✓/N)						
50 - 100%: 3	If no, is ingress of stock likely?						

If partly/wholly unenclosed, state relevant land use type:

DAMAGE FROM CATCHMENT/ADJACENT LAND USE:	Absent	Not seen	Present

TYPE		% of site affected	Effect on interest of site: Current		Future (if continues)	
Nutrient enrichment			Minor	Major	Minor	Major
Other (eg pollution)			Minor	Major	Minor	Major

SOURCES OF ENRICHMENT/POLLUTION:	Ground water on a broad front	Channelled water		From:		
		Field drains (sub-surface)	Open ditches		Likely heavy fertilizer input on adjacent fields	
		Via natural watercourses			Farmyard area/cattle enclosure	
					Septic tank	
					Not found	
					Other:	

Level of fertilizer/organic input to proximal catchment fields:	High	Locally	High	Medium	Low

9. LONG TERM CHANGES TO SITE (Natural/man-induced, gradual (eg seral) changes)

- scrub invasion?
- tussocks becoming over dominant?
- becoming rank?
- drying out?
- other? - if anything should get better under present management

Appendix 2. Constancy tables derived from the TWINSPAN analysis

S16 M1

	58	216	217
Eriophorum angustifolium	3	4	5
Molinia caerulea	2	1	2
Erica tetralix	1	1	1
Drosera rotundifolia	2	1	1
Sphagnum auriculatum var *auric*	9	2	7
Narthecium ossifragum	2	1	3
Sphagnum cuspidatum	-	2	4
Sphagnum papillosum	5	-	-
Menyanthes trifoliata	3	-	-
Rhynchospora alba	3	-	-
No of species	**10**	**7**	**7**

S4a M2

	118
Eriophorum angustifolium	1
Drosera rotundifolia	1
Narthecium ossifragum	1
Juncus acutiflorus	4
Sphagnum cuspidatum	10
No of species	**5**

S17 M2

	8	**54**	**213**
Eriophorum angustifolium	3	4	4
Sphagnum cuspidatum	10	7	10
Menyanthes trifoliata	-	5	3
Drosera rotundifolia	-	1	-
Sphagnum papillosum	-	3	-
Sphagnum recurvum	-	8	-
Juncus bulbosus	-	2	-
Agrostis canina	-	1	-
Drepanocladus fluitans	-	3	-
No of species	**2**	**9**	3

S18 M2

	46	59	224
Eriophorum angustifolium	2	2	2
Drosera rotundifolia	2	3	1
Sphagnum papillosum	4	9	6
Vaccinium oxycoccus	1	3	1
Sphagnum recurvum	4	1	3
Narthecium ossifragum	2	3	-
Menyanthes trifoliata	-	1	3
Carex rostrata	-	5	6
Rhynchospera alba	3	1	-
Sphagnum cuspidatum	8	-	5
Molinia caerulea	-	1	-
Erica tetralix	-	6	-
Carex panicea	-	1	-
Potentilla erecta	-	1	-
Sphagnum subnitens	-	3	-
Calluna vulgaris	-	-	1
Sphagnum capillifolium	1	-	-
Polytrichum commune	-	-	1
Viola palustris	-	1	-
Potamogeton polygonifolius	-	1	-
Rhytidiadelphus squarrosus	-	-	1
Sphagnum auriculatum var *auric*	-	-	8
Eleocharis multicaulis	-	1	-
Utricularia intermedia	-	1	-
Drosera intermedia	2	-	-
Drepanocladus sp	-	1	-
Cladopodiella fluitans	2	-	-
Carex magellanica	-	-	2
Drepanocladus fluitans	-	-	2
Sphagnum subsecundum	-	1	-
No of species	**11**	**20**	**14**

S19 M2

	256
Eriophorum angustifolium	4
Vaccinium oxycoccus	4
Aulacomnium palustre	2
Calluna vulgaris	2
Menyanthes trifoliata	2
Sphagnum recurvum	10
Carex nigra	1
Carex rostrata	5
Polytrichum commune	2
Andromeda polifolia	1
Dactylorhiza sp	2
No of species	**11**

S5ab M4

	204	209	223	234	240	241	247	248	269	273		
Sphagnum recurvum	8	10	8	4	8	10	10	10	1	4	v	(1-10)
Eriophorum angustifolium	3	-	1	-	2	2	5	1	2	4	iv	(1-8)
Carex rostrata	4	-	6	5	4	6	4	7	6	-	iv	(4-7)
Viola palustris	3	1	3	-	-	1	1	1	1	2	iv	(1-3)
Epilobium palustre	3	-	-	1	2	-	1	1	1	2	iv	(1-3)
Molinia caerulea	2	3	1	-	-	2	-	-	6	4	iii	(1-6)
Sphagnum papillosum	4	1	6	1	-	-	1	-	-	-	iii	(1-6)
Potentilla erecta	-	1	1	1	1	-	-	-	1	1	iii	(1)
Vaccinium oxycoccus	4	1	-	1	2	-	3	-	-	-	iii	(1-4)
Aulacomnium palustre	3	-	-	3	-	-	-	1	1	1	iii	(1-3)
Carex echinata	1	3	2	-	3	-	-	-	1	-	iii	(1-3)
Juncus acutiflorus	1	-	-	-	2	1	1	1	-	-	iii	(1-2)
Carex nigra	4	-	1	-	3	2	-	1	6	-	iii	(1-6)
Agrostis canina	3	-	-	-	-	1	3	2	1	1	iii	(1-3)
Polytrichum commune	3	3	-	5	4	-	1	1	-	-	iii	(1-5)
Galium palustre	1	-	-	1	2	-	-	1	3	1	iii	(1-3)
Holcus lanatus	2	1	-	-	2	-	-	-	2	1	iii	(1-2)
Sphagnum palustre	1	-	-	9	6	2	-	-	1	1	iii	(1-9)
Potentilla palustris	4	-	-	-	3	-	3	5	3	-	iii	(3-5)
Narthecium ossifragum	2	-	1	-	-	-	1	-	2	-	ii	(1-2)
Menyanthes trifoliata	-	-	-	1	3	-	1	2	-	-	ii	(1-3)
Polytrichum alpestre	1	-	-	3	1	-	-	-	-	-	ii	(1-3)
Hydrocotyle vulgaris	2	-	-	-	-	-	3	1	2	-	ii	(1-3)
Calliergon stramineum	3	-	-	-	2	-	1	-	1	-	ii	(1-3)
Cirsium palustre	-	-	-	1	-	-	-	-	1	1	ii	(1)
Equisetum fluviatile	1	-	-	-	2	1	-	-	1	-	ii	(1-2)
Rhytidadelphus squarrosus	1	-	-	-	-	-	-	1	-	1	ii	(1)
Juncus effusus	-	6	-	-	-	1	1	1	-	1	ii	(1-6)
Carex curta	-	-	-	-	3	-	1	1	1	-	ii	(1-3)
Drosera rotundifolia	1	-	-	1	-	-	-	-	-	-	i	(1)
Sphagnum capillifolium	-	-	-	1	-	-	-	-	-	-	i	(1)
Succisa pratensis	2	-	-	-	-	-	-	1	-	-	i	(1-2)
Aneura pinguis	1	-	-	-	-	-	-	-	-	-	i	(1)
Ranunculus flammula	-	-	-	-	-	-	-	-	1	1	i	(1)
Hypnum sp	-	-	-	-	-	-	-	-	1	-	i	(1)
Pleurozium schreberi	-	-	-	1	-	-	-	-	-	-	i	(1)
Anthoxanthum odoratum	-	-	-	-	2	-	-	-	-	-	i	(2)
Cardamine pratensis	1	-	-	-	-	-	-	-	1	-	i	(1)
Deschampsia flexuosa	-	-	-	3	-	-	-	-	-	-	i	(3)
Juncus conglomeratus	-	-	-	-	-	-	-	-	1	-	i	(1)
Luzula multiflora	-	-	-	1	-	-	-	-	1	-	i	(1)
Pedicularis palustris	-	-	-	-	1	-	-	-	-	-	i	(1)
Calypogeia sp	-	-	-	-	-	-	-	-	-	1	i	(1)
Ranunculus acris	1	-	-	-	-	-	-	-	-	-	i	(1)
Sphagnum fimbriatum	-	-	-	-	-	-	1	-	-	-	i	(1)
Agrostis stolonifera	-	1	-	-	1	-	-	-	-	-	i	(1)
Dryopteris carthusiana	-	-	-	1	-	-	-	-	-	-	i	(1)
Sphagnum teres	1	-	-	-	-	-	-	-	-	-	i	(1)
Dactylorhiza sp	-	-	-	-	-	-	1	-	1	-	i	(1)
Carex magellanica	3	-	-	-	-	-	-	-	-	-	i	(3)
Dactylorhiza fuchsii	-	-	-	-	-	-	-	-	1	-	i	(1)
Carex lasiocarpa	-	-	-	-	-	-	-	-	-	10	i	(10)
Carex limosa	-	-	-	-	1	-	-	-	-	-	i	(1)
Epilobium angustifolium	-	-	-	4	-	-	-	-	-	-	i	(4)
Festuca vivipera	-	1	-	-	-	-	-	-	-	-	i	(1)
No of species	**31**	**12**	**10**	**20**	**23**	**11**	**19**	**18**	**28**	**17**		

S4b M6

	26	32	154	170	183	238	249		
Potentilla erecta	2	2	2	3	3	3	2	v	(2-3)
Juncus acutiflorus	9	7	5	7	6	7	9	v	(5-9)
Agrostis canina	3	6	3	4	2	3	3	v	(2-6)
Polytrichum commune	4	3	2	3	4	5	4	v	(2-5)
Cirsium palustre	3	2	2	-	1	1	1	v	(1-3)
Viola palustris	3	3	3	3	4	-	3	v	(3-4)
Epilobium palustre	2	1	1	1	1	1	1	v	(1-2)
Holcus lanatus	1	1	2	-	2	1	1	v	(1-2)
Sphagnum palustre	5	3	-	1	6	5	1	v	(1-6)
Sphagnum recurvum	1	-	10	-	7	6	8	iv	(1-10)
Hydrocotyle vulgaris	-	3	4	1	3	-	1	iv	(1-4)
Galium saxatile	-	3	-	3	1	2	2	iv	(1-3)
Carex nigra	1	-	10	-	7	6	8	iv	(1-10)
Hydrocotyle vulgaris	-	3	4	1	3	-	1	iv	(1-3)
Galium saxatile	-	3	-	3	1	2	2	iv	(1-3)
Carex nigra	-	1	2	-	1	1	-	iii	(1-2)
Calliergon stramineum	-	1	1	-	2	-	3	iii	(1-3)
Galium palustre	-	1	2	1	1	-	-	iii	(1-2)
Juncus effusus	1	1	-	1	-	-	1	iii	(1)
Luzula multiflora	1	-	1	-	2	1	-	iii	(1-2)
Sphagnum fimbriatum	6	-	-	9	6	-	1	iii	(1-9)
Equisetum fluviatile	-	1	1	-	1	-	-	ii	(1)
Rhytidiadelphus squarrosus	1	1	-	-	-	3	-	ii	(1-3)
Anthoxanthum odoratum	2	3	-	-	-	3	-	ii	(2-3)
Festuca ovina	-	2	1	-	-	1	-	ii	(1-2)
Rumex acetosa	-	-	-	-	1	1	3	ii	(1-3)
Eriophorum angustifolium	-	-	-	1	-	-	-	I	(1)
Molinia caerulea	-	-	-	-	-	-	1	i	(1)
Erica tetralix	-	-	-	2	-	-	-	i	(2)
Narthecium ossifragum	-	-	-	1	-	-	-	i	(1)
Aulocomnium palustre	-	1	-	2	-	-	-	i	(1-2)
Carex echinata	-	-	2	-	1	-	-	i	(2-1)
Menyanthes trifoliata	-	-	-	1	-	-	-	i	(1)
Succisa pratensis	-	-	-	-	-	-	1	i	(1)
Carex rostrata	-	-	-	2	-	-	-	i	(2)
Nardus stricta	1	-	-	-	-	-	-	i	(1)
Potentilla palustris	-	-	-	1	-	-	1	i	(1)
Lotus uliginosus	2	4	-	-	-	-	-	i	(2-4)
Deschampsia flexuosa	-	-	-	-	-	3	-	i	(3)
Lophocolea bidentata	2	-	-	2	-	-	-	i	(2)
Hypnum cupressiforme	-	-	-	-	-	-	1	i	(1)
Pellia sp	-	1	-	-	-	-	-	i	(1)
Carex curta	-	-	-	-	1	-	1	i	(1)
Dryopteris carthusiana	-	-	-	-	1	-	2	i	(1-2)
Betula pubescens (g)	-	-	1	-	-	-	-	i	(1)
Salix cinerea (g)	-	-	2	-	-	-	-	i	(2)
Hylocomium splendens	-	-	-	-	-	-	1	i	(1)
Chiloscyphus pallescens	-	1	-	-	-	-	-	i	(1)
Eurynchium praelongum	-	-	-	2	-	-	3	i	(2-3)
Sphagnum squarrosum	-	1	-	-	-	-	-	i	(1)
Lophocolea sp	-	5	-	-	-	-	-	i	(5)
Calypogeia fissa	-	1	-	-	-	-	-	i	(1)
Cerastium fontanum triviale	-	1	-	-	-	-	-	i	(1)
Sagina procumbens	-	3	-	-	-	-	-	i	(3)
Plagiothecium sp	-	-	-	-	-	-	1	i	(1)
Achillea millefolium	1	-	-	-	-	-	-	i	(1)
Plagiothecium undulatum	-	-	-	-	-	-	1	i	(1)
Sphagnum girgensohnii	-	-	-	3	-	-	-	i	(3)
No of species	**20**	**30**	**21**	**24**	**25**	**19**	**29**		

S5aa M6

	9	27	52	53	137	143	173		
Eriophorum angustifolium	3	3	2	1	3	3	3	v	(1-3)
Molinia caerulea	3	3	2	1	2	2	4	v	(1-4)
Narthecium ossifragum	1	3	1	3	-	2	1	v	(1-3)
Potentilla erecta	1	3	3	2	1	3	3	v	(1-3)
Carex echinata	4	9	1	3	3	1	-	v	(1-9)
Sphagnum recurvum	1	1	3	1	8	10	5	v	(1-10)
Viola palustris	2	2	2	3	1	1	3	v	(1-3)
Vaccinium oxycoccus	-	2	3	3	1	1	-	iv	(1-3)
Aulacomium palustre	-	2	1	1	-	2	4	iv	(1-4)
Juncus acutiflorus	2	1	7	8	-	-	4	iv	(1-8)
Anthoxanthum odoratum	1	2	1	-	2	-	1	iv	(1-2)
Festuca ovina	-	2	3	2	1	3	-	iv	(1-3)
Drosera rotundifolia	-	1	1	1	-	-	1	iii	(1)
Sphagnum papillosum	-	2	7	8	-	1	-	iii	(1-8)
Carex panicea	-	3	2	-	-	1	3	iii	(1-3)
Sphagnum subnitens	-	1	1	1	-	-	6	iii	(1-6)
Carex nigra	3	2	-	-	3	5	-	iii	(2-5)
Succisa pratensis	-	2	1	-	-	1	1	iii	(1-2)
Agrostis canina	1	-	1	1	-	-	3	iii	(1-3)
Polytrichum commune	-	1	3	1	-	-	2	iii	(1-3)
Cirsium palustre	-	2	1	1	1	-	-	iii	(1-2)
Galium palustre	2	1	-	1	1	-	-	iii	(1-2)
Rhytidiadelphus squarrosus	-	1	2	1	-	-	3	iii	(1-3)
Sphagnum capillifolium	-	-	-	4	5	3	-	ii	(3-5)
Calliergon cuspidatum	-	2	1	2	-	-	-	ii	(1-2)
Hydrocotyle vulgaris	-	1	1	-	-	-	2	ii	(1-2)
Calliergon stramineum	1	-	-	1	-	-	3	ii	(1-3)
Epilobium palustre	1	1	-	1	-	-	-	ii	(1)
Calypogeia muelleriana	-	2	1	-	-	-	2	ii	(1-2)
Holcus lanatus	-	-	1	-	2	1	-	ii	(1-2)
Nardus stricta	-	1	1	-	1	-	-	ii	(1)
Sphagnum palustre	2	-	5	4	-	-	-	ii	(2-5)
Juncus conglomeratus	2	1	-	-	3	-	-	ii	(1-3)
Luzula multiflora	-	1	-	-	1	1	-	ii	(1)
Calluna vulgaris	-	-	-	-	-	2	-	i	(2)
Juncus bulbosus	3	1	-	-	-	-	-	i	(1-3)
Carex rostrata	-	-	-	-	-	5	3	i	(3-5)
Polytrichum alpestre	1	-	-	-	-	-	1	i	(1)
Potamogeton polygonifolius	5	-	-	-	-	-	-	i	(5)
Equisetum fluviatile	-	-	-	-	-	-	2	i	(2)
Myrica gale	1	-	-	-	-	1	-	i	(1)
Ranunculus flammula	3	-	-	1	-	-	-	i	(1-3)
Carex pulicaris	-	1	-	-	-	-	-	i	(1)
Sphagnum auriculatum var *auric*	7	1	-	-	-	-	-	i	(1-7)
Pleurozium schreberi	-	-	2	-	-	-	-	i	(2)
Potentilla palustris	-	-	-	-	-	-	3	i	(3)
Cardamine pratensis	-	-	1	-	-	-	-	i	(1)
Juncus effusus	-	-	-	-	1	-	-	i	(1)
Lotus uliginosus	-	-	-	-	-	-	2	i	(2)
Parnassia palustris	-	-	1	-	-	-	-	i	(1)
Pedicularis palustris	-	-	-	-	-	-	1	i	(1)
Polygala serpyllifolia	-	-	1	-	-	-	-	i	(1)
Carex curta	-	-	-	-	-	1	-	i	(1)
Sphagnum fimbriatum	-	4	-	-	-	-	1	i	(1-4)
Rhizomnium pseudopunctatum	-	-	1	-	-	-	-	i	(1)
Agrostis stolonifera	-	2	-	-	1	-	-	i	(1-2)
Danthonia decumbens	-	-	-	1	-	-	-	i	(1)
Betula pubescens	-	-	-	-	-	2	1	i	(1-2)
Galium saxatile	-	-	1	-	-	-	-	i	(1)
Leontodon autumnalis	-	1	-	-	-	-	-	i	(1)
Pseudoscleropodium purum	-	-	-	-	-	-	1	i	(1)
Poa trivialis	-	-	-	-	1	-	-	i	(1)
Sphagnum squarrosum	-	-	-	-	-	-	1	i	(1)
Hypericum elodes	7	-	-	-	-	-	-	i	(7)
No of species	**23**	**35**	**33**	**26**	**21**	**22**	**30**		

S13b M6

	74	150	261
Eriophorum angustifolium	4	3	3
Carex panicea	2	3	2
Carex echinata	3	1	3
Sphagnum subnitens	3	6	2
Juncus bulbosus	3	3	3
Carex demissa	3	3	1
Potamogeton polygonifolius	2	4	3
Erica tetralix	3	3	-
Drosera rotundifolia	1	3	-
Sphagnum papillosum	-	4	4
Vaccinium oxycoccus	2	-	1
Menyanthes trifoliata	-	3	6
Sphagnum recurvum	-	1	1
Carex nigra	-	2	2
Succisa pratensis	3	-	2
Aneura pinguis	1	-	3
Calliergon stramineum	-	1	2
Viola palustris	1	-	1
Equisetum fluviatile	-	1	2
Ranunculus flammula	1	-	3
Triglochin palustris	-	1	2
Sphagnum auriculatum var *auriculatum*	-	4	3
Sphagnum auriculatum var *inund*	2	-	2
Utricularia minor	-	5	2
Sphagnum teres	6	-	5
Aulocomnium palustre	-	1	-
Calluna vulgaris	-	1	-
Carex rostrata	-	-	2
Agrostis canina	-	-	1
Hydrocotyle vulgaris	1	-	-
Myrica gale	-	3	-
Calypogeia muelleriana	-	1	-
Nardus stricta	1	-	-
Potentilla palustris	-	-	3
Andromeda palifolia	-	-	1
Pedicularis palustris	-	-	2
Juncus conglomeratus	1	-	-
Mentha aquatica	1	-	-
Riccardia multifida	1	-	-
Carex curta	-	1	-
Caltha palustris	-	-	1
Danthonia decumbens	1	-	-
Salix cinerea (g)	-	-	2
Riccardia/Aneura sp	-	1	-
Leontodon autumnalis	1	-	-
Betula seedling/sp	-	1	-
Carex magellanica	-	-	4
No of species	**23**	**25**	**31**

S15 M6

	128	259
Narthecium ossifragum	3	2
Carex echinata	1	3
Menyanthes trifoliata	3	6
Sphagnum recurvum	3	4
Carex nigra	2	2
Juncus bulbosus	3	2
Carex rostrata	8	2
Carex demissa	3	3
Viola palustris	1	1
Ranunculus flammula	1	3
Triglochin palustris	1	3
Eriophorum angustifolium	-	3
Molinia caerulea	3	-
Sphagnum papillosum	2	-
Vaccinium oxycoccus	-	3
Succisa pratensis	-	3
Aneura pinguis	1	-
Agrostis canina	-	1
Hydrocotyle vulgaris	-	3
Sphagnum contortum	-	6
Potamogeton polygonifolius	-	2
Equisetum fluviatile	-	3
Carex dioica	1	-
Juncus articulatus	2	-
Potentilla palustris	-	4
Anagallis tenella	1	-
Carex curta	-	3
Caltha palustris	-	2
Salix cinerea (g)	-	2
Sphagnum teres	8	-
Carex magellanica	-	3
No of species	**18**	**24**

S6a M9

	35	99	191	197	203		
Menyanthes trifoliata	3	1	3	3	8	v	(1-8)
Calliergon cuspidatum	3	3	4	3	2	v	(1-4)
Galium palustre	2	3	2	3	1	v	(1-3)
Epilobium palustre	2	2	2	1	2	v	(1-2)
Cardamine pratensis	1	2	1	2	1	v	(1-2)
Eriophorum angustifolium	4	-	1	2	2	iv	(1-4)
Molinia caerulea	1	4	-	2	1	iv	(1-4)
Hydrocotyle vulgaris	-	3	4	3	1	iv	(1-4)
Sphagnum contortum	-	9	2	2	8	iv	(2-9)
Equisetum fluviatile	3	-	1	3	2	iv	(1-3)
Potentilla palustris	-	1	4	4	2	iv	(1-4)
Carex panicea	-	4	-	1	1	iii	(1-4)
Aulocomnium palustre	1	-	2	1	-	iii	(1-2)
Juncus acutiflorus	1	-	6	2	-	iii	(1-6)
Carex nigra	-	-	4	3	4	iii	(3-4)
Succisa pratensis	1	-	2	3	-	iii	(1-3)
Carex rostrata	7	-	-	6	4	iii	(4-7)
Ranunculus flammula	2	1	1	-	-	iii	(1-2)
Drepanocladus sp.	1	2	-	2	-	iii	(1-2)
Erica tetralix	-	1	-	-	1	ii	(1)
Narthecium ossifragum	1	-	-	-	1	ii	(1)
Vaccinium oxycoccus	-	-	1	2	-	ii	(1-2)
Carex echinata	1	-	-	2	-	ii	(1-2)
Sphagnum subnitens	1	-	2	-	-	ii	(1-2)
Agrostis canina	1	-	-	2	-	ii	(1-2)
Calliergon stramineum	-	-	2	1	-	ii	(1-2)
Cirsium palustre	-	-	1	-	2	ii	(1-2)
Viola palustris	-	-	-	1	1	ii	(1)
Angelica sylvestris	-	1	-	2	-	ii	(1-2)
Chiloscyphus sp.	3	-	4	-	-	ii	(3-4)
Valeriana officinalis	-	1	-	2	-	ii	(1-2)
Lemna minor	1	-	-	-	1	ii	(1)
Caltha palustris	-	-	-	1	4	ii	(1-4)
Sphagnum capillifolium	-	-	-	-	2	i	(2)
Sphagnum recurvum	1	-	-	-	-	i	(1)
Juncus bulbosus	-	-	-	-	3	i	(3)
Campylium stellatum	-	2	-	-	-	i	(2)
Polytrichum alpestre	-	-	-	-	1	i	(1)
Myrica gale	-	5	-	-	-	i	(5)
Triglochin palustris	-	-	1	-	-	i	(1)
Carex hostiana	-	-	-	-	1	i	(1)
Calypogeia muelleriana	-	-	-	-	1	i	(1)
Holcus lanatus	-	-	1	-	-	i	(1)
Rhytidiadelphus squarrosus	1	-	-	-	-	i	(1)
Eleocharis quinquiflora	-	-	1	-	-	i	(1)
Sphagnum magellanicum	-	-	-	-	1	i	(1)
Sphagnum palustre	1	-	-	-	-	i	(1)
Valeriana dioica	-	-	3	-	-	i	(3)
Lotus uliginosus	-	-	1	-	-	i	(1)
Luzula multiflora	-	-	-	1	-	i	(1)
Lophozia ventricosa	-	-	-	-	1	i	(1)
Achillea ptarmica	-	-	-	1	-	i	(1)
Rhizomnium pseudopunctatum	-	-	5	-	-	i	(5)
Sphagnum teres	-	-	-	7	-	i	(7)
Filipendula ulmaria	-	1	-	-	-	i	(1)
Rumex acetosa	-	-	-	2	-	i	(2)
Phragmites australis	-	6	-	-	-	i	(6)
Calliergon giganteum	-	-	4	-	-	i	(4)
Calliergon cordifolium	1	-	-	-	-	i	(1)
Carex lasiocarpa	-	-	4	-	-	i	(4)
Ranunculus omiophyllus	1	-	-	-	-	i	(1)

S6a M9 cont.

	35	99	191	197	203		
Bryum sp.	1	-	-	-	-	i	(1)
Plagiothecium sp.	1	-	-	-	-	i	(1)
Salix cinerea	1	-	-	-	-	i	(1)
Senecio aquaticus	-	-	-	2	-	i	(2)
Salix sp.	-	-	1	-	-	i	(1)
No of species	**28**	**19**	**29**	**31**	**27**		

	78	82	83	84	85	91	92	94	98	100	104	105	106	108	140	147	155	158	159	164	182	184	198	208	220	225	228	229	231	235	243	19	29	30	40	44	57	64	68	70	77	115	127		
Eriophorum angustifolium	4	2	2	2	2	3	2	3	-	2	-	2	1	1	2	2	3	2	1	1	1	2	4	1	2	3	1	3	2	-	3	3	3	2	3	3	2	3	3	1	3	-	1	v	(1-4)
Carex panicea	3	3	3	-	4	3	4	2	2	4	2	3	4	4	3	3	2	2	2	4	2	2	3	-	-	3	3	3	4	3	2	5	-	1	3	1	3	2	2	2	-	3	-	v	(1-5)
Menyanthes trifoliata	3	2	-	2	3	3	2	2	2	3	3	2	4	4	3	3	2	2	2	4	2	2	2	3	2	2	3	3	1	3	2	3	2	3	3	3	1	3	2	2	3	4	2	3	v	(1-4)
Aneura pinguis	3	3	3	-	2	3	1	3	2	3	2	1	3	-	2	2	2	3	3	1	3	2	2	2	1	3	-	1	1	-	3	3	2	-	3	3	3	-	3	3	4	6	4	2	v	(1-6)
Campylium stellatum	2	3	2	1	-	4	4	1	2	3	2	2	6	1	4	4	1	-	4	2	4	2	2	3	1	3	2	2	3	1	3	3	3	-	1	2	2	5	-	-	3	4	2	5	v	(1-5)
Potamogeton polygonifolius	3	1	2	3	3	5	-	5	3	-	1	3	3	5	1	3	4	6	2	2	3	3	-	2	-	3	3	4	5	2	1	2	-	1	1	2	5	-	10	9	4	6	4	8	v	(1-10)
Scorpidium scorpioides	1	5	6	2	4	7	9	2	-	3	2	6	8	-	6	5	-	7	-	7	5	-	-	3	7	-	-	9	9	4	6	2	1	5	8	5	-	3	3	2	3	1	3	v	(1-4)
Carex demissa	2	-	1	-	1	3	2	2	-	-	3	3	4	3	-	1	2	2	2	2	2	2	1	2	4	2	-	2	1	3	-	3	-	3	2	3	-	3	2	2	1	iv	(1-8)
Molinia caerulea	3	-	-	-	-	1	-	2	2	3	8	2	2	-	1	3	3	-	6	3	1	5	-	-	-	2	1	1	1	1	2	1	2	3	-	1	1	-	-	1	2	2	3	iv	(1-6)
Sphagnum subnitens	6	-	2	-	-	-	1	1	-	-	1	-	1	1	2	3	3	-	6	3	1	5	-	-	-	3	3	3	-	1	-	4	6	4	-	5	4	6	-	2	-	7	3	4	-	iv	(1-10)
Sphagnum contortum	-	8	8	2	-	7	1	9	7	10	2	1	1	-	-	6	3	5	-	7	2	-	4	-	1	3	-	1	-	7	-	-	-	-	1	2	4	6	1	-	-	-	-	-	iv	(1-8)
Eleocharis multicaulis	4	2	4	2	8	-	1	7	3	-	-	2	-	2	2	-	1	6	3	1	1	5	-	-	6	-	-	3	7	-	-	-	-	1	2	1	1	2	-	-	-	4	1	3	iv	(1-4)
Juncus bulbosus	3	2	-	2	-	3	2	1	3	-	-	-	-	-	-	-	2	2	1	3	1	2	-	1	2	-	1	3	3	-	2	3	-	2	1	3	3	-	1	-	1	-	3	2	iv	(1-3)
Drepanocladus revolvens	-	1	-	1	2	3	1	1	-	-	1	-	1	-	-	-	1	3	3	1	1	2	-	2	2	-	1	2	1	-	-	3	2	-	1	3	3	-	3	2	2	3	-	2	iv	(1-6)
Rhynchospera alba	3	3	-	6	-	4	2	2	4	4	-	3	-	-	3	-	-	-	3	1	3	2	-	-	-	-	1	2	1	-	-	-	4	2	-	3	2	1	2	1	3	2	1	-	iv	(1-3)
Erica tetralix	2	-	3	-	1	-	-	-	-	-	1	-	1	-	1	-	2	-	2	1	3	2	1	3	2	2	1	1	-	-	2	3	-	2	1	2	1	-	2	1	2	3	2	iv	(1-3)
Drosera rotundifolia	3	-	1	-	-	-	-	2	-	-	1	-	1	-	1	-	2	-	2	1	3	2	1	3	2	2	1	1	-	-	2	3	-	2	1	2	1	-	2	1	2	3	2	iv	(1-3)
Sphagnum papillosum	5	-	2	-	1	-	-	-	-	-	-	-	1	-	4	1	1	-	-	-	3	4	-	4	-	1	3	2	1	-	-	1	-	-	-	1	1	-	-	-	-	4	2	iii	(1-5)
Narthecium ossifragum	-	-	-	-	-	-	-	-	1	-	1	1	1	-	2	1	1	-	2	2	1	4	1	-	1	1	-	2	-	-	1	1	-	2	-	1	2	-	-	-	-	-	2	iii	(1-4)
Carex echinata	-	-	2	-	-	3	-	2	-	1	-	-	-	-	1	1	1	-	-	-	-	1	2	3	4	1	-	-	2	-	2	2	-	-	-	-	1	-	-	-	-	-	-	iii	(1-4)
Carex rostrata	-	5	4	6	4	3	6	-	2	-	-	2	3	6	-	-	-	3	3	3	1	2	6	-	-	-	1	-	-	3	5	-	7	6	-	3	-	5	2	-	-	-	1	-	iii	(1-7)
Equisetum fluviatile	-	1	1	1	1	-	1	-	2	2	-	-	-	-	-	-	2	2	1	3	1	3	-	-	-	2	1	2	2	1	-	-	1	-	1	-	-	-	-	-	-	1	-	iii	(1-3)
Myrica gale	-	6	-	-	-	3	2	1	2	6	7	5	-	-	4	3	5	4	6	2	4	-	-	-	-	1	-	-	-	-	-	-	-	4	-	-	-	-	3	-	2	2	iii	(1-7)
Carex dioica	-	-	2	-	-	-	1	1	-	-	-	3	3	-	-	1	1	-	3	-	1	-	2	2	2	1	2	-	-	-	1	-	-	-	-	-	1	-	4	4	3	2	4	4	iii	(1-4)
Eleocharis quinquiflora	2	-	1	-	2	4	-	2	-	-	-	3	4	4	4	4	-	-	2	4	-	-	2	-	-	-	5	-	-	-	1	-	-	-	-	1	-	3	-	1	3	-	-	iii	(1-5)
Vaccinum oxycoccus	1	-	-	-	-	-	1	1	-	-	-	-	-	-	1	-	1	-	-	-	1	1	1	1	-	1	2	-	-	-	2	1	2	-	1	-	-	-	2	-	3	-	-	1	-	iii	(1-3)
Drosera intermedia	-	-	-	-	-	-	3	-	2	3	-	-	-	-	3	-	-	-	-	-	3	1	-	-	-	-	-	-	-	-	-	-	4	-	-	-	2	-	3	-	-	1	-	iii	(1-4)
Utricularia minor	-	-	-	-	-	-	2	2	1	-	-	-	-	-	5	5	3	3	3	-	4	2	-	-	-	-	-	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ii	(1-5)
Utricularia intermedia	-	4	2	3	4	3	-	-	2	2	-	6	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	3	-	3	-	3	-	-	ii	(1-6)
Potentilla erecta	-	-	-	-	-	-	-	-	-	-	1	-	1	-	1	1	-	-	-	-	-	1	-	1	1	1	2	1	-	3	-	-	1	-	-	-	-	-	-	-	1	-	-	ii	(1-2)
Juncus acutiflorus	-	-	-	-	-	3	-	-	-	-	2	-	-	-	-	-	-	-	-	2	-	1	-	1	2	1	-	3	2	-	-	1	-	-	-	1	-	-	-	-	2	-	-	ii	(1-3)
Carex nigra	-	-	1	-	-	1	2	2	-	2	-	-	-	-	2	-	-	-	-	-	-	1	-	2	-	1	-	3	2	-	-	-	-	1	2	-	-	3	-	-	-	1	-	-	ii	(1-3)
Succisa pratensis	2	-	-	-	-	-	-	-	-	-	1	-	1	-	-	1	2	-	1	1	-	2	3	-	1	1	-	-	-	1	1	-	-	2	-	1	-	-	-	1	-	-	-	-	ii	(1-3)
Calliergon cuspidatum	1	1	-	-	-	-	-	-	-	-	2	-	-	-	3	1	-	1	1	1	-	1	3	-	-	-	-	-	-	1	1	-	-	2	-	1	-	-	-	-	1	2	-	ii	(1-3)
Calliergon stramineum	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	-	2	-	1	2	3	2	-	-	-	2	-	1	-	-	1	-	1	1	-	-	-	1	-	-	-	-	ii	(1-4)
Ranunculus flammula	-	-	-	-	2	-	-	4	-	-	-	-	1	-	1	1	-	-	-	1	2	3	-	-	3	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	ii	(1-4)
Triglochin palustris	1	-	-	-	1	2	1	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	3	-	-	-	-	-	2	-	-	1	-	-	1	2	1	-	3	3	-	ii	(1-3)
Carex pulicaris	-	-	1	-	-	-	-	-	-	-	1	-	2	-	-	1	-	-	-	1	1	-	-	-	1	-	-	1	1	3	-	-	1	-	-	-	-	-	-	-	-	-	-	ii	(1-3)
Sphagnum auriculatum var. auric.	-	-	-	6	4	-	-	1	7	-	-	-	-	-	-	-	5	-	-	-	-	2	-	8	-	1	9	-	-	-	-	-	-	-	-	-	-	10	-	-	-	2	ii	(1-10)
Brvum pseudotriquetrum	-	-	-	2	-	-	2	2	-	-	2	1	1	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	2	2	-	1	-	-	1	-	-	-	1	-	-	-	-	ii	(1-2)
Aulocomnium palustre	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	i	(1)
Calluna vulgaris	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	i	(1)
Sphagnum recurvum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	i	(1-2)
Polytrichum alpestre	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1-2)
Odontoschisma sphagnii	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Agrostis canina	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	2	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1-3)
Hydrocotyle vulgaris	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	i	(1-3)
Polytrichum commune	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Cirsium palustre	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(3-3)
Viola palustris	3	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1-2)
Galium palustre	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1-4)
Mylia anomela	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	4	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	i	(1)
Calypogeia muelleriana	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Rhytidiadelphus squarrosus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(2-3)
Nardus stricta	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Sphagnum magellanicum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1-3)
Hypnum sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Sphagnum palustre	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(2-5)
Juncus articulatus	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	3	-	5	-	-	-	-	-	-	-	2	-	-	-	1	-	-	-	-	-	-	-	-	-	i	(2)
Potentilla palustris	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(2)
Andromeda polifolia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Cardamine pratensis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Mentha aquatica	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	2	-	1	-	-	i	(1)
Selaginella selaginoides	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-	3	-	-	-	1	-	-	-	-	-	-	-	-	i	(1-3)
Juncus squarrosus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Pinguicula vulgaris	-	-	-	-	-	-	1	-	-	-	-	-	1	-	1	-	-	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	i	(1-3)
Parnassia palustris	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Cephalozia sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Pedicularis palustris	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	2	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	i	(1)
Cinidium molluscum	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	i	(1-2)
Calypogeia sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	1	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	2	i	(1-5)
Sphagnum auric. var inund.	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	5	1	-	-	1	-	-	-	-	-	-	-	-	-	-	3	-	-	1	-	-	-	-	-	-	-	i	(2)
Angelica sylvestris	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	i	(1-3)
Riccardia multifida	-	-	-	3	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(2)
Pellia spp.	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Polygala serpyllifolia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

S12 M9 cont.

	78	82	83	84	85	91	92	94	98	100	104	105	106	108	140	147	155	158	159	164	182	184	198	208	220	225	228	229	231	235	243	19	29	30	40	44	57	64	68	70	77	115	127		
Rhizomnium pseudopunctatum	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(2-3)
Euphrasia officinalis agg.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Drepanocladus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(2-4)
Equisetum palustre	-	-	-	-	-	-	-	-	-	-	-	3	2	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1-3)
Calliergon sarmentosum	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	i	(1-5)
Betula pubescens	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Sphagnum teres	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1-3)
Salix cinerea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Aneura sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	i	(1-2)
Pseudoscleropodium purum	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Fissidens adianthoides	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Fissidens sp.	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Algal mat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(2-5)
Hammarbya paludosa	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	i	(1-2)
Dactylorhiza fuchsii	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Calliergon giganteum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Brachythecium rivulare	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Calypogeia fissa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Dactylorhiza incarnata	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Dactylorhiza majalis purpurella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Drepanocladus fluitans	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Thuidium delicatulum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Carex lasiocarpa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(5)
Carex limosa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	2	-	-	-	-	-	-	-	-	-	-	-	-	i	(2-7)
Utricularia sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(3)
Epilobium angustifolium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(2)
Linum catharticum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Poa annua	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Drepanocladus aduncus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Viola sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Sphagnum platyphyllum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(4)
Scirpus cespitosus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	i	(1)
Epilobium palustre	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	i	(1)
Carex hostiana	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	3	-	-	-	-	3	-	1	-	i	(1-3)
Anthoxanthum odoratum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Anagallis tenella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	1	-	-	-	i	(1-2)
Ctenidium molluscum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	i	(1)
Calypogeia sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	i	(1)
Phragmites australis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	i	(2)
Sphagnum subsecundum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	i	(1)
Utricularia sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	i	(1)
Scirpus lacustris lacustris	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	i	(2)
Chara	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	i	(1)
No species	**26**	**18**	**26**	**20**	**19**	**21**	**24**	**27**	**19**	**15**	**29**	**21**	**32**	**12**	**32**	**28**	**29**	**19**	**30**	**35**	**31**	**40**	**30**	**28**	**24**	**25**	**26**	**30**	**21**	**22**	**31**	**31**	**15**	**24**	**28**	**29**	**18**	**18**	**15**	**28**	**24**	**32**	**26**		

S9b M10

	79	110	135	144	165	174	176	178	179	188	192	258	263	264	267		
Molinia caerulea	1	3	1	2	3	5	3	2	1	3	2	4	3	3	3	v	(1-5)
Carex panicea	5	6	5	3	4	3	3	3	3	2	5	4	4	4	6	v	(2-6)
Succisa pratensis	1	3	1	1	2	1	3	3	-	2	3	2	2	2	2	v	(1-3)
Calliergon cuspidatum	3	2	4	3	4	4	5	1	1	2	2	1	2	3	4	v	(1-5)
Campylium stellatum	3	3	1	-	2	3	4	3	2	4	4	5	1	4	5	v	(1-5)
Carex hostiana	5	6	4	3	2	8	2	3	2	4	5	1	3	3	6	v	(1-8)
Eriophorum angustifolium	5	3	1	2	-	-	1	2	-	1	-	2	-	2	1	iv	(1-2)
Potentilla erecta	2	1	-	1	2	2	1	1	-	-	2	1	-	-	1	iv	(1-2)
Carex echinata	5	2	1	1	2	-	3	1	-	1	2	1	1	-	2	iv	(1-3)
Juncus bulbosus	1	2	2	2	-	3	-	2	1	2	2	-	-	-	1	iv	(1-3)
Carex demissa	1	1	2	2	1	2	1	-	2	-	2	-	1	-	-	iv	(1-2)
Bryum pseudotriquetrum	2	1	2	2	2	-	-	2	1	-	-	1	2	2	2	iv	(1-2)
Juncus articulatus	3	2	1	-	3	-	4	3	4	2	-	3	-	3	2	iv	(1-4)
Valeriana dioica	-	3	1	-	1	3	3	-	-	2	2	1	2	2	2	iv	(1-3)
Pinguicula vulgaris	-	1	1	-	1	-	-	2	-	2	3	2	1	1	1	iv	(1-3)
Ctenidium molluscum	-	1	1	-	1	-	-	3	2	2	2	4	-	5	6	iv	(1-6)
Briza media	-	-	2	2	1	1	3	1	-	1	2	2	2	2	2	iv	(1-3)
Erica tetralix	2	1	-	2	-	1	1	2	-	1	-	-	-	-	3	iii	(1-3)
Drosera rotundifolia	-	-	-	1	1	-	-	2	-	1	2	1	-	2	2	iii	(1-2)
Narthecium ossifragum	-	3	-	1	2	-	-	1	1	1	2	-	-	-	-	iii	(1-3)
Aulocomnium palustre	-	-	1	2	-	1	2	2	1	-	-	-	-	1	1	iii	(1-2)
Sphagnum subnitens	-	-	-	5	-	1	-	2	1	3	3	1	-	1	1	iii	(1-5)
Juncus acutiflorus	-	2	-	2	6	1	-	-	-	4	-	2	3	2	3	iii	(1-6)
Aneura pinguis	3	1	-	-	-	2	-	1	-	-	2	2	1	2	2	iii	(1-3)
Hydrocotyle vulgaris	3	1	-	2	3	-	1	-	-	3	2	-	-	-	-	iii	(1-3)
Cirsium palustre	1	-	1	1	1	1	-	1	-	1	2	1	-	-	-	iii	(1-2)
Ranunculus flammula	-	2	2	-	1	1	1	2	2	-	1	-	1	-	-	iii	(1-2)
Triglochin palustris	2	1	1	-	1	-	-	2	2	2	-	1	-	3	-	iii	(1-3)
Drepanocladus revolvens	-	-	1	-	-	4	3	3	-	3	3	5	-	-	6	iii	(1-6)
Carex dioica	4	1	1	1	-	-	3	2	-	1	-	2	1	-	-	iii	(1-4)
Eleocharis quinquiflora	-	-	2	-	1	-	2	1	-	3	-	3	-	7	-	iii	(1-7)
Carex pulicaris	-	1	1	1	-	4	-	1	-	-	3	1	2	-	-	iii	(1-4)
Anthoxanthum odoratum	1	-	-	3	1	1	-	1	1	1	2	-	-	-	1	iii	(1-3)
Parnassia palustris	-	-	1	-	2	1	3	1	-	1	-	1	-	-	1	iii	(1-3)
Philonotis fontana	-	-	3	-	2	-	1	1	1	2	1	1	-	-	-	iii	(1-3)
Euphrasia officinalis agg.	-	-	-	-	1	-	1	1	-	-	1	1	-	1	3	iii	(1-3)

	79	110	135	144	165	174	176	178	179	188	192	258	263	264	267		
Carex flacca	2	3	1	-	-	-	-	-	-	2	1	1	1	2	-	iii	(1-3)
Pellia endiviifolia	-	-	-	-	4	1	-	3	1	-	2	-	1	5	-	iii	(1-5)
Fissidens adianthoides	-	1	-	-	2	1	-	1	-	-	-	2	-	4	2	iii	(1-4)
Sphagnum capillifolium	-	-	3	-	-	1	-	-	-	1	1	1	-	-	-	ii	(1-3)
Carex nigra	5	1	1	2	-	-	2	-	-	1	-	-	-	-	-	ii	(1-5)
Holcus lanatus	-	-	-	-	2	1	2	-	2	-	-	-	-	1	-	ii	(1-2)
Rhytidiadelphus squarrosus	-	-	-	1	-	-	-	1	-	-	-	1	-	-	1	ii	(1)
Festuca ovina	-	-	1	1	-	-	-	2	-	-	3	-	2	-	1	ii	(1-3)
Selaginella selaginoides	-	-	-	-	-	-	-	1	-	-	3	3	-	2	2	ii	(1-3)
Anagallis tenella	-	-	1	-	1	1	-	2	-	2	2	-	-	-	-	ii	(1-2)
Pedicularis palustris	-	1	-	-	1	-	3	-	-	-	-	1	-	-	-	ii	(1-3)
Achillea ptarmica	-	-	-	-	3	1	-	-	1	-	-	-	-	1	-	ii	(1-3)
Crepis paludosa	-	-	-	-	-	1	-	-	-	-	1	-	1	1	-	ii	(1)
Primula farinosa	-	-	-	-	-	-	-	2	-	1	-	3	2	3	3	ii	(1-3)
Cratoneuron commutatum	-	-	1	-	-	-	-	-	9	3	-	1	5	-	-	ii	(1-9)
Leontodon hispidus	-	-	-	-	-	-	-	-	-	1	-	1	1	2	2	ii	(1-2)
Eriophorum latifolium	-	-	-	-	-	-	-	-	-	2	-	1	-	1	2	ii	(1-2)
Sphagnum papillosum	-	-	-	-	-	-	-	1	-	-	4	-	-	-	1	i	(1-4)
Vaccinium oxycoccus	-	-	-	-	-	-	3	-	-	-	-	-	-	2	1	i	(1-3)
Calluna vulgaris	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	i	(1)
Menyanthes trifoliata	-	-	-	-	-	-	1	-	-	-	-	-	-	2	-	i	(1-2)
Agrostis canina	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	i	(1)
Calliergon stramineum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	i	(1)
Viola palustris	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	i	(2)
Galium palustre	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	i	(1)
Sphagnum contortum	1	-	-	-	-	4	8	-	-	-	-	-	-	-	-	i	(1-8)
Potamogeton polygonifolius	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Equisetum fluviatile	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	i	(2)
Scirpus cespitosus	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	i	(2)
Epilobium palustre	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	i	(1)
Mylia anomela	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	i	(1)
Calypogeia muelleriana	2	-	-	-	-	-	-	-	-	-	-	-	-	1	-	i	(1-2)
Scorpidium scorpioides	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	i	(1)
Nardus stricta	-	-	1	-	-	-	-	-	1	-	1	-	-	-	-	i	(1)
Hypnum sp.	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	i	(1)
Cardamine pratensis	-	-	-	-	-	-	-	3	1	-	-	-	-	-	-	i	(1-3)
Mentha aquatica	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	i	(2)
Juncus effusus	3	-	-	-	-	-	-	1	-	-	-	-	-	-	-	i	(1-3)

	79	110	135	144	165	174	176	178	179	188	192	258	263	264	267		
Lotus uliginosus	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	i	(1)
Juncus conglomeratus	-	-	2	2	-	-	-	-	-	-	1	-	-	-	-	i	(1-2)
Luzula multiflora	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	i	(1)
Lophoria ventricosa	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	i	(1)
Ranunculus acris	-	-	-	-	-	-	1	-	-	-	-	-	1	1	-	i	(1)
Angelica sylvestris	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	i	(1)
Hypnum cupressiforme	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Leucobryum glaucum	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	i	(2)
Riccardia multifida	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(3)
Pellia sp.	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Caltha palustris	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	i	(1)
Dicranum sp.	-	-	-	-	-	-	-	2	-	1	-	-	-	-	-	i	(1-2)
Agrostis stolonifera	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	i	(3)
Danthonia decumbens	-	-	-	-	1	-	-	-	-	-	2	1	-	-	-	i	(1-2)
Equisetum palustre	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(2)
Betula pubescens	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	i	(1)
Salix cinerea (g)	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	i	(2)
Sphagnum teres	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	i	(1)
Sphagnum warnstorfii	-	-	-	-	-	-	3	-	-	-	-	-	-	4	4	i	(3-4)
Riccardia/Aneura sp.	-	-	-	-	-	-	-	1	-	2	-	-	1	-	-	i	(1-2)
Dactylorhiza sp.	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	i	(1)
Filipendula ulmaria	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	i	(1)
Galium saxatile	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Leontodon autumnalis	-	-	-	-	3	1	-	-	-	-	-	-	1	-	-	i	(1-3)
Prunella vulgaris	-	-	-	-	3	-	-	2	-	-	-	-	-	-	-	i	(2-3)
Hylocomnium splendens	-	-	1	-	-	-	-	1	-	-	-	-	-	-	1	i	(1)
Pseudoscleropodium purum	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Thuidium sp.	1	-	-	-	-	-	-	-	-	-	-	1	-	-	1	i	(1)
Pedicularis sylvatica	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	i	(1)
Chiloscyphus pallescens	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	i	(1)
Chiloscyphus sp.	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	i	(3)
Lychnis flos-cuculi	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	i	(1)
Poa trivialis	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	i	(2)
Fissidens sp.	-	-	-	-	-	-	-	-	-	2	1	-	2	-	-	i	(1-2)
Equisetum arvense	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	i	(1)
Dactylorhiza fuchsii	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	i	(1)
Dicranum bonjeani	-	-	1	-	-	-	-	-	-	-	1	-	-	-	1	i	(1)
Scapania undulata	-	-	-	1	3	-	-	-	-	-	-	-	-	-	-	i	(1-3)
Cardamine sp.	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)

	79	110	135	144	165	174	176	178	179	188	192	258	263	264	267		
Lophocolea sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	i	(1)
Plantago lanceolata	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	i	(1)
Trifolium repens	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	i	(1)
Breutelia chrysocoma	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	i	(1)
Calypogeia fissa	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	i	(1)
Dactylorhiza incarnata	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(2)
Dactylorhiza majalis purpurella	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Scutellaria minor	-	2	-	-	-	2	-	-	-	-	-	-	-	-	-	i	(2)
Serratula tinctoria	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	i	(3)
Sphagnum subsecundum	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	i	(1)
Thuidium delicatulum	-	-	-	1	1	-	-	2		-	-	-	-	-	-	i	(1-2)
Fraxinus excelsior (g)	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	i	(1)
Racomitrium sp.	-	1	-	-	-	-	-	-	-	-	-	1	1	-	-	i	(1)
Cerastium fontanum triviale	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	i	(1)
Hypericum tetrapterum	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Lathyrus pratensis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	i	(1)
Sagina procumbens	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	i	(2)
Dicranella palustris	-	-	1	-	-	-	-	-	-	-	2	-	-	-	-	i	(1-2)
Diplophyllum albicans	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	i	(1)
Bryum sp.	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	i	(2)
Bellis perennis	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	i	(1)
Festuca vivipara	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	i	(1)
Juncus bufonius	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	i	(1)
Lotus corniculatus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	i	(1)
Huperzia selago	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	i	(1)
Scirpus setaceus	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	i	(3)
Campylopus introflexus	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	i	(1)
Mnium hornum	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Plagiomnium elatum	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	i	(2)
Philonotis calcarea	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	i	(1)
Cephaloziella sp.	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Taraxacum seedling/sp	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Alopecuris geniculatus	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	i	(3)
Anemone nemorosa	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	i	(1)
Festuca pratensis	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	i	(1)
Filaginella uliginosa	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	i	(1)
Poa annua	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	i	(1)
Polygonum hydropiper	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	i	(1)
Salix repens agg.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	i	(1)

	79	110	135	144	165	174	176	178	179	188	192	258	263	264	267		
Thuidium tamarascinum	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	i	(1)
Viola seeding	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	i	(2)
Ulex sp./seedling	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	i	(1)
Sagina sp.	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	i	(1)
Cratoneuron sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	i	(6)
No of species	**31**	**33**	**43**	**42**	**50**	**33**	**40**	**56**	**25**	**47**	**47**	**47**	**32**	**41**	**50**		

S8 M10

	193	194
Molinia caerulea	5	5
Carex panicea	3	3
Succisa pratensis	1	1
Campylium stellatum	4	3
Drepanocladus revolvens	2	2
Ctenidium molluscum	3	4
Dactylorhiza sp.	1	1
Phragmites australis	2	2
Schoenus nigricans	9	9
Aneura pinguis	-	2
Juncus articulatus	1	-
Selaginella selaginoides	-	2
Parnassia palustris	-	2
Angelica sylvestris	-	1
Carex flacca	-	2
Equisetum palustre	1	-
Primula forinosa	2	-
Centaurea nigra	-	3
Frangula alnus	-	1
No species	**12**	**16**

S10a M10

	20	23	36	38	41	63	65	87	126	187		
Molinia eaerulea	3	3	3	3	6	1	3	4	3	3	v	(1-6)
Erica tetralix	3	6	3	6	4	2	3	4	2	1	v	(1-6)
Drosera rotundifolia	2	2	1	3	1	-	3	2	2	3	v	(1-3)
Narthecium ossifragum	1	2	1	3	3	2	2	3	3	1	v	(1-3)
Carex panicea	3	3	3	3	1	5	4	3	4	6	v	(1-6)
Potentilla erecta	3	3	1	2	1	2	3	2	1	1	v	(1-3)
Carex echinata	2	3	3	3	1	4	1	3	1	2	v	(1-4)
Sphagnum subnitens	1	1	2	6	8	1	2	4	2	3	v	(1-8)
Succisa pratensis	1	3	3	2	-	2	2	4	2	3	v	(1-4)
Juncus bulbosus	1	3	3	3	-	3	2	2	1	4	v	(1-4)
Calliergon cuspidatum	2	1	1	-	1	2	2	1	4	2	v	(1-4)
Aneura pinguis	3	1	1	2	-	3	2	2	1	2	v	(1-3)
Eriophorum angustifolium	3	2	3	3	-	3	2	-	1	3	iv	(1-3)
Sphagnum papillosum	-	5	2	4	4	-	1	2	4	-	iv	(1-5)
Vaccinium oxycoccus	3	3	1	3	2	-	2	2	-	-	iv	(1-3)
Aulocomnium palustre	1	1	-	2	1	-	2	2	-	1	iv	(1-2)
Campylium stellatum	1	1	2	2	-	-	4	3	3	7	iv	(1-7)
Carex hostiana	-	-	7	3	4	5	5	4	4	6	iv	(4-7)
Carex dioica	2	-	-	3	-	2	2	1	1	2	iv	(1-3)
Selaginella selaginoides	1	-	3	1	-	-	3	3	2	2	iv	(1-3)
Anagallis tenella	1	-	3	1	-	2	3	1	1	2	iv	(1-3)
Sphagnum capillifolium	1	-	1	-	1	-	4	1	3	-	iii	(1-4)
Cirsium palustre	1	-	1	-	1	-	-	1	1	-	iii	(1)
Sphagnum contortum	3	2	-	3	-	5	1	-	-	1	iii	(1-5)
Drepanocladus revolvens	1	-	-	2	-	-	1	2	3	-	iii	(1-3)
Carex pulicaris	3	-	3	1	-	4	3	3	-	-	iii	(1-4)
Ctenidium molluscum	-	-	2	-	-	-	2	3	2	3	iii	(2-3)
Riccardia multifida	2	2	-	-	-	1	1	-	-	2	iii	(1-2)
Dicranum sp	-	-	2	1	1	1	2	-	-	1	iii	(1-2)
Prunella vulgaris	-	-	1	-	-	2	2	1	-	-	ii	(1-2)
Calluna vulgaris	-	-	-	-	-	-	1	1	1	1	ii	(1)
Juncus acutiflorus	2	-	-	-	4	-	-	-	3	2	ii	(2-4)
Sphagnum recurvum	4	4	-	-	2	-	-	-	-	-	ii	(2-4)
Carex nigra	-	-	-	1	-	-	1	2	-	1	ii	(1-2)
Polytrichum alpestre	-	-	-	-	1	-	-	2	3	-	ii	(1-3)
Odontoschisma sphagnii	-	-	1	2	-	-	-	2	-	-	ii	(1-2)
Carex demissa	-	-	-	2	-	1	-	-	-	2	ii	(1-2)
Calliergon stramineum	-	1	-	2	-	-	-	2	-	-	ii	(1-2)
Triglochin palustris	1	2	-	-	-	-	-	-	1	-	ii	(1-2)
Scorpidium scorpiodes	1	-	-	-	-	-	-	-	4	1	ii	(1-4)
Eleocharis quinquiflora	-	-	1	-	-	-	-	-	3	1	ii	(1-3)
Nardus stricta	-	2	-	-	-	4	1	2	-	-	ii	(1-4)
Juncus articulatus	-	-	1	-	-	-	-	1	-	1	ii	(1)
Juncus squarrosus	3	-	3	-	-	-	3	1	-	-	ii	(1-3)
Pinguicula vulgaris	-	-	2	-	-	-	-	1	2	2	ii	(1-2)
Cephalozia sp	-	-	-	-	-	-	1	1	3	1	ii	(1-3)
Calypogeia sp	-	-	-	-	2	-	1	1	-	-	ii	(1-2)
Rhizomnium pseudopunctatum	3	-	-	-	-	-	-	-	1	1	ii	(1-3)
Cephalozia connivens	-	1	-	-	1	-	-	-	1	-	ii	(1)
Euphrasia officinalis agg	-	-	3	-	-	-	3	4	-	1	ii	(1-3)
Danthonia decumbens	1	-	-	1	-	-	1	1	-	-	ii	(1)
Sphagnum warnstorfii	1	-	-	3	-	-	-	-	-	1	ii	(1-3)
Leontodon autumnalis	-	-	-	-	-	2	-	1	-	-	i	(1-2)
Menyanthes trifoliota	1	-	-	-	-	-	-	-	-	-	i	(1)
Carex rostrata	-	-	1	-	-	-	-	-	-	-	i	(1)
Agrostis canina	-	-	-	-	-	1	-	2	-	-	i	(1-2)
Polytrichum commune	-	1	-	-	-	-	1	-	-	-	i	(1)
Viola paulstris	-	-	-	-	-	-	1	-	-	-	i	(1)
Galium palustre	-	-	-	-	-	-	1	-	-	-	i	(1)
Potamogeton polygonifolius	-	-	-	-	-	-	-	-	-	2	i	(2)
Myrica gale	-	-	-	-	6	-	-	-	-	-	i	(6)
Mylia anomela	-	1	-	-	-	-	1	-	-	-	i	(1)
Ranunculus flammula	-	-	-	-	-	2	-	-	-	1	i	(1-2)
Calypogeia muelleriana	-	1	-	2	-	-	-	-	-	-	i	(1-2)

S10a M10 cont.

	20	23	36	38	41	63	65	87	126	187		
Holcus lanatus	-	-	-	-	-	1	-	-	-	-	i	(1)
Cladonia impexa	-	-	-	-	-	-	1	2	-	-	i	(1-2)
Hypnum sp	-	-	-	2	-	-	-	-	1	-	i	(1-2)
Pleurozium schreberi	-	-	-	1	-	-	-	1	-	-	i	(1)
Sphagnum palustre	-	-	-	-	-	-	-	-	1	-	i	(1)
Anthoxanthum odoratum	1	-	-	-	-	-	2	-	-	-	i	(1-2)
Festuca ovina	-	1	-	-	-	-	2	-	-	-	i	(1-2)
Vaccinium myrtillus	-	1	-	-	-	-	-	1	-	-	i	(1)
Bryum pseudotriquetrum	-	-	-	-	-	-	1	-	-	-	i	(1)
Valeriana dioica	-	-	-	-	-	-	-	-	-	2	i	(2)
Juncus effusus	-	1	-	-	-	-	-	-	-	-	i	(1)
Campylopus sp	-	-	-	-	1	-	-	-	-	-	i	(1)
Juncus conglomeratus	-	-	-	-	-	-	-	1	-	1	i	(1)
Luzula multiflora	-	-	-	-	-	-	-	-	1	-	i	(1)
Pedicularis palustris	-	-	-	-	-	-	-	-	1	-	i	(1)
Lophocolea bidentata	1	-	-	-	-	-	-	-	-	2	i	(1)
Hypnum cupressiforme	-	-	-	-	-	-	-	2	-	-	i	(2)
Briza media	-	-	-	-	-	-	-	-	2	2	i	(2)
Leucobryum glaucum	-	-	-	-	-	-	-	-	1	-	i	(1)
Pellia sp	1	-	-	-	-	-	-	-	-	-	i	(1)
Polygala serpyllifolia	-	-	-	-	-	-	-	1	1	-	i	(1)
Empetrum nigrum nigrum	1	-	-	-	-	-	-	2	-	-	i	(1-2)
Carex flacca	-	-	-	-	-	-	-	-	1	-	i	(1)
Drepanocladus sp	-	-	2	-	-	-	-	-	-	1	i	(1-2)
Crepis paludosa	-	-	-	-	-	-	-	-	1	-	i	(1)
Riccardia/Aneura sp	-	-	-	-	-	-	-	-	1	-	i	(1)
Plagiomnium undulatum	-	-	-	-	-	-	-	-	-	1	i	(1)
Thuidium sp	-	-	-	-	-	-	-	-	2	-	i	(2)
Pedicularis sylvatica	-	1	-	-	-	-	2	-	-	-	i	(1-3)
Fissidens adianthoides	-	-	-	-	-	-	1	-	-	-	i	(1)
Chiloscyphus pallescens	1	-	-	-	1	-	-	-	-	-	i	(1)
Fissidens sp	-	-	-	-	-	-	-	1	-	1	i	(1)
Equisetum arvense	1	-	-	-	-	-	-	-	-	-	i	(1)
Cratoneuron commutatum	-	-	-	-	-	-	-	5	-	-	i	(1)
Dicranum bonjeani	-	1	-	-	-	-	-	-	-	-	i	(1)
Scapania undulata	-	-	1	-	-	-	1	-	-	-	i	(1)
Juniperus communis communis	-	-	-	-	-	-	-	-	1	-	i	(1)
Fissidens osmundoides	-	-	3	-	-	-	-	-	-	-	i	(3)
No of species	**40**	**32**	**35**	**33**	**24**	**28**	**46**	**50**	**45**	**44**		

S11a M10

	3	4	31	96	
Molinia caerulea	2	2	3	3	(2-3)
Erica tetralix	1	2	2	3	(1-3)
Drosera rotundifolia	2	2	1	3	(1-3)
Sphagnum papillosum	2	1	3	1	(1-3)
Carex panicea	3	3	2	3	(2-3)
Aneura pinguis	2	1	3	3	(2-3)
Campylium stellatum	6	3	3	5	(3-6)
Drepanocladus revolvens	4	2	2	2	(2-4)
Narthecium ossifragum	-	2	1	1	(1-2)
Sphagnum subnitens	1	2	2	-	(1-2)
Juncus acutiflorus	-	2	2	1	(1-2)
Succisa pratensis	-	1	2	2	(1-2)
Juncus bulbosus	2	2	-	3	(2-3)
Cirsium palustre	1	1	-	1	(1)
Carex hostiana	3	5	-	4	(3-5)
Scorpidium scorpiodes	-	4	3	4	(3-4)
Selaginella selaginoides	2	-	2	3	(2-3)
Pinguicula vulgaris	-	1	2	3	(1-3)
Calliergon sarmentosum	-	2	1	3	(1-3)
Eriophorum angustifolium	-	2	1	-	(1-2)
Potentilla erecta	2	-	2	-	(2)
Carex echinata	1	1	-	-	(1)
Calluna vulgaris	1	-	1	-	(1)
Carex demissa	2	-	2	-	(2)
Calliergon stramineum	-	1	1	-	(1)
Rhynchospora alba	-	-	-	-	-
Eleocharis quinquiflora	-	-	3	5	(3-5)
Nardus stricta	4	-	3	-	(3-4)
Juncus articulatus	-	2	1	-	(1-2)
Anagallis tenella	-	-	1	3	(1-3)
Juncus squarrosus	3	-	-	1	(1-3)
Ctenidium molluscum	-	1	-	2	(1-2)
Riccardia multifida	2	-	2	-	(2-2)
Vaccinium oxycoccus	1	-	-	-	(1)
Aulocomnium palustre	1	-	-	-	(1)
Sphagnum capillifolium	-	-	-	1	(1)
Calliergon cuspidatum	-	-	-	1	(1)
Agrostis canina	-	-	-	1	(1)
Sphagnum contortum	5	-	-	-	(1)
Potamogeton polygonifolius	-	-	1	-	(1)
Triglochin palustris	-	-	1	-	(1)
Carex dioica	-	2	-	-	(2)
Carex pulicaris	-	-	-	1	(1)
Sphagnum auriculatum var auric	-	1	-	-	(1)
Eleocharis multicaulis	6	-	-	-	(6)
Bryum pseudotriquetrum	1	-	-	-	(1)
Juncus conglomeratus	-	-	1	-	(1)
Euphrasia officinalis agg	-	-	-	1	(1)
Drosera intermedia	-	-	3	-	(3)
Danthonia decumbens	-	-	1	-	(1)
Scapania undulata	1	-	-	-	(1)
Campylopus atrovirens	-	-	1	-	(1)
Polytrichum sp	-	-	-	1	(1)
Racomitrium sp	-	-	1	-	(1)
No of species	**26**	**25**	**33**	**28**	

S23 M15

	39	42	61	62
Molinia caerulea	7	3	4	4
Erica tetralix	7	4	3	5
Potentilla erecta	1	1	1	1
Caluna vulgaris	5	7	6	6
Sphagnum capillifolium	1	6	4	6
Odontoschisma sphagni	2	2	2	3
Scirpus cespitosus	4	4	3	4
Sphagnum tenellum	1	3	2	4
Cladonia impexa	1	2	1	4
Vaccinium myrtillus	1	3	2	3
Juncus squarrosus	1	4	3	3
Eriophorum angustifolium		1	1	1
Sphagnum papillosum		6	5	5
Vaccinium oxycoccus		1	1	2
Carex echinata		1	1	2
Nardus stricta		4	3	2
Dicranum scoparium		1	1	2
Pleurozium schreberi		1	3	1
Campylopus sp	2	2		2
Leucobryum glaucum		1	1	1
Sphagnum compactum	1		1	1
Carex panicea	1	1		
Polytrichum alpestre		1	2	
Festuca ovina	3		2	
Hypnum jutlandicum	3	2		
Cladonia uncialis		1	1	
Drosera rotundifolia		1		
Narthecium ossifragum		2		
Aulocomnium palustre		1		
Sphagnum subnitens		1		
Juncus acutiflorus			1	
Sphagnum recurvum		1		
Carex nigra		1		
Eriophorum vaginatum	1			
Polytrichum commune	1			
Mylia anomela		2		
Calypogeia muelleriana		1		
Sphagnum cuspidatum				1
Hypnum sp				3
Juncus conglomeratus			1	
Calypogeia sp				1
Polygala serpyllifolia			1	
Danthonia decumbens		1		
Racomitrium lanugnosum				1
Calypogeia fissa	2			
Gymnocolea inflata				1
Lophozia sp	1			
Diplophyllum albicans	2			
Erica cinerea	1			
Ptilidium ciliare	1			
No of species	**23**	**33**	**26**	**26**

S11b M15

	219	221	222
Molinia caerulea	3	3	3
Erica tetralix	4	1	2
Drosera rotundifolia	3	3	2
Narthecium ossifragum	2	2	2
Carex panicea	4	2	4
Aneura pinguis	3	1	2
Carex demissa	2	3	1
Rhynchospera alba	4	3	2
Carex hostiana	3	2	5
Selaginella selaginoides	2	1	2
Juncus squarrosus	1	3	3
Caliergon sarmentosum	2	2	1
Eriophorum angustifolium	2		2
Potentilla erecta	1		1
Carex echinata	3		4
Succisa pratensis	2		3
Juncus bulbosus	3		3
Campylium stellatum	2		2
Carex dioica		1	2
Scorpidium scorpiodes		2	1
Carex palicaris	1		3
Hypnum sp		1	1
Sphagnum auriculatum var. *inundatum*	3	3	
Pedicularis sylvatica		1	1
Racomitrium lanuginosum	3	2	
Breutelia chrysocoma	3		3
Campylopus atrovirens	5	5	
Sphagnum papillosum		2	
Sphagnum subnitens		1	
Juncus acutiflorus		1	
Viola palustris			1
Sphagnum contortum			7
Scirpus cespitosus	2		
Drepanocladus revolvens	4		
Sphagnum tenellum		1	
Rhytidiadelphus squarrosus	1		
Nardus stricta		2	
Anagallus tenella			2
Riccardia multifiola			1
Pellia sp			2
Polygala serpyllifolia		1	
Drepanocladus sp			1
Algal mat	3		
Hammarbya paludosa	2		
Sphagnum compactum	.	1	
Fraxinus excelsior (g)	1		
Huperzia selago		1	
Campylium sp		1	
No of species	**29**	**28**	**30**

S24a M15b

	69	71	72	113	175	257		
Eriophorum angustifolium	2	3	2	2	4	2	v	(2-4)
Molinia caerulea	2	2	3	3	1	3	v	(1-3)
Erica tetralix	3	4	4	3	4	3	v	(3-4)
Drosera rotundifolia	2	2	2	2	1	3	v	(1-3)
Sphagnum papillosum	9	9	8	6	10	6	v	(6-10)
Narthecium ossifragum	2	2	4	2	4	3	v	(2-4)
Aulocomnium palustre	2	2	1	3	1	2	v	(1-3)
Carex echinata	3	2	2	3	2	2	v	(2-3)
Calluna vulgaris	6	5	6	4	2	1	v	(1-6)
Juncus acutiflorus	1	1	1	1	2	2	v	(1-2)
Sphagnum capillifolium	4	4	5	3	3	2	v	(2-5)
Succisa pratensis	1	2	3	3	-	1	v	(1-3)
Odontoschisma sphagni	3	2	3	1	-	1	v	(1-3)
Calliergon stramineum	1	3	-	1	2	1	v	(1-3)
Carex dioica	4	3	4	3	-	3	v	(3-4)
Carex panicea	3	1	2	3	-	-	iv	(1-3)
Potentilla erecta	2	3	2	2	-	2	iv	(2-3)
Vaccinium oxycoccus	2	3	2	-	-	1	iv	(1-3)
Sphagnum subnitens	-	2	3	2	1	-	iv	(1-3)
Carex nigra	-	3	-	3	1	2	iv	(1-3)
Juncus bulbosus	3	-	1	1	-	3	iv	(1-3)
Mylia anomela	-	2	2	2	2	-	iv	(2)
Nardus stricta	1	1	-	-	3	3	iv	(1-3)
Polytrichum alpestre	-	-	-	3	1	3	iii	(1-3)
Dicranum scoparium	-	2	-	3	-	1	iii	(1-3)
Polygala serpyllifolia	-	1	2	-	-	1	iii	(1-2)
Menyanthes trifoliata	-	-	2	1	-	-	ii	(1-2)
Polytrichum commune	-	1	-	-	1	-	ii	(1)
Potamogeton polygonifolius	-	1	1	-	-	-	ii	(1)
Triglochin palustris	-	1	-	2	-	-	ii	(1-2)
Carex hostiana	1	-	4	-	-	-	ii	(1-4)
Calypogeia muelleriana	-	1	-	3	-	-	ii	(1-3)
Carex pulicaris	-	-	-	1	-	1	ii	(1)
Hypnum sp	1	-	-	-	-	1	ii	(1)
Dicranum sp	1	-	2	-	-	-	ii	(1-2)
Aneura pinguis	-	-	-	1	-	1	i	(1)
Sphagnum recurvum	-	-	-	6	-	-	i	(6)
Calliergon cuspidatum	-	-	-	1	-	-	i	(1)
Campylium stellatum	-	-	-	1	-	-	i	(1)
Agrostis canina	-	-	-	-	-	1	i	(1)
Myrica gale	4	-	-	-	-	-	i	(4)
Scirpus cespitosus	-	-	-	-	-	1	i	(1)
Scorpidium scorpiodes	-	-	-	-	-	1	i	(1)
Sphagnum tenellum	-	-	-	-	-	3	i	(3)
Sphagnum cuspidatum	-	-	-	-	-	1	i	(1)
Cladonia impexa	-	-	-	-	-	1	i	(1)
Sphagnum auriculatum var *auric*	-	-	-	-	-	4	i	(4)
Vaccinium myrtillus	-	-	-	-	-	1	i	(1)
Juncus squarrosus	-	-	-	-	-	2	i	(2)
Cephalozia sp	-	-	-	-	1	-	i	(1)
Juncus conglomeratus	-	-	-	1	-	-	i	(1)
Pedicularis palustris	-	-	-	1	-	-	i	(1)
Lophozia ventricosa	-	-	-	2	-	-	i	(2)
Calypogeia sp	-	-	1	-	-	-	i	(1)
Hypnum cupressiforme	-	-	2	-	-	-	i	(2)

S24a M15b cont.

	69	71	72	113	175	257		
Leucobryum glaucum	-	-	-	-	-	1	i	(1)
Kurzia pauciflora	-	-	2	-	-	-	i	(2)
Cephalozia connivens	-	-	-	2	-	-	i	(2)
Drepanocladus sp	-	-	-	-	-	1	i	(1)
Equisetum palustre	-	-	-	-	3	-	i	(3)
Calliergon sarmentosum	-	-	-	-	-	1	i	(1)
Pedicularis sylvatica	-	-	-	-	-	1	i	(1)
Poa trivialis	-	-	-	1	-	-	i	(1)
Rhytidiadelphus loreus	-	-	-	-	-	2	i	(2)
Hammarbya paludosa	-	-	-	-	-	2	i	(2)
Racomitrium lanuginosum	-	-	-	-	-	1	i	(1)
Sphagnum compactum	-	-	-	-	-	1	i	(1)
Breutelia chrysocoma	-	-	-	-	-	2	i	(2)
Cladonia uncialis	-	-	-	-	-	1	i	(1)
Dactylorhiza majalis purpurella	-	-	-	1	-	-	i	(1)
Campylopus atrovirens	-	-	-	-	-	2	i	(2)
Gymnocolea inflata	-	-	-	-	-	1	i	(1)
Polytrichum sp	-	-	-	-	-	1	i	(1)
Carex pauciflora	-	-	-	-	-	3	i	(3)
Diplophyllum albicans	-	-	-	-	-	-	i	(1)
Dactylorhiza maculata maculata	-	-	-	3	-	-	i	(3)
Campylopus introflexus	-	-	-	-	-	1	i	(1)
Equisetum variegatum	-	-	-	-	-	2	i	(2)
No of species	**24**	**28**	**28**	**37**	**20**	**51**		

S24b M15b

	21	22	24	25	37	55	73	89	242		
Eriophorum angustifolium	4	3	2	3	4	3	3	4	5	v	(2-5)
Erica tetralix	6	7	7	7	6	6	6	5	4	v	(4-7)
Drosera rotundifolia	3	2	2	2	2	3	1	3	2	v	(1-3)
Sphagnum papillosum	6	5	7	9	8	8	8	8	8	v	(5-8)
Vaccinium oxycoccus	3	3	3	3	1	3	2	2	1	v	(1-3)
Aulocomnium palustre	1	2	1	1	2	3	2	1	2	v	(1-3)
Sphagnum recurvum	1	4	3	2	4	4	5	3	1	v	(1-4)
Carex panicea	1	3	1	3	1	-	-	1	3	iv	(1-3)
Potentilla erecta	3	4	1	3	2	-	3	3	3	iv	(1-4)
Calluna vulgaris	-	-	2	2	1	2	6	4	5	iv	(1-6)
Sphagnum capillifolium	3	1	1	-	1	2	2	3	5	iv	(1-5)
Polytrichum alpestre	3	2	2	-	2	1	-	4	1	iv	(1-4)
Odontoschisma sphagni	2	-	1	1	2	3	-	3	3	iv	(1-3)
Eriophorum vaginatum	-	2	4	3	2	7	2	3	-	iv	(2-7)
Dicranum scoparium	1	-	1	1	-	1	2	1	2	iv	(1-2)
Hypnum jutlandicum	2	1	2	1	-	1	2	-	3	iv	(1-3)
Molinia caerulea	4	-	3	-	4	3	-	4	2	iii	(2-4)
Narthecium ossifragum	3	-	3	-	4	-	1	-	4	iii	(1-4)
Carex echinata	3	6	3	6	2	-	3	-	-	iii	(2-6)
Agrostis canina	-	1	2	-	1	-	1	2	-	iii	(1-2)
Polytrichum commune	-	-	2	-	1	2	1	-	1	iii	(1-2)
Mylia anomela	2	1	1	-	-	2	-	-	2	iii	(1-2)
Calypogeia muelleriana	1	2	-	2	1	-	2	-	-	iii	(1-2)
Pleurozium schreberi	-	-	2	1	1	1	-	1	2	iii	(1-2)
Vaccinium myrtillus	1	1	3	-	1	3	-	-	-	iii	(1-3)
Empetrum nigrum nigrum	1	1	2	-	2	-	2	-	-	iii	(1-2)
Sphagnum subnitens	-	-	-	-	-	-	-	1	1	ii	(1)
Carex nigra	2	1	-	-	-	-	-	-	-	ii	(2-1)
Succisa pratensis	-	1	1	-	-	-	-	-	-	ii	(1)
Juncus bulbosus	1	-	1	-	2	-	-	-	-	ii	(1-2)
Viola palustris	-	2	-	1	1	-	-	1	-	ii	(1-2)
Scirpus cespitosus	1	-	-	-	-	-	1	1	1	ii	(1)
Rhytidiadelphus squarrosus	-	1	-	1	1	-	-	-	-	ii	(1)
Nardus stricta	-	-	-	2	1	-	-	-	1	ii	(1-2)
Cladonia impexa	-	-	-	-	-	1	-	1	2	ii	(1-2)
Festuca ovina	2	1	2	1	-	-	-	-	-	ii	(1-2)
Juncus squarrosus	-	-	1	2	1	-	-	-	1	ii	(1-2)
Polygala serpyllifolia	-	1	1	-	-	1	-	-	1	ii	(1)
Juncus acutiflorus	-	-	2	-	-	-	1	-	-	i	(1-2)
Menyanthes trifoliata	-	-	-	-	-	-	-	1	-	i	(1)
Aneura pinguis	3	-	-	-	-	-	-	-	-	i	(3)
Carex rostrata	-	-	-	-	-	-	-	-	4	i	(4)
Calliergon stramineum	1	-	-	-	-	-	-	-	-	i	(1)
Equisetum fluviatile	-	-	-	-	-	-	-	1	-	i	(1)
Triglochin palustris	3	-	-	-	-	-	-	-	-	i	(3)
Sphagnum tenellum	-	-	-	-	-	-	-	-	3	i	(3)
Carex pulicaris	1	-	-	-	-	-	-	-	-	i	(1)
Hypnum sp	-	-	-	-	2	-	-	-	-	i	(1)
Anthoxanthum odoratum	-	1	-	-	-	-	-	-	-	i	(1)
Juncus effusus	-	-	-	-	-	-	-	1	-	i	(1)
Lotus uliginosus	-	1	-	-	-	-	-	-	-	i	(1)
Campylopus sp	-	-	-	-	-	-	1	-	-	i	(1)
Juncus conglomeratus	-	-	-	-	1	-	1	-	-	i	(1)
Luzula multiflora	-	1	-	-	-	-	-	-	-	i	(1)
Lophozia ventricosa	-	-	-	-	-	-	-	-	1	i	(1)
Calypogia sp	-	-	-	-	-	1	-	-	-	i	(1)
Hypnum cupressiforme	-	-	-	-	-	-	-	3	-	i	(3)
Leucobryum glaucum	-	-	-	-	-	1	-	-	-	i	(1)
Kurzia pauciflora	-	-	-	-	-	-	1	-	1	i	(1)
Riccardia multifida	3	2	-	-	-	-	-	-	-	i	(2-3)
Cephalozia connivens	-	-	-	-	-	-	-	3	-	i	(3)
Danthonia decumbens	-	1	-	-	-	-	-	-	-	i	(1)
Pseudoscleropodium purum	-	-	-	-	-	-	-	-	1	i	(1)
Pedicularis sylvatica	-	1	-	1	-	-	-	-	-	i	(1)
Rhytidiadelphus loreus	-	1	-	1	-	-	-	-	-	i	(1)
Equisetum arvense	-	-	1	-	1	-	-	-	-	i	(1)
Hypogymnia physodes	-	-	-	1	-	1	-	-	-	i	(1)
Cepholozia loitlesbergeri	-	-	-	-	-	-	-	-	1	i	(1)
Ptilidium ciliare	-	-	-	-	-	-	1	-	-	i	(1)
No of species	**30**	**33**	**32**	**26**	**31**	**24**	**25**	**27**	**32**		

S22 M17

	212	214	215	218	
Molinia caerulea	6	4	4	8	(4-8)
Erica tetralix	2	1	3	2	(1-3)
Sphagnum papillosum	4	7	8	8	(4-8)
Potentilla erecta	1	1	1	1	(1)
Scirpus cespitosus	4	3	3	3	(3-4)
Eriophorum angustifolium	2	4	4	-	(2-4)
Sphagnum capillifolium	1	4	3	-	(1-3)
Drosera rotundifolia	1	3	-	-	(1-3)
Narthecium ossifragum	3	1	-	-	(1-3)
Carex rostrata	-	-	5	1	(1-5)
Sphagnum cuspidatum	3	5	-	-	(3-5)
Agrostis stolonifera	1	-	-	1	(1)
Vaccinium oxycoccus	-	-	-	1	(1)
Sphagnum subnitens	1	-	-	-	(1)
Calluna vulgaris	1	-	-	-	(1)
Sphagnum recurvum	-	3	-	-	(3)
Polytrichum commune	1	-	-	-	(1)
Juncus squarrosus	4	-	-	-	(4)
Campylopus sp	1	-	-	-	(1)
Deschampsia flexuosa	3	-	-	-	(3)
Sphagnum auriculatum var *inund*	-	-	3	-	(3)
Polygala serpyllifolia	-	-	-	1	(1)
Dactylorhiza sp	-	1	-	-	(1)
Rhytidiadelphus loreus	1	-	-	-	(1)
Sphagnum imbricatum	-	-	-	6	(6)
No of species	**18**	**12**	**9**	**10**	

S26 M17

	48	55	66	67	111	136	202	270	271	274	276		
Eriophorum angustifolium	3	3	2	3	1	1	-	2	3	2	-	v	(1-3)
Molinia caerulea	2	3	1	-	4	2	2	6	-	2	3	v	(1-6)
Erica tetralix	4	6	5	6	1	1	3	1	1	2	2	v	(1-6)
Vaccinium oxycoccus	4	3	2	3	3	3	1	2	3	2	-	v	(1-4)
Aulocomnium palustre	5	3	1	3	-	9	4	1	4	3	1	v	(1-9)
Calluna vulgaris	4	2	1	2	4	3	3	1	1	1	6	v	(1-6)
Sphagnum capillifolium	1	2	4	4	3	4	5	1	7	2	2	v	(1-7)
Sphagnum recurvum	4	4	2	-	1	-	4	8	7	7	2	v	(1-8)
Polytrichum alpestre	2	1	3	1	4	3	4	2	2	2	3	v	(1-4)
Eriophorum vaginatum	6	7	6	4	4	-	5	6	6	8	-	v	(4-8)
Polytrichum commune	4	2	6	1	4	1	5	1	1	2	1	v	(1-6)
Vaccinium myrtillus	4	3	4	2	2	-	5	2	1	1	3	v	(1-5)
Sphagnum papillosum	4	8	4	7	8	-	2	4	-	-	-	iv	(2-8)
Carex nigra	-	-	-	-	1	4	4	3	2	1	1	iv	(1-4)
Dicranum scoparium	1	1	1	1	-	-	2	-	-	1	1	iv	(1-2)
Pleurozium schreberi	3	1	3	2	-	-	4	2	-	1	2	iv	(1-4)
Deschampsia flexuosa	2	-	-	-	2	3	3	2	1	1	1	iv	(1-3)
Lophozia ventricosa	1	-	1	1	1	-	1	1	-	3	1	iv	(1-3)
Drosera rotundifolia	3	3	-	1	2	2	-	-	1	-	-	iii	(1-3)
Odontoschisma sphagni	3	3	2	2	-	-	-	1	1	-	-	iii	(1-3)
Hypnum sp	-	3	3	-	-	-	2	2	-	-	2	iii	(2-3)
Mylia anomela	-	2	-	-	3	-	-	1	1	-	-	ii	(1-3)
Calypogeia muelleriana	-	-	-	-	-	-	-	1	-	2	2	ii	(1-2)
Cladonia impexa	1	1	-	-	-	-	2	-	-	-	1	ii	(1-2)
Sphagnum palustre	-	-	-	-	1	-	-	1	2	-	-	ii	(1-2)
Festuca ovina	-	-	-	-	-	1	2	-	-	-	1	ii	(1-2)
Cephalozia sp	-	-	-	-	2	-	-	2	1	-	-	ii	(1-2)
Calypogeia sp	-	1	-	-	1	-	-	-	-	3	-	ii	(1-3)
Juncus squarrosus	-	-	-	-	-	-	1	-	-	-	4	ii	(1-4)
Agrostis canina	-	-	1	1	-	-	-	-	-	-	-	ii	(1)
Leucobryum glaucum	-	1	1	-	-	-	-	-	-	-	-	i	(1)
Narthecium ossifragum	-	-	-	1	-	-	-	-	-	-	-	i	(1)
Carex echinata	-	-	-	-	-	2	-	-	-	-	-	i	(2)
Menyanthes trifoliata	-	-	-	-	-	-	-	-	1	-	-	i	(1)
Hydrocotyle vulgaris	-	-	-	-	-	2	-	-	-	-	-	i	(2)
Scirpus cespitosus	-	-	-	1	-	-	-	-	-	-	-	i	(1)
Sphagnum tenellum	-	-	-	-	-	-	-	-	-	-	6	i	(6)
Nardus stricta	-	-	-	-	-	2	-	-	-	-	-	i	(2)
Sphagnum magellanicum	-	-	-	-	-	-	-	-	3	-	-	i	(3)
Anthoxanthum odoratum	-	-	-	-	-	3	-	-	-	-	-	i	(3)
Campylopus sp	-	-	1	-	-	-	-	-	-	-	1	i	(1)
Juncus conglomeratus	-	-	-	-	-	3	-	-	-	-	-	i	(3)
Luzula multiflora	-	-	-	-	-	1	-	-	-	-	-	i	(1)
Kurzia pauciflora	1	-	-	-	-	-	-	-	-	-	-	i	(1)
Hypnum jutlandicum	-	1	-	-	-	-	-	-	-	-	-	i	(1)
Carex curta	-	-	-	-	-	-	-	-	2	-	-	i	(2)
Sphagnum fimbriatum	-	-	-	-	2	-	-	-	-	-	-	i	(2)
Dryopteris carthusiana	-	-	1	-	-	-	-	-	-	1	-	i	(1)
Galium saxatile	-	-	-	-	-	1	-	-	-	-	-	i	(1)
Rhytidiadelphus loreus	-	-	1	2	-	-	-	-	-	-	-	i	(1-2)
Sphagnum compactum	-	-	-	-	-	-	-	-	-	-	1	i	(1)
Hypogymnia physodes	-	1	2	-	-	-	-	-	-	-	-	i	(1-2)
Calypogeia fissa	1	-	-	-	-	-	-	-	-	-	-	i	(1)
Cladonia uncialis	-	-	-	-	-	-	-	-	-	-	1	i	(1)
Pohlia sp	-	-	-	-	-	-	-	-	-	1	-	i	(1)
Vaccinium uliginosum	-	-	-	-	-	-	-	-	1	-	-	i	(1)
Barbilophozia floerkei	-	-	-	-	-	-	-	-	-	-	4	i	(4)
Mylia sp	1	-	-	-	-	-	-	-	-	-	-	i	(1)
No of species	**23**	**24**	**24**	**20**	**21**	**19**	**21**	**23**	**22**	**21**	**24**		

S29 M17

	15	50	86	130	142	186		
Eriophorum angustifolium	3	3	2	2	3	2	v	(2-3)
Erica tetralix	6	3	4	5	3	4	v	(3-6)
Drosera rotundifolia	1	2	1	-	3	2	v	(1-3)
Sphagnum papillosum	8	8	8	5	1	7	v	(1-8)
Narthecium ossifragum	2	-	2	3	5	4	v	(2-5)
Calluna vulgaris	6	5	5	5	1	3	v	(1-6)
Odontoschisma sphagni	4	2	3	3	3	2	v	(2-4)
Eriophonum vaginatum	3	4	5	-	6	4	v	(3-6)
Scirpus cespitosus	4	5	3	5	5	5	v	(3-5)
Cladonia impexa	2	1	1	4	1	1	v	(1-4)
Molinia caerulea	1	3	1	-	-	3	iv	(1-3)
Sphagnum subnitens	1	3	-	1	-	2	iv	(1-3)
Dicranum scoparium	-	-	1	2	1	2	iv	(1-2)
Vaccinium myrtillus	-	2	2	-	1	1	iv	(1-2)
Campylopus sp	-	1	1	1	-	2	iv	(1-2)
Vaccinium oxycoccus	-	1	2	-	-	2	iii	(1-2)
Myrica gale	1	-	6	-	5	-	iii	(1-6)
Calypogeia muelleriana	-	-	1	2	2	-	iii	(1-2)
Sphagnum tenellum	-	-	2	8	-	7	iii	(2-8)
Hypnum sp	-	-	-	2	1	2	iii	(1-2)
Lophozia ventricosa	-	2	1	-	1	-	iii	(1-2)
Leucobryum glaucum	-	-	2	-	1	1	iii	(1-2)
Potentilla erecta	-	-	-	-	1	1	ii	(1)
Aulocomium palustre	-	1	1	-	-	-	ii	(1)
Sphagnum recurvum	-	-	1	-	-	2	ii	(1-2)
Mylia anomela	-	1	-	-	-	1	ii	(1-2)
Sphagnum magellanicum	4	-	-	-	-	1	ii	(1-4)
Juncus squarrosus	-	1	-	4	-	-	ii	(1-4)
Cephalozia connivens	-	1	-	-	-	1	ii	(1)
Polytrichum alpestre	-	3	-	-	-	-	i	(3)
Polytrichum commune	-	-	1	-	-	-	i	(1)
Rhynchospera alba	-	1	-	-	-	-	i	(1)
Nardus stricta	-	-	-	2	-	-	i	(2)
Sphagnum auriculatum var *auric*	-	-	-	-	-	1	i	(1)
Pleurozium schreberi	-	2	-	-	-	-	i	(2)
Andromeda polifolia	-	-	-	-	2	-	i	(2)
Hypnum cupressiforme	-	-	3	-	-	-	i	(3)
Kurzia pauciflora	2	-	-	-	-	-	i	(2)
Hypnum jutlandicum	1	-	-	-	-	-	i	(1)
Sphagnum fimbriatum	-	-	1	-	-	-	i	(1)
Betula pubescens (g)	-	-	-	-	1	-	i	(1)
Algal mat	-	-	-	-	1	-	i	(1)
Campylopus paradoxus	-	-	-	-	1	-	i	(1)
Erica cinerea	-	-	-	-	2	-	i	(2)
Campylopus subulatus	1	-	-	-	-	-	i	(1)
Lophozia incisa	-	-	-	-	-	1	i	(1)
No of species	**17**	**22**	**24**	**16**	**22**	**25**		

S25 M18

	60	81	149	151	245	260	262		
Eriophorum angustifolium	4	4	3	4	3	3	2	v	(2-4)
Erica tetralix	6	7	3	1	6	6	3	v	(1-7)
Drosera rotundifolia	3	1	2	1	1	2	1	v	(1-3)
Sphagnum papillosum	7	10	9	8	6	8	8	v	(6-10)
Narthecium ossifragum	3	3	4	3	2	3	4	v	(2-4)
Vaccinium oxycoccus	2	2	1	3	3	2	2	v	(1-3)
Eriophorum vaginatum	2	1	3	3	5	2	3	v	(1-5)
Potentilla erecta	1	1	1	-	3	1	3	iv	(1-3)
Aulocomnium palustre	2	2	1	1	1	-	2	iv	(1-2)
Calluna vulgaris	1	1	-	1	2	6	6	iv	(1-6)
Sphagnum recurvum	4	-	3	5	2	6	5	iv	(2-5)
Polytrichum alpestre	1	3	1	2	2	1	-	iv	(1-3)
Sphagnum capillifolium	1	-	1	1	6	-	-	iii	(1-6)
Carex nigra	-	1	3	1	-	-	1	iii	(1-3)
Polytrichum commune	2	-	2	1	-	1	1	iii	(1-2)
Deschampsia flexuosa	-	-	-	1	1	1	1	iii	(1)
Odontoschisma sphagni	1	-	-	1	4	-	-	ii	(1-4)
Agrostis canina	-	-	1	1	-	1	2	ii	(1-2)
Calliergon stramineum	1	-	-	-	-	1	3	ii	(1-3)
Calypogeia muelleriana	-	3	-	-	2	3	2	ii	(2-30
Hypnum sp	-	-	1	-	-	2	3	ii	(1-3)
Dicranum scoparium	1	1	-	-	-	-	1	ii	(1)
Pleurozium schreberi	-	-	-	-	3	1	-	ii	(1-3)
Andromeda polifolia	-	-	3	-	2	2	2	ii	(2-3)
Molinia caerulea	1	-	-	-	4	-	-	i	(1-4)
Carex echinata	-	-	-	-	1	-	3	i	(1-3)
Sphagnum subnitens	1	-	-	-	-	-	-	i	(1)
Menyanthes trifoliata	-	-	-	-	1	-	2	i	(1-2)
Succisa pratensis	-	-	-	-	-	-	3	i	(3)
Viola palustris	-	-	-	-	-	-	1	i	(1)
Equisetum fluviatile	-	-	1	-	-	-	1	i	(1)
Surpus cespitosus	-	-	-	-	6	-	3	i	(3-6)
Mylia anomela	2	-	-	-	-	1	-	i	(1-2)
Sphagnum cuspidatum	6	-	-	-	1	-	-	i	(1-6)
Rhytidiadelphus squarrosus	-	-	-	-	2	1	-	i	(1-2)
Nardus stricta	-	-	-	-	-	-	2	i	(2)
Cladonia impexa	-	-	-	-	1	-	-	i	(1)
Sphagnum palustre	-	-	-	1	-	-	-	i	(1)
Festuca ovina	-	-	1	-	-	-	-	i	(1)
Vaccinium myrtillus	-	1	-	-	-	-	-	i	(1)
Cephalozia sp	-	-	-	-	1	-	-	i	(1)
Hypnum jutlandicum	-	-	-	-	3	-	-	i	(3)
Pellia sp	-	1	-	-	-	-	-	i	(1)
Polygala serpyllifolia	-	-	-	-	2	-	-	i	(2)
Carex curta	-	1	-	1	-	-	-	i	(1)
Empetrum nigrum	-	-	-	-	1	-	-	i	(1)
Sphagnum fimbriatum	-	-	1	-	-	-	-	i	(1)
Dicranum sp	1	-	-	-	-	-	-	i	(1)
Drepanocladus sp	1	-	-	-	-	-	-	i	(1)
Galium saxatile	-	-	-	-	-	-	2	i	(2)
Rhytidiadelphus loreus	-	-	-	-	2	-	-	i	(2)
Betula sp	-	-	2	2	-	-	-	i	(2)
Dactylorhiza fuchsii	-	-	-	-	1	-	-	i	(1)
Betula pubescens	-	-	1	1	-	-	-	i	(1)
Agrostis sp	-	-	-	-	1	-	-	i	(1)
Bryum sp	-	-	-	-	-	1	-	i	(1)
No of species	**23**	**17**	**22**	**21**	**32**	**22**	**28**		

S27 M18

	7	12	13	14	18	45	56	80	107	148	152	153	195	205	206	207	236	239	250	251	252	253	277	278	279	281	282	283	284		
Eriophorum angustifolium	6	2	3	3	2	5	4	3	4	2	3	-	4	4	3	4	4	3	3	3	3	-	1	3	3	4	5	5	6	v	(1-6)
Erica tetralix	3	5	4	5	4	5	5	6	4	2	3	2	2	7	4	6	3	3	1	2	3	2	5	5	2	4	4	5	5	v	(1-7)
Drosera rotundifolia	2	2	3	3	1	2	3	2	2	3	3	3	3	3	3	3	2	2	3	3	3	3	-	2	1	3	2	3	2	v	(1-3)
Sphagnum papillosum	2	5	8	8	6	9	9	6	9	6	5	3	2	8	4	9	3	7	2	1	6	3	2	2	2	3	6	6	3	v	(1-9)
Narthecium ossifragum	4	3	3	3	3	3	4	3	5	4	3	4	3	2	-	1	3	3	3	4	3	3	2	3	2	3	3	3	4	v	(1-5)
Odontoschisma sphagni	1	3	3	3	4	1	3	3	2	3	2	4	1	3	3	-	1	1	2	1	-	3	6	2	-	3	3	1	1	v	(1-6)
Eriophorum vaginatum	-	4	5	3	3	3	1	4	5	4	4	5	-	1	4	5	2	4	5	5	5	3	5	4	6	3	3	4	4	iv	(1-7)
Calluna vulgaris	1	6	4	5	6	1	-	7	3	3	1	4	1	3	4	2	7	3	-	-	-	2	5	1	1	3	-	2	3	iv	(1-7)
Sphagnum capillifolium	1	4	2	6	6	3	1	i	-	2	2	4	-	1	-	-	8	7	2	-	4	4	8	7	4	1	1	-	4	iv	(1-8)
Scirpus cespitosus	5	5	6	6	2	1	3	-	3	-	-	-	-	-	-	-	6	2	6	4	6	7	-	1	1	2	3	4	1	iv	(1-7)
Mylia anomela	2	3	-	-	2	3	2	1	2	-	1	1	2	3	3	2	3	3	1	-	2	3	-	3	2	1	2	2	1	iv	(1-3)
Sphagnum tenellum	2	2	5	4	6	3	4	6	-	7	-	4	-	-	2	-	3	1	3	2	2	4	3	3	3	4	6	6	1	iv	(1-7)
Sphagnum cuspidatum	1	2	4	-	-	1	4	-	-	4	7	4	2	2	8	4	-	-	3	3	3	2	-	-	7	1	6	4	1	iv	(1-8)
Sphagnum magellanicum	9	8	3	3	-	1	-	-	1	1	1	1	10	3	1	-	-	-	9	10	3	5	4	7	7	10	4	7	9	iv	(1-10)
Vaccinium oxycoccus	3	-	-	-	-	3	-	1	1	-	-	-	3	3	2	3	3	-	4	4	3	3	3	3	3	-	-	2	4	iii	(1-4)
Aulocomnium palustre	1	-	-	-	-	-	2	1	-	-	-	-	1	2	-	-	2	-	3	1	3	3	-	-	1	1	1	1	1	iii	(1-3)
Cladonia impexa	-	-	-	1	1	-	-	1	-	1	1	2	-	-	2	-	2	-	-	-	-	-	1	-	1	1	1	1	-	iii	(1-2)
Andromeda polifolia	-	-	-	-	-	-	-	-	-	-	-	-	2	3	1	1	-	-	3	3	3	3	2	3	2	3	3	3	3	iii	(1-3)
Molinia caerulea	-	1	1	1	2	-	2	1	4	-	-	-	-	-	-	-	1	1	4	-	4	1	-	-	-	-	-	-	-	ii	(1-4)
Sphagnum recurvum	-	-	-	-	-	-	-	-	-	-	4	2	1	3	1	3	-	-	-	-	-	-	-	-	1	-	-	-	1	ii	(1-4)
Polytrichum alpestre	2	-	-	-	-	-	-	3	1	-	-	1	2	1	-	-	-	1	4	1	6	3	-	-	1	1	1	1	1	ii	(1-6)
Polytrichum commune	2	-	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	3	1	-	-	2	-	-	-	1	ii	(1-3)
Rhynchospera alba	-	-	1	-	1	3	1	-	-	1	-	-	-	-	3	-	-	-	1	1	-	-	-	2	-	-	-	-	ii	(1-3)
Cepholoxia sp.	-	-	-	-	-	-	-	-	1	-	-	1	-	2	-	-	-	-	1	-	1	-	1	1	-	1	2	2	-	ii	(1-2)
Deschampsia flexuosa	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	1	2	-	2	1	-	-	1	-	-	-	-	ii	(1-2)
Kurzia pauciflora	-	2	3	2	-	1	-	1	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	2	3	1	ii	(1-3)
Cladopedielia fluitans	2	-	1	-	-	2	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	4	3	-	ii	(1-2)
Carex panicea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Potentilla erecta	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	i	(1)
Sphagnum subnitens	-	-	-	-	-	-	1	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1-3)
Carex nigra	-	-	-	-	-	-	-	-	1	-	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1-2)
Carex rostrata	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	3	-	1	-	-	-	-	-	-	-	-	-	i	(1-3)
Agrostis canina	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Calliergon stramineum	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(2)
Equisetum fluviatile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Myrica gale	-	1	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1-5)
Calypogeia muelleriana	-	1	1	1	-	-	-	3	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	2	-	-	-	-	i	(1-3)
Hypnum sp.	-	-	-	-	-	-	-	-	-	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Dicranum scoparium	-	-	-	-	-	-	-	-	-	-	-	2	-	-	1	-	1	1	-	-	-	-	-	1	-	-	-	-	-	i	(1-2)
Plewrozium schreberi	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2	-	-	2	-	-	-	-	-	-	-	i	(1-2)
Vaccinium myrtillus	1	-	-	-	-	-	-	-	-	1	-	1	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Campylopus sp.	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	i	(1)
Luzula multiflora	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	i	(1)
Lophozia ventricosa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Calypogeia sp.	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	2	-	-	-	-	i	(1-2)
Hypnum cupressiforme	1	-	-	-	-	-	-	1	-	-	-	-	-	-	2	-	-	-	2	-	-	-	-	-	-	2	-	-	-	i	(1-2)
Leucobryum glaucum	-	-	-	-	-	-	-	-	2	1	-	3	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	i	(1-3)
Hypnum jutlandicum	-	2	-	2	3	-	-	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	2	-	-	-	-	-	-	i	(1-3)
Empetrum nigrum nigrum	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	1	1	1	1	i	(1)
Cephalozia connivens	2	1	-	-	2	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	i	(1-2)
Dicranum sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	i	(1)
Rhytidiadelphus loreus	-	-	-	-	-	-	-	-	-	1	1	3	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Betula seedling sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1-3)
Carex magellanica	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	i	(2)
Algal mat	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Rhacomitrium lanuginosum	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Hypogymnia physodes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Lophozia sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	i	(1)
Carex pauciflora	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-	-	-	-	-	i	(2-3)
Cepholozia loitlesbergeri	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Cladonia arbuscula	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Calypogeia sphagnicola	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
Mylia taylorii	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	i	(1)
No. of species	23	20	18	18	19	21	17	20	18	20	17	21	17	26	23	14	25	23	25	17	20	23	17	19	25	21	22	23	22		

S28 M18

	133	254	255	272	275	280		
Erica tetralix	3	4	4	2	3	2	v	(2-4)
Calluna vulgaris	6	8	8	6	6	4	v	(4-8)
Sphagnum capillifolium	4	1	6	2	6	6	v	(1-6)
Odontoschisma sphagni	2	3	3	2	3	3	v	(2-3)
Eriophorum vaginatum	6	5	6	8	6	7	v	(6-8)
Pleurozium schreberi	1	1	3	2	1	5	v	(1-5)
Vaccinium oxycoccus	3	-	1	3	3	4	iv	(1-4)
Sphagnum recurvum	4	-	1	8	7	1	iv	(1-8)
Sphagnum magellanicum	2	1	1	1	-	2	iv	(1-2)
Dicranum scoparium	1	1	-	1	1	1	iv	(1)
Hypnum cupressiforme	3	6	4	-	1	2	iv	(1-6)
Eriophorum angustifolium	1	2	1	1	-	-	iii	(1-2)
Sphagnum papillosum	2	1	1	-	1	-	iii	(1-2)
Aulocomnium palustre	4	-	-	2	2	2	iii	(2-4)
Polytrichum alpestre	1	-	-	1	1	1	iii	(1)
Sphagnum tenellum	1	5	4	-	2	-	iii	(1-5)
Sphagnum cuspidatum	1	-	-	1	4	1	iii	(1-4)
Andromeda polifolia	1	2	2	-	-	1	iii	(1-2)
Cephalozia sp	-	-	1	2	1	2	iii	(1-2)
Campylopus sp	1	-	1	-	1	2	iii	(1-2)
Lophozia ventricosa	1	-	2	-	1	2	iii	(1-2)
Empetrum nigrum nigrum	1	-	-	3	-	2	iii	(1-3)
Narthecium ossifragum	-	3	2	-	-	1	iii	(2-3)
Molinia caerulea	2	-	-	-	-	1	ii	(1-2)
Mylia anomela	-	1	-	2	-	2	ii	(1-2)
Cladonia impexa	-	5	4	-	-	3	ii	(3-5)
Sphagnum subnitens	-	1	-	-	-	-	i	(1)
Myrica gale	6	-	-	-	-	-	i	(6)
Scirpus cespitosus	-	1	-	-	-	2	i	(1-2)
Calypogeia muelleriana	-	-	-	-	-	1	i	(1)
Hypnum sp	-	-	-	2	-	-	i	(2)
Festuca ovina	-	-	-	-	-	1	i	(1)
Vaccinium myrtillus	-	-	-	1	-	3	i	(1-3)
Deschampsia flexuosa	-	-	-	-	-	3	i	(3)
Calypogeia sp	1	-	-	-	-	-	i	(1)
Leucobryum glaucum	-	-	-	-	-	2	i	(2)
Kurzia pauciflora	-	-	1	-	-	-	i	(1)
Sphagnum fimbriatum	1	-	-	-	-	-	i	(1)
Betula pubescens (g)	2	-	-	-	4	-	i	(2-4)
Gymnocolea inflata	-	1	-	-	-	-	i	(1)
Betula pubescens (s)	-	-	-	4	-	-	i	(4)
Cladonia arbuscula	-	-	-	-	-	1	i	(1)
Odontoschisma denudatum	-	1	-	-	-	-	i	(1)
Cladonia furcata	-	1	-	-	-	-	i	(1)
Pinus sylvestris	1	-	-	-	-	-	i	(1)
No of species	**27**	**21**	**20**	**20**	**19**	**30**		

S30 M18

	95	132	141	145	146	156	181		
Eriophorum angustifolium	3	3	3	3	3	3	3	v	(3)
Erica tetralix	6	4	3	3	3	3	4	v	(3-6)
Sphagnum papillosum	8	2	7	5	5	9	8	v	(2-9)
Myrica gale	6	5	7	4	4	5	6	v	(2-9)
Molinia caerulea	4	1	4	3	-	3	4	iv	(1-4)
Drosera rotundifolia	1	-	1	3	3	2	3	iv	(1-13)
Narthecium ossifragum	3	-	3	4	3	3	4	iv	(2-4)
Calluna vulgaris	3	8	2	3	2	1	-	iv	(1-8)
Odontoschisma sphagni	3	3	-	3	1	4	3	iv	(1-3)
Eriophorum vaginatum	5	3	2	-	3	4	2	iv	(2-5)
Sphagnum subnitens	1	4	-	3	5	1	-	iii	(1-5)
Sphagnum capillifolium	-	4	-	3	-	1	1	iii	(1-4)
Polytrichum alpestre	3	-	2	1	-	-	1	iii	(1-3)
Sphagnum magellanicum	-	1	4	5	-	1	4	iii	(1-5)
Hypnum sp	-	-	1	1	1	1	1	iii	(1)
Campylopus sp	1	2	-	1	-	1	2	iii	(1-2)
Aulacomnium palustre	-	1	-	1	-	-	1	ii	(1)
Andromeda polifolia	-	1	1	-	1	-	-	ii	(1)
Calypogeia sp	-	1	2	-	2	-	-	ii	(1-2)
Carex panicea	-	-	1	4	-	-	2	ii	(1-4)
Potentilla erecta	-	-	-	1	-	-	-	i	(1)
Vaccinium oxycoccus	1	1	-	-	-	-	-	i	(1)
Menyanthes trifoliata	-	-	1	-	-	-	2	i	(1-2)
Sphagnum recurvum	-	-	-	-	-	2	1	i	(1-2)
Carex nigra	-	-	-	-	-	-	1	i	(1)
Polytrichum commune	-	-	-	-	-	1	1	i	(1)
Rhynchospera alba	-	-	-	-	4	-	-	i	(4)
Equisetum fluviatile	-	-	-	-	-	-	1	i	(1)
Scirpus cespitosus	1	-	-	-	1	-	-	i	(1)
Mylia anomela	-	-	-	-	1	-	-	i	(1)
Calypogeia muelleriana	1	-	-	-	-	-	2	i	(1-2)
Sphagnum tenellum	-	1	-	4	-	-	-	i	(1-4)
Sphagnum cuspidatum	-	1	-	-	-	-	-	i	(1)
Nardus stricta	-	-	-	1	-	-	-	i	(1)
Cladonia impexa	-	1	-	1	-	-	-	i	(1)
Sphagnum ariculatum var auric	-	-	-	-	3	-	-	i	(3)
Pleurozium schreberi	-	-	1	-	-	-	-	i	(1)
Sphagnum palustre	-	-	4	-	-	-	-	i	(4)
Vaccinium myrtillus	-	-	-	1	-	-	-	i	(1)
Pinguicula vulgaris	-	-	-	-	2	-	-	i	(2)
Cephalozia sp	-	1	-	-	-	-	1	i	(1)
Lophozia ventricosa	-	2	-	-	-	-	-	i	(2)
Sphagnum auriculatum var inund	-	-	-	-	5	-	2	i	(2-5)
Hypnum cupressiforme	3	3	-	-	-	-	-	i	(3)
Leucobryum glaucum	-	-	-	1	-	-	1	i	(1)
Kurzia pauciflora	-	-	-	2	-	-	-	i	(2)
Polygala serpyllifolia	-	-	-	-	-	-	2	i	(2)
Empetrum nigrum nigrum	-	1	-	-	-	-	-	i	(1)
Sphagnum fimbriatum	-	1	-	-	1	-	-	i	(1)
Dicranum sp	-	-	-	1	-	-	-	i	(1)
Betula pubescens (g)	-	-	2	1	-	-	-	i	(1-2)
Betula seedling sp	-	-	-	-	-	1	1	i	(1)
Hypogymnia physodes	-	-	1	-	-	-	-	i	(1)
Cladonia uncialis	-	-	-	1	-	-	-	i	(1)
Campylopus paradoxus	-	-	-	2	-	-	-	i	(2)
Betula pubescens (s)	-	1	-	-	-	-	-	i	(1)
Polytrichum sp	-	-	-	1	-	-	-	i	(1)
Splachnum ampullaceum	-	-	-	1	-	-	-	i	(1)
Aira praecox	-	-	-	1	-	-	-	i	(1)
Pinus sylvestris	-	1	-	-	-	-	-	i	(1)
No of species	**17**	**26**	**20**	**31**	**20**	**18**	**27**		

S13a M21

	6	59	88	109	180	200		
Eriophorum angustifolium	5	2	3	2	4	2	v	(2-5)
Drosera rotundifolia	3	3	3	2	2	2	v	(2-4)
Molinia caerulea	-	1	2	4	4	1	iv	(1-4)
Erica tetralix	-	6	2	3	3	3	iv	(2-6)
Sphagnum papillosum	-	9	4	10	4	7	iv	(4-10)
Narthecium ossifragum	3	3	-	4	4	2	iv	(2-4)
Menyanthes trifoliata	-	1	3	1	3	5	iv	(1-5)
Carex panicea	1	1	-	2	3	1	iii	(1-3)
Sphagnum subnitens	1	3	4	-	6	-	iii	(1-6)
Carex rostrata	-	5	3	4	2	-	iii	(2-5)
Potentilla erecta	-	1	-	1	-	1	ii	(1)
Vaccinium oxycoccus	-	3	-	-	2	4	ii	(2-4)
Aulocomnium palustre	-	-	-	1	1	3	ii	(1-3)
Carex echinata	-	-	-	2	2	2	ii	(2)
Sphagnum recurvum	1	1	-	-	-	4	ii	(1-4)
Carex nigra	-	-	-	1	2	4	ii	(1-4)
Sphagnum auriculatum var *auric*	3	-	-	4	-	1	ii	(1-4)
Sphagnum auriculatum var *inund*	8	-	8	-	4	-	ii	(4-8)
Calluna vulgaris	-	-	-	1	-	-	i	(1)
Juncus acutiflorus	-	-	-	-	3	1	i	(1-3)
Calliergon cuspidatum	-	-	-	-	-	2	i	(2)
Aneura pinguis	-	-	2	-	-	2	i	(2)
Campylium stellatum	-	-	-	-	-	4	i	(4)
Polytrichum alpestre	-	-	-	2	-	-	i	(2)
Agrostis canina	-	-	-	-	-	2	i	(2)
Hydrocotyle vulgaris	-	-	-	-	-	1	i	(1)
Calliergon stramineum	-	-	-	-	2	2	i	(2)
Polytrichum commune	-	-	-	-	-	1	i	(1)
Viola palustris	-	1	-	-	-	-	i	(1)
Potamogeton polygonifolius	-	1	-	-	-	-	i	(1)
Rhynchospera alba	-	1	4	-	-	-	i	(1-4)
Equisetum fluviatile	-	-	-	-	2	-	i	(2)
Myrica gale	-	-	3	-	6	-	i	(3-6)
Calypogeia muelleriana	-	-	-	-	2	-	i	(2)
Carex dioica	-	-	-	3	-	-	i	(3)
Hypnum sp	-	-	-	1	1	-	i	(1)
Sphagnum palustre	-	-	-	1	3	-	i	(1-3)
Eleocharis multicaulis	-	1	1	-	-	-	i	(1)
Potentilla palustris	-	-	-	-	-	1	i	(1)
Cephalozia sp	-	-	1	-	2	-	i	(1-2)
Campylopus sp	-	-	-	-	1	-	i	(1)
Calypogeia sp	-	-	-	1	-	-	i	(1)
Kurzia pauciflora	-	-	1	-	-	-	i	(1)
Riccardia multifida	-	-	-	-	4	-	i	(1)
Pellia sp	-	-	-	-	-	1	i	(1)
Utricularia intermedia	-	1	-	-	-	-	i	(1)
Sphagnum fimbriatum	-	-	-	-	2	-	i	(2)
Agrostis stolonifera	-	-	-	2	-	-	i	(2)
Drosera intermedia	-	-	3	-	-	-	i	(3)
Drepanocladus sp	-	1	-	-	-	-	i	(1)
Equisetum palustre	-	-	-	-	2	-	i	(2)
Riccardia/Aneura sp	-	-	-	-	-	1	i	(1)
Carex magellanica	-	-	-	-	-	3	i	(3)
Dactylorhiza incarnata	-	-	-	1	-	-	i	(1)
Sphagnum subsecundum	-	1	-	-	-	-	i	(1)
No of species	**7**	**20**	**16**	**22**	**27**	**27**		

S20 M21

	5	10	28	43	116	167	168	169	185	201	237	237	
Eriophorum angustifolium	3	3	3	6	1	3	3	3	3	4	4	4	v (1-6)
Molinia caerulea	2	8	3	3	2	4	4	4	1	-	3	-	v (1-8)
Erica tetralix	1	4	2	6	3	4	4	3	-	6	1	1	v (1-6)
Drosera rotundifolia	3	2	3	2	3	2	3	3	3	3	3	1	v (1-3)
Sphagnum papillosum	9	6	10	8	8	10	9	3	1	9	10	7	v (1-10)
Narthecium ossifragum	2	2	-	3	4	3	3	3	3	1	3	2	v (1-4)
Vaccinium oxycoccus	2	3	2	2	-	3	-	3	3	5	2	2	v (2-5)
Aulocomnium palustre	-	3	1	2	1	3	3	3	1	2	1	1	v (1-3)
Potentilla erecta	1	1	1	3	-	2	2	-	-	1	2	2	iv (1-3)
Menyanthes trifoliata	-	2	-	2	3	1	2	3	1	-	-	1	iv (1-3)
Sphagnum recurvum	1	-	-	-	-	1	2	2	-	3	2	6	iv (1-6)
Carex rostrata	-	-	3	4	-	3	2	3	2	2	3	5	iv (2-5)
Calliergon stramineum	1	3	-	-	1	3	3	3	-	2	-	1	iv (1-3)
Sphagnum subnitens	-	1	-	-	5	-	2	9	-	-	2	-	iii (1-9)
Calluna vulgaris	-	-	-	1	4	2	-	2	-	-	1	1	iii (1-4)
Juncus acutiflorus	-	2	-	-	-	3	2	2	-	-	-	1	iii (1-3)
Sphagnum capillifolium	4	-	-	-	-	-	2	-	-	2	1	6	iii (1-6)
Polytrichum alpestre	4	-	-	-	-	5	3	3	1	-	-	3	iii (1-5)
Polytrichum commune	-	-	1	-	-	-	-	1	1	1	-	4	iii (1-4)
Carex echinata	-	1	-	1	-	-	-	1	-	-	-	3	ii (1-3)
Carex nigra	-	-	-	-	3	-	-	-	3	4	-	-	ii (3-4)
Rhynchospera alba	-	-	3	1	1	-	-	-	-	-	-	-	ii (1-3)
Equisetum fluviatile	-	-	-	-	-	2	3	2	-	-	-	1	ii (1-3)
Calypogeia muelleriana	3	-	-	-	-	-	2	1	-	-	-	-	ii (1-3)
Nardus stricta	2	-	-	-	-	1	1	-	-	-	-	-	ii (1-2)
Sphagnum magellanicum	-	6	-	-	-	-	-	-	10	1	-	-	ii (1-10)
Cephalozia connivens	1	-	-	-	-	2	3	1	-	-	-	-	ii (1-3)
Carex panicea	-	-	-	2	-	-	-	-	-	-	-	-	i (2)
Juncus bulbosus	-	-	-	-	-	-	-	1	-	-	-	-	i (1)
Odentoschisma sphagni	-	1	-	1	-	-	-	-	-	-	-	-	i (1)
Eriophorum vaginatum	-	-	-	1	-	-	-	-	1	-	-	-	i (1)
Viola palustris	-	-	-	-	-	-	-	-	-	1	-	-	i (1)
Myrica gale	-	6	-	-	4	-	-	-	-	-	-	-	i (4-6)
Mylia anomela	-	-	-	1	-	-	-	-	2	-	-	-	i (1-2)
Rhytidiadelphus squarrosus	-	-	-	-	-	-	-	-	-	-	-	1	i (1)
Cladonia impexa	-	-	-	1	-	-	-	-	-	-	-	-	i (1)
Potentilla palustris	-	-	-	-	-	-	-	-	-	1	-	-	i (1)
Calypogeia sp	-	-	-	-	-	-	-	-	-	1	-	-	i (1)
Sphagnum auriculatum var *inund*	3	-	-	-	-	-	-	-	-	-	-	-	i (3)
Hypnum cupressiforme	-	-	-	-	-	-	-	-	-	-	-	1	i (1)
Sphagnum warnstorfii	-	-	-	-	-	-	3	-	-	-	-	-	i (3)
Riccardia/Aneura sp	-	-	-	-	-	-	-	-	-	-	-	2	i (2)
Campylopus paradoxus	-	1	-	-	-	-	-	-	-	-	-	-	i (1)
No of species	**16**	**18**	**11**	**19**	**14**	**19**	**21**	**22**	**15**	**18**	**14**	**22**	

S21 M21

	2	16	17	97	210	211	230	246		
Eriophorum angustifolium	4	9	4	3	7	5	4	3	v	(3-7)
Molinia caerulea	4	4	4	4	6	6	3	3	v	(3-6)
Drosera rotundifolia	3	1	2	2	2	4	1	3	v	(1-4)
Sphagnum papillosum	5	3	10	9	-	7	7	7	iv	(3-10)
Narthecium ossifragum	3	4	4	6	2	3	-	4	iv	(2-6)
Erica tetralix	3	2	5	3	-	-	2	2	iii	(2-5)
Calluna vulgaris	1	-	1	3	-	-	1	1	iii	(1-3)
Sphagnum auriculatum var *auric*	7	9	-	-	8	2	8	6	iii	(2-9)
Carex panicea	2	-	1	1	-	-	-	-	ii	(1-2)
Potentilla erecta	2	-	-	1	-	1	-	-	ii	(1-2)
Vaccinium oxycoccus	1	-	-	-	-	-	-	3	ii	(1-3)
Carex echinata	-	1	-	-	1	-	1	3	ii	(1-3)
Eriophorum vaginatum	-	-	1	-	-	1	-	3	ii	(1-3)
Rhynchospera alba	-	-	-	1	-	-	4	2	ii	(1-4)
Myrica gale	1	2	3	-	-	-	-	-	ii	(1-3)
Scirpus cespitosus	3	3	-	-	-	-	2	-	ii	(2-3)
Sphagnum capillifolium	1	-	-	-	-	-	-	1	i	(1)
Sphagnum tenellum	1	-	2	-	-	-	-	1	i	(1-2)
Aulocomnium palustre	1	-	-	-	-	-	-	-	i	(1)
Sphagnum subnitens	-	-	1	-	-	8	-	-	i	(1-8)
Sphagnum capillifolium	1	-	-	-	-	-	-	1	i	(1)
Menyanthes trifoliata	-	-	-	-	-	-	3	4	i	(3-4)
Sphagnum recurvum	-	-	-	-	-	-	-	2	i	(2)
Juncus bulbosus	-	-	-	-	-	1	-	-	i	(1)
Aneura pinguis	-	-	-	-	-	-	1	-	i	(1)
Polytrichum alpestre	-	-	-	-	-	-	1	-	i	(1)
Carex demissa	1	-	-	-	-	-	-	-	i	(1)
Agrostis canina	-	1	-	-	-	-	-	-	i	(1)
Equisetum fluviatile	-	-	-	-	-	-	1	-	i	(1)
Mylia anomela	-	-	-	-	-	-	-	2	i	(2)
Drepanocladus revolvens	-	-	-	-	-	-	2	-	i	(2)
Calypogeia muelleriana	-	-	-	1	-	-	-	-	i	(1)
Sphagnum cuspidatum	-	1	-	-	-	-	-	5	i	(1-5)
Nardus stricta	3	-	-	-	-	-	-	-	i	(3)
Eleocharis multicaulis	3	-	-	-	-	-	-	-	i	(3)
Andromeda polifolia	-	-	-	-	-	-	-	2	i	(2)
Juncus squarrosus	2	-	-	-	-	-	-	-	i	(2)
Riccardia multifida	-	-	-	-	-	-	1	-	i	(1)
Hypnum jutlandicum	1	-	-	-	-	-	-	-	i	(1)
Polygala serpyllifolia	-	-	-	1	-	-	-	-	i	(1)
Calliergon sarmentosum	-	-	-	-	-	-	2	-	i	(2)
Carex magellanica	-	-	-	-	-	-	-	3	i	(3)
Hammarbya paludosa	-	-	-	-	-	2	-	-	i	(2)
Racomitrium lanuginosum	1	-	-	-	-	-	-	-	i	(1)
Campylopus paradoxus	1	-	-	-	-	-	-	-	i	(1)
No of species	**24**	**12**	**12**	**12**	**6**	**11**	**17**	**21**		

S3a M23

	112	114	120	157	162	166	189	199	226	244		
Calliergon cuspidatum	2	3	8	7	3	8	4	6	2	3	v	(2-8)
Cirsium palustre	3	2	2	3	1	1	2	1	1	2	v	(1-3)
Epilobium palustre	2	2	1	-	1	3	2	1	2	1	v	(1-3)
Holcus lanatus	2	2	2	2	1	2	1	-	1	3	v	(1-3)
Lotus uliginosus	3	2	3	3	1	2	2	2	3	-	v	(1-3)
Ranunculus acris	3	3	1	2	1	1	2	-	3	3	v	(1-3)
Aulocomnium palustre	-	1	2	-	1	1	1	3	-	3	iv	(1-3)
Juncus acutiflorus	8	9	5	4	5	7	7	-	9	-	iv	(4-8)
Carex nigra	-	-	1	1	2	2	1	-	2	5	iv	(1-5)
Succisa pratensis	2	1	2	1	2	2	3	4	-	-	iv	(1-4)
Hydrocotyle vulgaris	3	4	1	-	3	3	4	3	5	-	iv	(1-5)
Galium palustre	2	2	1	2	1	-	1	-	3	-	iv	(1-3)
Cardamine pratensis	1	1	-	1	-	2	1	-	1	1	iv	(1-2)
Molinia caerulea	-	1	4	4	1	-	1	-	-	-	iii	(1-4)
Carex panicea	1	2	1	-	4	-	1	-	-	2	iii	(1-4)
Potentilla erecta	2	1	3	-	-	1	-	-	-	2	iii	(1-3)
Carex echinata	-	-	2	6	2	-	1	-	1	6	iii	(1-6)
Viola palustris	3	-	1	2	1	2	-	-	3	-	iii	(1-3)
Anthoxanthum odoratum	-	2	1	-	1	-	1	-	1	1	iii	(1-2)
Festuca ovina	4	2	-	2	-	-	1	-	1	-	iii	(1-4)
Mentha aquatica	-	3	-	1	3	4	1	1	-	-	iii	(1-4)
Valeriana dioica	-	2	-	4	1	-	2	2	-	-	iii	(1-4)
Crepis paludosa	-	4	3	2	-	-	3	-	1	-	iii	(1-4)
Plagiomnium undulatum	3	-	1	1	-	-	2	-	-	3	iii	(1-3)
Lophocolea bidentata	3	2	-	3	-	-	3	-	1	3	iii	(1-3)
Agrostis canina	2	-	-	5	2	-	-	-	-	1	ii	(1-5)
Calliergon stramineum	-	-	-	1	-	-	-	2	-	2	ii	(1-2)
Ranunculus flammula	-	-	-	1	2	1	-	-	-	-	ii	(1-2)
Triglochin palustris	-	-	2	-	1	-	-	-	-	1	ii	(1-2)
Carex hostiana	-	-	1	-	3	-	-	1	-	-	ii	(1-3)
Rhytidiadelphus squarrosus	3	-	2	-	-	2	-	-	1	-	ii	(1-3)
Carex pulicaris	-	-	1	-	1	-	1	-	-	-	ii	(1)
Sphagnum palustre	2	-	1	-	-	-	-	-	-	2	ii	(1-2)
Juncus articulatus	-	-	-	-	1	1	-	1	-	-	ii	(1)
Potentilla palustris	-	-	-	-	1	-	-	3	1	-	ii	(1-3)
Parnassia palustris	-	-	3	-	1	2	-	1	-	-	ii	(1-3)
Luzula multiflora	1	-	1	1	-	-	1	-	-	-	ii	(1)
Pedicularis palustris	-	-	1	-	1	-	1	1	-	-	ii	(1)
Angelica sylvestris	1	-	-	1	-	-	4	1	-	-	ii	(1-4)
Briza media	-	-	1	-	2	1	-	-	-	-	ii	(1-2)
Achillea ptarmica	-	2	-	1	1	-	-	-	-	-	ii	(1-2)
Rhizomnium pseudopunctatum	-	-	-	1	2	1	-	-	-	1	ii	(1-2)
Caltha palustris	-	-	-	-	-	-	2	1	3	-	ii	(1-3)
Carex flacca	-	5	-	1	-	-	2	-	-	-	ii	(1-5)
Equisetum palustre	2	1	-	2	-	-	-	-	-	2	ii	(1-2)
Sphagnum warnstorfii	-	-	-	-	-	-	5	7	-	3	ii	(3-7)
Rumex acetosa	3	-	1	-	-	-	-	-	-	1	ii	(1-3)
Myosotis secunda	-	-	-	-	1	-	1	-	3	-	ii	(1-3)
Chyloscyphus pallescens	-	1	-	-	2	-	3	-	-	-	ii	(1-3)
Chyloscyphus sp.	1	-	-	-	-	3	-	-	2	-	ii	(1-3)
Brachythecium sp.	-	-	-	2	-	-	2	1	1	-	ii	(1-2)
Lychnis flos-cuculi	-	-	-	-	-	-	2	1	1	-	ii	(1-2)
Eriophorum angustifolium	-	-	2	-	1	-	-	2	-	-	ii	(1-2)
Drosera rotundifolia	-	-	-	-	-	-	-	1	-	-	i	(1)
Narthecium ossifragum	-	1	2	-	-	-	-	-	-	-	i	(1-2)
Vaccinium oxycoccus	-	-	-	-	-	-	-	-	-	3	i	(3)
Sphagnum subnitens	-	-	1	-	1	-	-	-	-	-	i	(1)
Calluna vulgaris	-	-	-	-	-	-	-	-	-	1	i	(1)
Juncus bulbosus	-	-	-	-	1	-	-	-	-	-	i	(1)
Aneura pinguis	-	-	1	-	-	-	-	-	-	1	i	(1)
Carex rostrata	-	-	-	-	-	-	-	1	-	6	i	(1-6)
Campylium stellatum	-	-	-	-	-	-	-	2	-	-	i	(2)
Carex demissa	-	-	1	-	1	-	-	-	-	-	i	(1)
Sphagnum contortum	-	-	2	-	-	-	-	-	-	1	i	(1-2)

S3a M23 cont.

	112	114	120	157	162	166	189	199	226	244		
Equisetum fluviatile	-	-	-	-	-	-	-	1	-	-	i	(1)
Myrica gale	-	-	-	1	-	-	-	-	-	-	i	(1)
Drepanocladus revolvens	-	-	-	-	1	-	-	-	-	-	i	(1)
Eleocharis quinquiflora	-	-	-	-	-	-	-	-	-	1	i	(1)
Bryum pseudotriquetrum	-	-	-	-	-	-	-	1	-	-	i	(1)
Juncus effusus	-	-	-	2	-	-	-	-	-	1	i	(1-2)
Anagallis tenella	-	-	-	-	1	-	-	-	-	-	i	(1)
Juncus conglomeratus	1	2	-	-	-	-	-	-	-	-	i	(1-2)
Calypogeia sp.	-	-	1	-	-	-	-	-	-	-	i	(1)
Pellia sp.	-	-	-	-	-	-	-	-	-	1	i	(1)
Carex curta	-	-	-	-	-	-	-	-	2	-	i	(2)
Sphagnum fimbriatum	-	-	-	-	1	-	-	-	-	-	i	(1)
Philonotis fontana	-	-	-	-	2	-	-	-	-	2	i	(2)
Euphrasia officinalis	-	-	-	-	-	1	-	-	-	-	i	(1)
Drepanacladus sp.	-	-	-	-	-	-	-	-	1	-	i	(1)
Danthonia decumbens	-	-	1	-	-	-	-	-	-	-	i	(1)
Pellia endiviifolia	-	-	-	-	-	4	-	-	-	-	i	(4)
Salix cinerea	-	-	-	-	-	-	-	1	-	-	i	(1)
Sphagnum teres	-	-	-	-	-	-	-	6	1	-	i	(1-6)
Dactylorhiza sp.	-	-	1	-	-	-	1	-	-	-	i	(1)
Filipendula ulmaria	-	-	-	-	-	3	-	-	-	-	i	(3)
Leontodon autumnalis	-	-	-	-	-	-	-	-	-	2	i	(2)
Hylocomium splendens	-	-	-	-	-	-	-	-	-	3	i	(3)
Poa trivialis	-	1	-	-	-	-	-	-	-	-	i	(1)
Stellaria alsine	-	1	-	-	1	-	-	-	-	-	i	(1)
Valeriana officinalis	-	-	-	2	-	-	1	-	-	-	i	(1-2)
Fissidens sp.	-	-	-	-	-	-	-	-	-	1	i	(1)
Dactylorhiza fuchsii	-	-	-	-	1	-	1	-	-	-	i	(1)
Ranunculus repens	-	1	-	-	-	-	-	-	-	-	i	(1)
Brachythecium rivulare	3	-	-	-	-	-	-	-	-	-	i	(3)
Lophocolea sp.	-	-	2	-	-	-	-	-	-	-	i	(2)
Galium uliginosum	-	-	-	-	-	-	-	2	-	2	i	(2)
Plantago lanceolata	-	1	-	-	-	-	-	-	-	-	i	(1)
Trifolium repens	-	-	-	-	-	1	-	-	-	-	i	(1)
Calliergon cordifolium	-	-	-	-	-	-	-	1	-	-	i	(1)
Climaceum dendroides	-	-	-	-	-	-	-	1	-	4	i	(1-4)
Dactylorhiza incarnata	1	-	-	-	-	-	-	-	-	-	i	(1)
Dactylorhiza majalis purpur	-	-	-	-	-	-	1	-	-	-	i	(1)
Myosotis lax cespitosa	-	-	-	-	-	-	1	-	-	-	i	(1)
Scutellaria minor	-	-	-	-	2	-	-	-	-	-	i	(2)
Polytrichum sp.	-	-	1	-	-	-	-	-	-	-	i	(1)
Cerastium fontanum triviale	1	-	-	-	-	-	-	-	-	-	i	(1)
Trollius europeaus	-	-	-	-	-	-	1	-	-	-	i	(1)
Agrostis sp.	-	-	-	-	-	-	-	-	1	-	i	(1)
Carex lepidocarpa	-	-	-	-	-	-	-	1	-	1	i	(1)
Dactylorhiza maculata	1	-	-	-	-	-	-	-	-	-	i	(1)
Juncus bufonius	-	-	-	-	1	-	-	-	-	-	i	(1)
Scirpus setaceus	-	-	-	-	1	-	-	-	-	-	i	(1)
Poa sp.	1	-	-	-	-	-	-	-	-	-	i	(1)
Pohlia sp.	-	-	-	-	-	-	-	-	1	-	i	(1)
*Taraxacum seedling/*sp.	-	-	-	-	-	-	-	-	1	-	i	(1)
Carex elata	-	-	-	-	-	-	-	7	-	-	i	(7)
Cynosurus cristatus	-	-	-	-	-	-	-	-	-	1	i	(1)
Deschampsia cespitosa cesp.	-	1	-	-	-	-	-	-	-	-	i	(1)
Homalothecium nitens	-	-	-	-	-	-	-	-	-	2	i	(2)
Plagiomnium affine	-	-	-	-	-	1	-	-	-	-	i	(1)
Trichocolea tomentella	-	-	-	-	-	-	-	-	-	3	i	(3)
No of species	**31**	**32**	**41**	**32**	**46**	**27**	**40**	**33**	**30**	**40**		

S6b M23

	33	47	138	139	177		
Eriophorum angustifolium	1	5	3	2	4	v	(1-5)
Carex panicea	1	3	1	2	2	v	(1-3)
Juncus acutiflorus	1	1	4	3	1	v	(1-4)
Carex nigra	4	1	2	4	5	v	(1-5)
Calliergon cuspidatum	1	1	6	2	3	v	(1-6)
Epilobium palustre	1	1	2	1	2	v	(1-2)
Philonotis fontana	7	1	2	4	4	v	(1-7)
Carex echinata	1	1	3	2	-	iv	(1-3)
Hydrocotyle vulgaris	3	4	7	4	-	iv	(3-7)
Viola palustris	-	1	1	1	1	iv	(1)
Galium palustre	3	1	3	-	2	iv	(1-3)
Sphagnum contortum	-	2	1	6	5	iv	(1-6)
Ranunculus flammula	1	1	1	-	2	iv	(1-2)
Triglochin palustris	1	2	1	2	-	iv	(1-2)
Bryum pseudotriquetrum	-	2	1	1	1	iv	(1-2)
Cardamine pratensis	-	1	1	1	1	iv	(1)
Aulocomnium palustre	-	1	4	3	-	iii	(1-4)
Menyanthes trifoliata	-	1	-	4	1	iii	(1-4)
Juncus bulbosus	1	1	1	-	-	iii	(1)
Carex demissa	1	1	-	-	2	iii	(1-2)
Agrostis canina	1	1	2	-	-	iii	(1-2)
Cirsium palustre	1	1	1	-	-	iii	(1)
Holcus lanatus	-	1	2	2	-	iii	(1-2)
Carex dioica	-	1	2	-	2	iii	(1-2)
Juncus articulatus	2	-	1	-	3	iii	(1-3)
Stellaria alsine	3	-	2	1	-	iii	(1-3)
Lemna minor	1	-	2	1	-	iii	(1-2)
Molinia caerulea	1	2	-	-	-	ii	(1-2)
Vaccinium oxycoccus	-	1	-	2	-	ii	(1-2)
Sphagnum capillifolium	-	-	1	5	-	ii	(1-5)
Succisa pratensis	-	1	-	-	1	ii	(1)
Carex rostrata	-	6	-	6	-	ii	(6)
Campylium stellatum	1	1	-	-	-	ii	(1)
Potamogeton polygonifolius	2	1	-	1	-	ii	(1-2)
Anthoxanthum odoratum	-	2	3	-	-	ii	(2-3)
Juncus effusus	1	3	-	-	-	ii	(1-3)
Luzula multiflora	1	1	-	-	-	ii	(1)
Drepanocladus sp.	1	-	-	1	-	ii	(1)
Pellia endiviifolia	-	-	-	2	2	ii	(2)
Myosotis secunda	-	1	1	-	-	ii	(1)
Narthecium ossifragum	-	1	-	-	-	i	(1)
Sphagnum subnitens	-	1	-	-	-	i	(1)
Sphagnum recurvum	-	-	-	3	-	i	(3)
Aneura pinguis	1	-	-	-	-	i	(1)
Rhynchospera alba	1	-	-	-	-	i	(1)
Equisetum fluviatile	1	-	-	-	-	i	(1)
Carex hostiana	-	-	-	1	-	i	(1)
Eleocharis quinquiflora	-	-	-	2	-	i	(2)
Nardus stricta	1	-	-	-	-	i	(1)
Potentilla palustris	-	-	-	-	3	i	(3)
Mentha aquatica	3	-	-	-	-	i	(3)
Valeriana dioica	-	-	-	-	1	i	(1)
Juncus conglomeratus	-	1	-	-	-	i	(1)
Pedicularis palustris	-	-	-	-	2	i	(2)
Ctenidium molluscum	-	-	-	-	1	i	(1)
Pellia sp.	2	-	-	-	-	i	(2)
Rhizomnium pseudopunctatum	3	-	-	-	-	i	(3)
Caltha palustris	-	-	-	-	3	i	(3)
Agrostis stolonifera	-	-	1	-	-	i	(1)
Salix cinerea	-	-	-	-	1	i	(1)
Prunella vulgaris	-	1	-	-	-	i	(1)
Hylocomnium splendens	-	-	-	-	1	i	(1)
Chiloscyphus pallescens	-	2	-	-	-	i	(2)
Lychnis flos-cuculi	-	-	1	-	-	i	(1)
Poa trivialis	-	-	2	-	-	i	(2)
Sphagnum squarrosum	-	1	-	-	-	i	(1)

S6b M23 cont.

	33	47	138	139	177		
Ranunculus repens	-	-	1	-	-	i	(1)
Brachythecium rivulare	-	1	-	-	-	i	(1)
Cardamine sp.	2	-	-	-	-	i	(2)
Trifolium repens	-	-	1	-	-	i	(1)
Myosotis laxa cespitosa	2	-	-	-	-	i	(2)
Veronica scutellata	-	-	2	-	-	i	(2)
Ranunculus omiophyllus	4	-	-	-	-	i	(4)
Dicranella palustris	-	-	2	-	-	i	(2)
Veronica beccabunga	-	-	1	-	-	i	(1)
Montia fontana	3	-	-	-	-	i	(3)
Cephalozia sp.	-	-	-	1	-	i	(1)
Apium nodiflorum	-	1	-	-	-	i	(1)
Ranunculus hederaceus	1	-	-	-	-	i	(1)
Chiloscyphus polyanthos	-	-	-	2	-	i	(2)
Poa sp.	1	-	-	-	-		
No of species	**38**	**42**	**37**	**30**	**26**		

S7b M23

	34	134	190
Carex nigra	3	4	6
Juncus bulbosus	2	3	1
Galium palustre	2	2	2
Cardamine pratensis	2	2	2
Juncus effusus	7	1	4
Potentilla erecta	1	-	2
Carex echinata	3	-	2
Juncus actitiflorus	3	3	-
Calliergon.cuspidatum	4	-	7
Agrostis canina	2	-	4
Hydrocotyle vulgaris	-	6	3
Viola palustris	3	-	3
Equisetum fluviatile	2	-	2
Epilobium palustre	3	1	-
Ranunculus flammula	1	-	3
Holcus lanatus	2	1	-
Rhytidiadelphus squarrosus	4	-	6
Anthoxanthum odoratum	3	-	1
Potentilla palustris	-	1	4
Lotus uliginosus	-	3	2
Caltha palustris	-	2	2
Salix cinerea	1	-	1
Rumex acetosa	1	-	1
Stellaria alsine	1	1	-
Ranunculus repens	3	-	1
Calliergon cordifolium	1	1	-
Myosotis laxa caespitosa	1	1	-
Veronica scutellata	-	2	3
Molinia caerulea	1	-	-
Carex panicea	-	-	1
Aulocomnium palustre	1	-	-
Menyanthes trifoliata	-	10	-
Sphagnum recurvum	1	-	-
Succisa pratensis	-	-	1
Carex rostrata	-	-	1
Carex demissa	-	-	2
Polytrichum commine	2	-	-
Cirsium palustre	3	-	-
Juncus articulatus	1	-	-
Mentha aquatica	-	7	-
Juncus conglomeratus	-	1	-
Lophocolea bidentata	4	-	-
Carex curta	-	-	1
Dryopteris carthusiana	1	-	-
Filipendula ulmaria	-	-	1
Lychnis flos-cuculi	-	-	3
Poa trivialis	-	1	-
Valeriana officinalis	-	-	1
Eurynchium praelongum	2	-	-
Lemna minor	-	3	-
Sphagnum squarrosum	1	-	-
Calliergon giganteum	-	1	-
Brachythecium rivulare	2	-	-
Trifolium repens	1	-	-
Ranunculus omiophyllus	1	-	-
Sagina procumbens	1	-	-
Eleocharis palustris	-	4	-
Montia fontana	1	-	-
Carex ovalis	-	-	1
Scutellaria galericulata	1	-	-
No of species	**39**	**23**	**31**

S2a M25

	76	163
Molinia caerulea	2	8
Erica tetralix	2	1
Narthecium ossifragum	2	1
Carex panicea	3	3
Potentilla erecta	3	2
Aulocomium palustre	2	1
Sphagnum subnitens	3	2
Juncus acutiflorus	5	6
Succisa pratensis	3	2
Calliergon cuspidatum	3	3
Hydrocotyle vulgaris	3	1
Rhytidiadelphus squarrosus	2	1
Lotus uliginosus	2	1
Parnassia palustris	2	2
Lophocolea bidentata	2	3
Eurynchium praelongum	1	2
Dicranum bonjeani	1	1
Plantago lanceolata	1	2
Drosera rotundifolia	2	-
Vaccinium oxycoccus	1	-
Carex echinata	2	-
Sphagnum recurvum	3	-
Aneura pinguis	2	-
Campylium stellatum	3	-
Calliergon stramineum	3	-
Polytrichum commune	2	-
Cirsium palustre	2	-
Viola palustris	3	-
Galium palustre	1	-
Sphagnum contortum	4	-
Carex hostiana	-	3
Calypogeia muelleriana	2	-
Eleocharis quinquiflora	1	-
Nardus stricta	2	-
Carex pulicaris	-	3
Hypnum sp	-	1
Sphagnum palustre	2	-
Anthoxanthum odoratum	1	-
Festuca ovina	3	-
Cardamine pratensis	1	-
Mentha aquatica	-	1
Anagallis tenella	-	-
Luzula multiflora	-	1
Ranunculus acris	1	-
Briza media	-	1
Pellia sp	4	-
Achillea ptarmica	2	-
Rhizomnium pseudopunctatum	2	-
Euphrasia officinalis agg	-	1
Agrostis stolonifera	-	1
Carex flacca	-	1
Crepis paludosa	1	-
Scutellaria minor	-	1
Fraxinus excelsior (g)	-	1
Leontodon autumnalis	1	-
Prunella vulgaris	3	-
Hylocomium splendens	1	-
Plagiomnium elatum	-	1
Thuidium sp	-	2
Chiloscyphus sp	3	-
Dactylorhiza fuchsii	-	1
Scapania undulata	-	2
No of species	**46**	**33**

S2b M25

	93	101	102	103	129		
Potentilla erecta	1	2	1	1	1	v	(1-2)
Sphagnum subnitens	1	1	1	1	5	v	(1-5)
Juncus acutiflorus	7	4	5	3	3	v	(3-7)
Cirsium palustre	1	1	2	2	2	v	(1-2)
Viola palustris	2	2	1	1	2	v	(1-2)
Galium palustre	3	2	1	1	2	v	(1-3)
Mentha aquatica	4	3	4	2	1	v	(1-4)
Lophocolea bidentata	2	3	3	3	3	v	(2-3)
Dryopteris carthusiana	1	1	2	1	1	v	(1-2)
Molinia caerulea	-	7	6	8	3	iv	(3-8)
Calliergon cuspidatum	-	4	3	2	1	iv	(1-4)
Hydrocotyle vulgaris	5	1	-	1	2	iv	(1-5)
Myrica gale	1	7	8	-	8	iv	(1-8)
Sphagnum palustre	5	1	1	-	3	iv	(1-5)
Valeriana dioica	3	-	1	2	3	iv	(1-3)
Angelica sylvestris	-	2	2	1	1	iv	(1-2)
Succisa pratensis	-	1	1	-	3	iii	(1-3)
Agrostis canina	2	-	-	2	3	iii	(2-3)
Calypogeia muelleriana	-	3	-	3	2	iii	(2-3)
Rhytidiadelphus squarrosus	2	1	-	-	2	iii	(1-2)
Lotus uliginosus	1	2	-	2	-	iii	(1-3)
Ranunculus acris	3	1	1	-	-	iii	(1-3)
Pellia sp	-	3	2	-	1	iii	(1-3)
Achillea ptarmica	1	1	-	2	-	iii	(1-2)
Hookeria lucens	-	1	1	-	1	iii	(1)
Aulocomnium palustre	-	-	-	1	2	ii	(1-2)
Carex echinata	-	1	-	-	2	ii	(1-2)
Sphagnum recurvum	6	-	-	-	1	ii	(1-6)
Polytrichum commune	1	-	-	-	1	ii	(1)
Epilobium palustre	3	1	-	-	-	ii	(1-3)
Filipendula ulmaria	-	2	2	-	-	ii	(2)
Pseudoscleropodium purum	-	1	-	-	1	ii	(1)
Eurynchium praelongum	-	-	3	-	3	ii	(3)
Juniperus communis communis	-	1	1	-	-	ii	(1)
Lysimachia nemorum	1	-	-	-	1	ii	(1)
Erica tetralix	-	-	-	-	2	i	(2)
Sphagnum papillosum	-	-	-	-	1	i	(1)
Narthecium ossifragum	-	-	-	2	-	i	(2)
Juncus bulbosus	-	-	-	-	1	i	(1)
Campylium stellatum	-	-	-	-	2	i	(2)
Calliergon stramineum	-	-	-	-	1	i	(1)
Sphagnum contortum	-	-	-	-	3	i	(3)
Ranunculus flammula	2	-	-	-	-	i	(2)
Carex hostiana	-	-	-	-	1	i	(1)
Holcus lanatus	2	-	-	-	-	i	(2)
Hypnum sp	-	-	-	-	2	i	(2)
Anagallis tenella	-	-	-	-	1	i	(1)
Sphagnum auriculatum var *auric*	-	-	-	-	1	i	(1)
Hypnum cupressiforme	-	1	-	-	-	i	(1)
Sphagnum fimbriatum	-	-	-	-	3	i	(3)
Rhizomnium pseudopunctatum	-	-	-	1	-	i	(1)
Caltha palustris	3	-	-	-	-	i	(3)
Galium saxatile	1	-	-	-	-	i	(1)
Prunella vulgaris	1	-	-	-	-	i	(1)
Hylocomium splendens	-	-	-	-	1	i	(1)
Myosotis secunda	2	-	-	-	-	i	(2)
Chiloscyphus sp	-	2	-	-	-	i	(2)
Brachythecium sp	-	-	1	-	-	i	(1)
Poa trivialis	1	-	-	-	-	i	(1)
Sphagnum squarrosum	-	-	-	-	1	i	(1)
Hypogymnia physodes	-	-	-	-	1	i	(1)
Pteridium aquilinum	-	-	-	-	1	i	(1)
Mnium hornum	-	-	-	-	2	i	(2)
No of species	**29**	**30**	**23**	**21**	**45**		

S10b M25	**75**
Molinia caerulea	6
Drosera rotundifolia	1
Narthecium ossifragum	2
Carex panicea	4
Potentilla erecta	1
Aulacomnium palustre	2
Carex echinata	1
Sphagnum subnitens	1
Juncus acutiflorus	3
Succisa pratensis	1
Calliergon cuspidatum	2
Aneura pinguis	2
Campylium stellatum	4
Agrostis canina	3
Hydrocotyle vulgaris	3
Calliergon stramineum	2
Cirsium palustre	3
Sphagnum contortum	4
Myrica gale	8
Hypericum pulchrum	2
Viola riviniana	1
Pseudoscleropodium purum	1
Valeriana officinalis	1
Plantago lanceolata	1
Bryum pseudotriquetrum	2
Anagallis tenella	3
Lophocolea bidentata	2
Pellia sp	3
Dryopteris carthusiana	1
No of species	**29**

S14 M29

	1	11	90	117	121	171	172		
Eriophorum angustifolium	-	2	3	1	3	3	3	v	(1-3)
Carex panicea	3	-	1	2	2	3	4	v	(1-4)
Juncus bulbosus	3	2	4	2	2	3	3	v	(2-4)
Carex demissa	3	-	2	2	3	3	4	v	(2-4)
Potamogeton polygonifolius	5	4	5	5	4	6	6	v	(4-6)
Ranunculus flammula	3	3	4	3	3	2	1	v	(1-4)
Eleocharis multicaulis	6	8	7	4	-	2	3	v	(2-8)
Juncus acutiflorus	-	3	-	3	3	1	1	iv	(1-3)
Menyanthes trifoliata	-	-	2	2	-	3	3	iii	(2-3)
Carex echinata	2	2	-	3	-	-	-	ii	(2-3)
Carex nigra	-	-	3	-	-	4	-	ii	(3-4)
Hydrocotyle vulgaris	1	-	-	1	1	-	-	ii	(1)
Galium palustre	2	-	-	1	1	-	-	ii	(1-2)
Rhynchospera alba	-	2	3	1	-	-	-	ii	(1-3)
Triglochin palustris	-	-	1	1	1	-	-	ii	(1)
Sphagnum auriculatum var *auric*	2	8	4	-	-	-	-	ii	(2-8)
Potentilla palustris	-	-	-	3	1	1	-	ii	(1-3)
Mentha aquatica	-	-	-	3	2	2	-	ii	(2-3)
Pedicularis palustris	-	-	-	2	-	3	1	ii	(1-3)
Hypericum elodes	6	-	-	-	8	4	-	ii	(4-8)
Molinia caerulea	-	2	-	-	-	-	-	i	(2)
Drosera rotundifolia	-	1	-	-	-	-	-	i	(1)
Sphagnum papillosum	-	-	2	-	-	-	-	i	(2)
Vaccinium oxycoccus	-	-	2	-	-	-	-	i	(2)
Calliergon cuspidatum	-	-	-	1	-	-	-	i	(1)
Aneura pinguis	-	-	-	-	1	-	-	i	(1)
Carex rostrata	-	-	-	-	-	2	2	i	(2)
Agrostis canina	-	-	1	-	-	-	-	i	(1)
Polytrichum commune	-	2	-	-	-	-	-	i	(2)
Cirsium palustre	-	-	-	-	2	-	-	i	(2)
Sphagnum palustre	-	-	-	-	3	-	-	i	(3)
Equisetum fluviatile	-	-	-	-	-	1	3	i	(1-3)
Myrica gale	-	-	2	-	-	-	-	i	(2)
Epilobium palustre	-	-	-	-	1	-	-	i	(1)
Scorpidium scorpiodes	-	-	1	-	-	1	-	i	(1)
Holcus lanatus	-	-	-	-	1	-	-	i	(1)
Rhytidiadelphus squarrosus	-	-	-	-	1	-	-	i	(1)
Eleocharis quinquiflora	-	-	-	-	-	3	3	i	(3)
Nardus stricta	-	1	-	-	-	-	-	i	(1)
Bryum pseudotriquetrum	-	-	-	-	1	1	-	i	(1)
Juncus articulatus	-	-	-	-	-	2	2	i	(2)
Juncus effusus	-	2	-	-	-	-	-	i	(2)
Lotus uliginosus	-	3	-	-	-	-	-	i	(3)
Juncus conglomeratus	-	3	-	-	-	-	-	i	(3)
Sphagnum auriculatum var *inund*	-	-	1	-	4	-	-	i	(1-4)
Utricularia intermedia	-	-	-	1	-	-	-	i	(1)
Utricularia minor	-	-	-	3	-	-	-	i	(3)
Agrostis stolonifera	-	-	-	-	2	-	-	i	(2)
Drosera intermedia	-	-	-	1	-	-	-	i	(1)
Pellia endiviifolia	-	-	-	-	2	-	-	i	(2)
Riccardia/Aneura sp	-	-	-	-	1	-	-	i	(1)
Phragmites australis	-	-	-	-	2	-	-	i	(2)
Calliergon giganteum	-	-	-	-	2	2	-	i	(2)
Cardamine sp	-	-	-	1	-	-	-	i	(1)
Utricularia sp	-	-	-	2	-	-	-	i	(2)
Nymphaea alba	-	-	-	2	-	-	-	i	(2)
No of species	**12**	**16**	**18**	**24**	**27**	**32**	**14**		

S1 M32b

	233
Eriophorum angustifolium	1
Carex echinata	3
Carex demissa	1
Cirsium palustre	2
Galium palustre	1
Holcus lanatus	3
Bryum pseudotriquetrum	8
Cardamine pratensis	2
Ranunculus acris	2
Achillea ptarmica	1
Philonotis fontana	2
Leontodon autumnalis	3
Brachythecium rivulare	4
Festuca rubra	3
Epilobium sp	3
Chrysosplenium oppositifolium	2
Drepanocladus vernicosus	6
No of species	**17**

S9a M37

	232
Carex panicea	1
Succisa pratensis	1
Aneura pinguis	2
Carex demissa	2
Hydrocotyle vulgaris	3
Galium palustre	3
Triglochin palustris	2
Bryum pseudotriquetrum	2
Juncus articulatus	2
Cardamine pratensis	3
Mentha aquatica	3
Selaginella selaginoides	1
Anagallis tenella	1
Pinguicula vulgaris	1
Pellia sp	2
Fissidens sp	1
Cratoneuron commutatum	10
Lophozia sp	1
Festuca rubra	3
Agrostis sp	2
Saxifraga aizoides	1
Veronica beccabunga	1
Philonotis calcarea	1
No of species	**23**

S7a S27

	119	122	123	124	125	160	161		
Juncus acutiflorus	9	4	7	1	3	1	10	v	(1-10)
Hydrocotyle vulgaris	1	2	1	1	3	1	2	v	(1-3)
Galium palustre	2	1	1	3	3	2	1	v	(1-3)
Epilobium palustre	1	2	2	2	2	1	2	v	(1-2)
Menyanthes trifoliata	1	3	4	4	3	4	-	iv	(1-4)
Cirsium palustre	1	1	1	1	1	-	1	iv	(1)
Mentha aquatica	2	-	4	4	4	6	5	iv	(2-6)
Carex rostrata	-	2	2	6	5	8	-	iii	(2-8)
Ranunculus flammula	1	-	1	1	-	1	1	iii	(1)
Eriophorum angustifolium	1	3	-	-	-	2	-	ii	(1-3)
Molinia caerulea	1	-	-	-	-	1	1	ii	(1)
Carex nigra	-	-	1	-	3	1	-	ii	(1-3)
Calliergon cuspidatum	1	-	7	4	3	-	-	ii	(1-7)
Calliergon stramineum	-	1	-	5	5	-	-	ii	(1-5)
Viola palustris	1	-	-	-	-	1	1	ii	(1)
Holcus lanatus	-	2	1	-	-	-	1	ii	(1-2)
Potentilla palustris	-	3	3	2	2	-	-	ii	(2-3)
Juncus effusus	3	-	1	4	2	-	-	ii	(1-4)
Carex curta	-	4	1	-	1	-	-	ii	(1-4)
Myosotis secunda	2	-	-	-	-	1	1	ii	(1-2)
Brachythecium sp	-	-	2	3	-	-	2	ii	(2-3)
Carex panicea	1	-	-	-	-	-	-	i	(1)
Carex echinata	1	-	-	-	-	-	-	i	(1)
Juncus bulbosus	1	-	-	-	-	-	-	i	(1)
Campylium stellatum	1	-	-	-	-	-	-	i	(1)
Agrostis canina	-	2	2	-	-	-	-	i	(2)
Sphagnum contortum	-	-	-	-	8	-	-	i	(8)
Potamogeton polygonifolius	1	-	-	-	-	-	-	i	(1)
Equisetum fluviatile	-	-	-	-	-	1	2	i	(1-2)
Myrica gale	1	-	-	-	-	-	-	i	(1)
Rhytidiadelphus squarrosus	-	-	1	-	-	-	-	i	(1)
Sphagnum palustre	-	1	-	-	-	-	-	i	(1)
Juncus articulatus	-	-	-	1	-	-	-	i	(1)
Cardamine pratensis	1	-	-	-	-	-	1	i	(1)
Lotus uliginosus	-	-	1	-	-	-	1	i	(1)
Juncus conglomeratus	1	-	-	-	-	-	1	i	(1)
Pedicularis palustris	-	-	-	-	-	1	1	i	(1)
Lophocolea bidentata	-	-	-	-	1	-	-	i	(1)
Angelica sylvestris	1	-	-	-	-	-	-	i	(1)
Utricularia minor	-	-	-	2	1	-	-	i	(1-2)
Rhizomnium pseudopunctatum	-	-	-	-	-	-	2	i	(2)
Caltha palustris	2	-	-	-	-	-	-	i	(2)
Agrostis stolonifera	1	-	-	-	-	2	-	i	(1-2)
Betula pubescens (g)	1	-	-	-	-	-	-	i	(1)
Salix cinerea	-	2	-	-	-	-	-	i	(2)
Aneura sp	-	-	-	1	-	-	-	i	(1)
Chiloscyphus sp	-	-	-	-	-	1	-	i	(1)
Lychnis flos-cuculi	-	-	2	-	-	-	-	i	(2)
Poa trivialis	-	-	-	-	-	-	2	i	(2)
Stellaria alsine	-	-	-	-	-	-	1	i	(1)
Eurynchium praelongum	-	-	-	1	-	-	-	i	(1)
Lemna minor	-	-	1	-	-	-	-	i	(1)
Sphagnum squarrosum	-	10	-	-	1	-	-	i	(1-10)
Algal mat	-	-	-	4	2	-	-	i	(2-4)
Phragmites australis	-	2	-	-	-	-	-	i	(2)
Ranunculus repens	-	-	-	-	-	-	1	i	(1)
Calliergon giganteum	-	-	-	-	-	2	-	i	(2)
Cardamine sp	-	-	-	1	1	-	-	i	(1)
Calliergon cordifolium	-	-	-	-	-	2	-	i	(2)
Juniperus communis communis	1	-	-	-	-	-	-	i	(1)
Hypericum tetrapterum	-	-	-	-	-	1	1	i	(1)
Eleocharis palustris	-	-	1	-	-	-	-	i	(1)
Plagiomnium elatum	-	-	-	-	3	-	-	i	(3)
Alnus glutinosa (g)	1	-	-	-	-	-	-	i	(1)
Dryopteris sp	-	-	-	1	-	-	-	i	(1)
Callitriche seedling sp	-	-	-	1	-	-	-	i	(1)
No of species	**28**	**17**	**22**	**22**	**21**	**20**	**22**		

S3c M26

	265	266	268
Molinia caerulea	2	3	3
Juncus acutiflorus	9	4	6
Calliergon cuspidatum	6	3	9
Carex hostiana	1	3	1
Holcus lanatus	3	3	2
Rhytidiadelphus squarrosus	3	3	1
Valeriana dioica	3	2	3
Angelica sylvestris	1	1	3
Achillea ptarmica	2	2	2
Plagiomnium undulatum	2	1	4
Equisetum arvense	1	1	1
Lophocolea sp	3	2	3
Galium uliginosum	1	1	2
Climaceum dendroides	1	3	3
Serratula tinctoria	3	4	1
Carex panicea	2	2	-
Potentilla erecta	2	2	-
Succisa pratensis	1	2	-
Ranunculus acris	-	2	2
Crepis paludosa	1	-	2
Filipendula ulmaria	1	-	1
Pseudoscleropodium purum	4	3	-
Thuidium sp	1	3	-
Lathyrus pratensis	1	-	1
Trolius europeaus	2	3	-
Stachys officinalis	1	2	-
Equisetum sylvaticum	-	-	-
Aulocomnium palustre	-	1	-
Sphagnum subnitens	-	1	-
Agrostis canina	-	2	-
Nardus stricta	-	1	-
Anthoxanthum odoratum	-	-	1
Festuca ovina	-	2	-
Juncus squarrosus	-	1	-
Lotus uliginosus	-	-	1
Parnassia palustris	-	2	-
Ctenidium molluscum	-	3	-
Briza media	-	2	-
Agrostis stolonifera	-	-	2
Pellia endiviifolia	-	1	-
Sphagnum warnstorfii	-	2	-
Dactylorhiza sp	-	-	1
Rumex acetosa	-	-	1
Hylocomium splendens	-	3	-
Brachythecium sp	-	-	4
Primula farinosa	-	1	-
Valeriana officinalis	-	-	1
Leontodon hispidus	-	2	-
Ranunculus repens	-	-	1
Brachythecium rivulare	1	-	-
Cardamine sp	-	-	2
Festuca rubra	-	-	1
Lotus corniculatus	-	2	-
Geum rivale	1	-	-
Trifolium medium	-	1	-
Rhytidiadelphus triquetris	-	2	-
Plagiochilla porelloides	-	1	-
No of species	**27**	**41**	**29**

Appendix 3. Definition of TWINSPAN end-groups in vegetation terms and comparison to NVC communities and sub-communities (Tratt 1991) and comments upon the national importance of these communities and sub-communities (based upon the Rodwell 1991 and in press).

Note: The quadrat numbers refer to Twinspan numbers, these can be translated to numbers given in the survey by reference to Table 1.

End-group S16

* Contains 3 quadrats: 58, 216, 217.

M1 *Sphagnum auriculatum* bog pool community.

These stands represent bog pool vegetation. *Sphagnum auriculatum var. auriculatum* is usually dominant and is often accompanied by *S. cuspidatum. Eriophorum angustifolium* is the most prominent vascular species and is accompanied by scattered individuals of *Narthecium ossifragum, Drosera rotundifolia, Erica tetralix* and *Molinia caerulea.* The vegetation is enriched in quadrat 58 by *Rhynchospora alba, Sphagnum recurvum, S. papillosum* and *Menyanthes trifoliata.*

This community type occurs with both blanket mire communities, such as at Great Moss where it occurs with M17 *Scirpus cespitosus-Eriophorum vaginatum* blanket mire, and a complex of fen/bog communities such as at Knott-End Moss and Great Ludderburn Moss. It occupies wet pools in the low-lying areas of valley mires and basin mires where it is found in association with M21 *Narthecium ossifragum-Sphagnum papillosum* valley mire.

Nationally, this community has largely a western distribution and is also found within the valley mires of southern England.

End-group S17

* Contains 3 quadrats: 8, 54, 213.

M2 *Sphagnum cuspidatum* bog pool community.

These stands represent species poor bog pool vegetation dominated by *Sphagnum cuspidatum* with frequent *Eriophorum angustifolium. Menyanthes trifoliata* is occasional and the vegetation can be enriched by *Sphagnum recurvum, S. papillosum, Drosera rotundifolia, Juncus bulbosus, Agrostis canina* and *Drepanocladus fluitans* (quadrat 213).

End-group S18

* Contains 3 quadrats: 46, 59, 224.

M2 *Sphagnum cuspidatum* bog pool community

These stands represent *Sphagnum* carpets usually dominated by *S. cuspidatum* accompanied by combinations of *S. auriculatum, S. papillosum* and *S. recurvum. Eriophorum angustifolium, Menyanthes trifoliata* and *Drosera rotundifolia* are the most frequent vascular species although *Carex rostrata* is sometimes prominent. *Vaccinium oxycoccus, Narthecium ossifragum, Rhynchospora alba, Drepanocladus fluitans* and Cladopodiella fluitans are often found and there are occasional records of *Calluna vulgaris* and *Carex magellanica*.

End-group S19

* Contains 1 quadrat: 256

M2b *Sphagnum cuspidatum/recurvum* bog pool community: *Sphagnum recurvum* sub-community.

Carex rostrata and *Eriophorum angustifolium* co-dominate over a *Sphagnum recurvum* lawn interspersed with hummocks supporting *Calluna vulgaris, Andromeda polifolia* and *Carex nigra. Vaccinium oxycoccus* is abundant and *Polytrichum commune, Menyanthes trifoliata* and *Dactylorhiza* sp. are scattered through the lawn.

End-group S4a

* Contains 1 quadrat: 118.

M2a *Sphagnum cuspidatum/recurvum* bog pool community.

This stand represents a large species-poor *Sphagnum cuspidatum* carpet over a shallow rock basin. Scattered individuals of *Juncus acutiflorus, Narthecium ossifragum, Drosera rotundifolia* and *Eriophorum angustifolium* are often found.

The comments made in relation to M1 *Sphagnum auriculatum* mire largely apply here. The nationally scarce *Andromeda polifolia* has been recorded from examples of this community.

End-group S5ab

* Contains 10 quadrats: 204, 209, 223, 234, 240, 241, 247, 248, 269, 273.

M4 *Carex rostrata-Sphagnum recurvum* mire.

The ground cover of these stands consists of a thick *Sphagnum* carpet dominated by *Sphagnum recurvum* or *S. palustre* or a mixture

of both. *Sphagnum papillosum* is usually present but less abundant. Sedges are the most common vascular element with *Carex rostrata* the usual dominant accompanied by a variety of other species including *C. echinata, C. nigra* and *C. curta.* One quadrat is dominated by *C. lasiocarpa*, and another by *Juncus effusus. Eriophorum angustifolium* and *Molinia caerulea* are also common and attain variable cover. *Vaccinium oxycoccus, Narthecium ossifragum* and *Agrostis canina* occur quite frequently. Bryophytes, apart from *Sphagna,* are few but *Aulacomnium palustre* and *Polytrichum commune* are quite frequent with *Rhytidiadelphus squarrosus* and *Calliergon stramineum* more occasional and scattered.

This is the main community type within such sites as Langdale and South-west of Birks Head Plantation. In other sites such as Eycott, it occurs with a complex of wet heath communities and M9 *Carex rostrata-Calliergon cuspidatum* mire and at Bowscale Moss it is found with the raised mire community M18 *Erica tetralix-Sphagnum papillosum.*

This community is a poor-fen type, found often within topogenous situations e.g. basins, though sometimes it is found in water tracks. It is generally found in northern and western England where base-poor geology occurs and in nutrient-poor situations and there are examples in the south-west e.g. Dartmoor and Goss Moor NNR, Cornwall.

End-group S4b

* Contains 7 quadrats: 26, 32, 154, 170, 183, 238, 249.

M6d *Carex echinata-Sphagnum recurvum/auriculatum* mire: *Juncus acutiflorus* sub-community.

Juncus acutiflorus is the dominant vascular species in all these stands, commonly accompanied by mixtures of *Viola palustris, Lotus uliginosus, Galium palustre, Hydrocotyle vulgaris* and *Potentilla erecta* with more occasional *Holcus lanatus, Agrostis canina, Luzula multiflora, Carex echinata* and *Carex nigra.* The ground layer is dominated by *Sphagna,* often in mixtures but usually with *S. recurvum* or *S. fimbriatum* (quadrats 26, 170) prominent and often very abundant. *Sphagnum palustre* usually accompanies these and can attain quite high cover. *Sphagnum girgensohnii* occurs in quadrat 178. Other bryophytes are rarely abundant and include *Rhytidiadelphus squarrosus, Calliergon stramineum* and *Aulacomnium palustre.* The liverwort *Lophocolea bidentata* is sometimes present. These stands are generally quite species-poor and can be quite rank.

End-group S5aa

* Contains 7 quadrats: 9, 27, 52, 53, 137, 143, 173.

M6 *Carex echinata-Sphagnum recurvum/auriculatum* mire.

These stands are characterised by a ground cover of luxuriant *Sphagna* in various combinations, most commonly including *S. palustre, S. recurvum* and *S. papillosum. Sphagnum auriculatum, S. fimbriatum, S. capillifolium* and *S. subnitens* occur less frequently but can attain high cover. The herbaceous layer is quite variable with sedges, particularly *Carex echinata, C. nigra, C. panicea* and *C. pulicaris* prominent, or with dominant *Juncus acutiflorus. Eriophorum angustifolium, Viola palustris, Cirsium palustre* and *Agrostis canina* occur in most stands and *Anthoxanthum odoratum* and *Festuca ovina* are sometimes present. *Vaccinium oxycoccus, Narthecium ossifragum* and *Drosera rotundifolia* are frequent and often found together. *Erica tetralix* is quite frequent but *Myrica gale* and *Calluna vulgaris* are scarce and attain only low cover. Amongst the *Sphagna, Aulacomnium palustre, Calliergon cuspidatum* and *Polytrichum commune* can often be found.

End-group S13b

* Contains 3 quadrats: 74, 150, 261.

M6 *Carex echinata-Sphagnum recurvum/auriculatum* mire.

Small sedges are prominent in the sward in these stands: *Carex demissa, C. echinata,* and *C. nigra* occur frequently, *Carex rostrata, C. curta* and *C. magellanica* are occasional but can be locally abundant. *Eriophorum angustifolium* is present throughout and *Menyanthes trifoliata* and *Ranunculus flammula* are often found. *Sphagnum subnitens* and *S. auriculatum* are found but at variable cover. *Sphagnum teres* occurs frequently and where present it is usually abundant. *Aulacomnium palustre* and *Calliergon stramineum* are often present.

End-group S15

* Contains 2 quadrats: 128, 259.

M6 *Carex echinata-Sphagnum recurvum/auriculatum* mire.

These are sedge-dominated stands although the pattern of dominance differs. *Carex rostrata* is dominant in the more species poor stand (128) but there is no clear dominant in the other (259) instead a mixture of sedges predominate including *Carex demissa, C. curta, C. magellanica* and *C. nigra. C. echinata* is present in both and *C. panicea* accompanies the *C. rostrata* in quadrat 128. Other herbs frequently found include *Triglochin palustris, Ranunculus flammula, Juncus bulbosus* and *Viola palustris.* This layer is enriched with abundant *Sphagnum recurvum,* sometimes accompanied by *S. teres* and *S. papillosum.* This element of the vegetation is otherwise impoverished due to

the swampy environment.

This community is represented in the survey by both the typical and *Juncus acutiflorus* sub-community and was widespread throughout the surveyed sites. It is found with a variety of other communities such as M18 *Erica tetralix-Sphagnum papillosum* raised mire and M21 *Narthecium ossifragum-Sphagnum papillosum* valley mire in the Subberthwaite complex, and soligenous flushes at Eycott Hill and Stable Harvey Moss. Alone it characterises sites such as Killington Reservoir and Langdale.

This community is essentially associated with base-poor flushes especially in north and north-west England and in the south-west where harder, base-poor geologies are found. Stands are characteristically small in extent.

End-group S6a

* Contains 6 quadrats: 35, 99, 191, 197, 203.

M9 *Carex rostrata-Calliergon cuspidatum* mire.

Carex rostrata tends to predominate except in two stands where *Juncus acutiflorus* and *Carex lasiocarpa* share dominance, and where *Phragmites australis* is prominent. These species are accompanied by other sedges, particularly *Carex nigra*, herbs such as *Menyanthes trifoliata, Ranunculus flammula, Cardamine pratensis, Potentilla palustris* and small dicots such as *Hydrocotyle vulgaris* which is often abundant. This suite of species is common to all stands. Other, less frequent, vascular species include *Angelica sylvestris, Eriophorum angustifolium, Equisetum fluviatile, Caltha palustris, Carex echinata, Narthecium ossifragum* and *Filipendula ulmaria*. The ground layer consists of a mixture of bryophytes. *Sphagnum contortum* and *S. teres* can be abundant as can *Calliergon cuspidatum* and *Chilosyphus sp. Campylium stellatum* is often present and there are occasional records for *Aulacomnium palustre, Drepanocladus sp., Calliergon stramineum* and *Calliergon giganteum*.

End-group S12

* Contains 43 quadrats: 19, 29, 30, 40, 44, 57, 64, 68, 70, 77, 78, 82, 83, 84, 85, 91, 92, 94, 98, 100, 104, 105, 106, 108, 115, 127, 140. 147, 155, 158, 159, 164, 182, 184, 198, 208, 220, 225, 228, 229, 231, 235, 243.

M9a *Carex rostrata-Calliergon cuspidatum* mire: *Campylium stellatum-Scorpidium scorpioides* sub-community.

These stands are characterised by a distinctive bryophyte flora. The most abundant species are *Scorpidium scorpioides, Campylium stellatum, Sphagnum contortum, Calliergon cuspidatum* and *Drepanocladus revolvens*.

The vascular elements are variable. *Carex rostrata* tends to

dominate the more species-poor, swampy areas but *Eleocharis quinqueflora* and *Eleocharis multicaulis* are frequently present and can be dominant. *Carex lasiocarpa* and *C. limosa* are occasionally prominent and small sedges such as *Carex panicea, C. nigra, C. pulicaris, C. dioica* and *C. echinata* are often found but tend to be sparsely distributed. The sub-shrubs *Myrica gale, Vaccinium oxycoccus* and *Erica tetralix* are found on hummocks in the more hummocky stands. *Narthecium ossifragum* and *Drosera rotundifolia* are also often found in these situations. *Rhynchospora alba, Utricularia spp.,* and *Potamogeton polygonifolius* commonly occur in wetter hollows. *Utricularia intermedia* was recorded at one site (77). Other vascular species found scattered throughout the community are *Potentilla palustris, Menyanthes trifoliata, Cardamine pratensis, Galium palustre* and *Pinguicula vulgaris.* The club moss *Selaginella selaginoides* is occasionally found.

This community is frequently found within the surveyed sites associated with M10 *Carex dioica-Pinguicula vulgaris* mire where it is found in the bottom of the valley or basin as well as in abandoned peat cuttings.

It is represented by one sub-community and one 'type' which are often mutually exclusive to sites (with Upper Black Beck Mire proving the exception). The most frequent sub-community recorded is M9a *Campylium stellatum-Scorpidium scorpioides* sub-community. The less frequently found type is less bryophyte-rich and has not been assigned to a sub-community. Both types are relatively species-rich with the respective range in number of species per quadrat being 15-40 and 19-29.

In general, this community has a very local occurrence in England and stands are usually small in extent. Its localised occurrence is due partly to the absence of the particular environmental conditions with which it is associated. Because of its infrequency in England it is believed that the community is rare. It is certainly more frequent in Scotland where it is found in basin mires.

The *Sphagnum* element of the community may simply be in equilibrium, but this element may indicate successional processes towards bog (ombrotrophic) conditions.

In some sites the community is found in abandoned peat cuttings, and this may suggest the type of management necessary to maintain the occurrence of this community in Cumbria.

The nationally scarce species, *Hammarbya paludosa* has been recorded in this community in the survey.

End-group S9b

* Contains 15 quadrats: 79, 110, 135, 144, 165, 174, 176, 178, 179, 188, 192, 258, 263, 264, 267

M10 *Carex dioica-Pinguicula vulgaris* mire.

Short sedges are a feature of this vegetation with no species clearly dominant. The most common sedges are *Carex hostiana* and *C. panicea*, with frequent *C. echinata, C. nigra, C. dioica, C. flacca* and *C. pulicaris*. *Juncus articulatus* is common but *Juncus acutiflorus* is only occasional. *Molinia caerulea* is frequent and can be quite abundant, but not tussocky. Other grasses that occur frequently but rarely abundantly are *Anthoxanthum odoratum* and *Briza media*. *Eriophorum angustifolium* and *Eleocharis quinqueflora* are both frequent and *Eriophorum latifolium* is occasional. *Pinguicula vulgaris, Viola palustris* and *Erica tetralix* occur frequently, with *Primula farinosa, Leontondon hispidus* and *Triglochin palustris* occasionally found.

The bryophyte flora is characteristically rich with *Campylium stellatum, Drepanocladus revolvens, Ctenidium molluscum* and *Bryum psuedotriquetrum* constant and often abundant. *Calliergon cuspidatum, Philonotis fontana, Sphagnum contortum* and *S. warnstorfii* are frequent and *S. papillosum* and *S. subnitens* can be locally abundant. The liverworts *Aneura pinguis* and *Pellia sp* and the club moss *Selaginella selaginoides* are sometimes found.

End-group S10a

M10a *Carex dioica-Pinguicula vulgaris* mire: *Carex demissa-Juncus bulbosus/kochii* sub-community

* Contains 10 quadrats: 20, 23, 36, 38, 41, 63, 65, 87, 126, 187

Sedges are an important component of the herb layer with *Carex hostiana* constant and usually most prominent frequently accompanied by *C. panicea, C. pulicaris* and *C. echinata*. *Eriophorum angustifolium* and *Molinia caerulea* are frequent and often abundant. *Erica tetralix, Narthecium ossifragum, Drosera rotundifolia* and *Vaccinium oxycoccus* occur on hummocks lending a heathy appearance to the vegetation. *Calluna vulgaris* is quite frequent but very short and of low cover. *Pinguicula vulgaris* is occasionally found. The bryophyte flora is rich with abundant *Campylium stellatum, Calliergon cuspidatum, Scorpidium scorpioides*, and *Sphagna*, particularly *S. subnitens, S. recurvum, S. contortum, S. papillosum* and *S. warnstorfii*. *Bryum pseudotriquetrum, Ctenidium molluscum, Drepanocladus revolvens* and *Dicranum sp.* are often found. The liverwort *Aneura pinguis* and the clubmoss *Selaginella selaginoides* are both frequently found.

End-group S11a

* Contains 4 quadrats: 3, 4, 31, 96

M10a *Carex dioica-Pinguicula vulgaris* mire: *Carex demissa-Juncus bulbosus/kochii* sub-community

These stands represent stony flushes with shallow peat. *Carex hostiana* is a constant species in the sward and *C. panicea* is common. The sward is generally short due to grazing and this contributes to the lack of dominance by any single species. *Eleocharis quinqueflora* is abundant in two stands and *Eleocharis multicaulis* in another. The vegetation is generally species rich and herbs such as *Pinguicula vulgaris, Narthecium ossifragum,* and *Drosera rotundifolia* occur frequently. *Nardus stricta, Molinia caerulea, C. echinata* and *Juncus squarrosus* are all found occasionally.

Bryophytes are abundant and include *Campylium stellatum, Scorpidium scorpioides, Drepanocladus revolvens, Sphagnum contortum, S. papillosum* and *Ctenidium molluscum. Aneura pinguis* and *Selaginella selaginoides* are constant and can be abundant.

End-group S8

* Contains 2 quadrats: 193, 194

M10aiii *Carex dioica-Pinguicula vulgaris* mire: *Carex demissa-Juncus bulbosus/kochii* sub-community *Schoenus nigricans* variant.

These stands are dominated by tussocky *Schoenus nigricans* accompanied by *Molinia caerulea*. There are only scattered plants on the marl-clay between the tussocks and *Campylium stellatum* is the most abundant species at this level. *Phragmites australis, Succisa pratensis* and *Dactylorhiza sp.* occur in both stands. The bryophytes *Drepanocladus revolvens* and *Ctenidium molluscum* are also constant but sparse. Other species present only in one or other of the quadrats are *Primula farinosa* (growing on the *Campylium stellatum*) in quadrat 193, and *Angelica sylvestris, Carex flacca, Centaurea nigra, Parnassia palustris, Aneura pinguis* and *Selaginella selaginoides* in quadrat 194.

This community is frequently found within the survey, and may alone characterise a site, or is found with M21 *Narthecium ossifragum-Sphagnum papillosum* valley mire or with M9 *Carex rostrata-Calliergon cuspidatum* mire. The main sub-community found is *Carex demissa-Juncus bulbosus* and very limited occurrence of the *Schoenus nigricans* variant.

Samples are characteristically species rich, ranging from 25-56 species / $2m^2$, though this declines when there is a clear dominant (*S. nigricans* variant has 12-16 species).

This is a soligenous community largely associated with base-rich flushes, though the *C. demissa-J. bulbosus* sub-community is found in less base-rich sites. Stands are characteristically small in size, generally confined to the area of flushing water. The community may or may not occur on a peat substrate, often the eroding water prevents the build-up of peat.

The community is largely an upland type associated with the limestones of northern and north west England where stands are frequent.

End-group S23

* Contains 4 quadrats: 39, 42, 61, 62

M15 *Scirpus cespitosus-Erica tetralix* wet heath.

These stands contain wet heath vegetation dominated by mixtures of sub-shrubs, the most common and abundant species being *Calluna vulgaris* and *Erica tetralix* accompanied by sparse *Vaccinium oxycoccus* and *Vaccinium myrtilis Molinia caerulea* and *Scirpus cespitosus* are also commonly found and can be locally abundant. *Nardus stricta, Festuca ovina, Juncus squarrosus, Carex panicea, C. echinata, Potentilla erecta* and *Polygala serpylifolia* are found occasionally. The bryophyte flora is generally quite patchy: *Sphagnum papillosum, S. capillifolium, S. tenellum, Leucobryum glaucum* and *Dicranum scoparium* occur frequently but are rarely abundant. The liverwort *Odontoschisma sphagni* is frequently found with *Barbilophozia floerki* occurring more occasionally and the lichen *Cladonia impexa* can become quite prominent in the ground cover.

End-group S11b

* Contains 3 quadrats: 219, 221, 222

M15a *Scirpus cespitosus-Erica tetralix* wet-heath: *Carex panicea* sub-community.

Carex panicea, C. hostiana, Molinia caerulea and *Eriophorum angustifolium* are the most prominent vascular species in these stands. *Juncus squarrosus, Narthecium ossifragum, Drosera rotundifolia, Rhyncospora alba* and *Erica tetralix* occur frequently. The bog orchid, *Hammarbya paludosa*, is found here. The bryophyte flora includes *Campylopus atrovirens, Racomitrium lanuginosum* and *Breutelia chrysochoma. Aneura pinguis* and *Selaginella selaginoides* are constant and can be abundant.

End-group S24a

* Contains 6 quadrats: 69, 71, 72, 113, 175, 257

M15a *Scirpus cespitosus-Erica tetralix* wet heath: *Carex panicea* sub-community.

Sphagna are very prominent in these stands, *S. papillosum* and *S. capillifolium* dominating the ground layer under a canopy formed by sub-shrubs. The most common vascular species are *Calluna vulgaris, Erica tetralix, Molinia caerulea, Narthecium ossifragum, Drosera rotundifolia* and *Carex echinata, Potentilla erecta, Eriophorum angustifolium, Carex panicea, Carex nigra, Carex dioica* and *Juncus acutiflorus* occur frequently with *Juncus*

bulbosus, Nardus stricta, Carex hostiana, Polygala serpylifolia, Hammarbya paludosa and *Succisa pratensis* found occasionally. The liverworts *Odontoschisma sphagni* and *Mylia anomala* occur frequently amongst the *Sphagna* and sparse individuals of *Rhytidiadelphus squarrosus, Aulacomnium palustre, Polytrichum alpestre, Calliergon stramineum, Campylopus atrovirens* and *Aneura pinguis* are found occasionally. These stands are often grazed.

End-group S24b

* Contains 9 quadrats: 21, 22, 24, 25, 37, 55, 73, 89, 242

M15b *Scirpus cespitosus-Erica tetralix* wet heath: Typical sub-community.

These standard represent heath vegetation. The sub-shrubs *Erica tetralix* and *Vaccinium oxycoccus* are common and *Erica* is often abundant although the *Vaccinium* attains only low cover. *Calluna vulgaris* and *Empetrum nigrum* are sometimes present and the former can be locally abundant. *Eriophorum angustifolium, Potentilla erecta, Carex echinata, C. panicea* and *Drosera rotundifolia* occur frequently, with more occasional records for *Eriophorum vaginatum, Agrostis canina, Polygala serpylifolia* and *Scirpus cespitosus. Sphagnum papillosum* usually dominates the ground layer commonly accompanied by *S. recurvum, Aulacomnium palustre, Hypnum jutlandicum* and *Polytrichum alpestre. Rhytidiadelphus squarrosus, Pleurozium schreberi* and *Dicranum scoparium* are occasionally found. Liverworts are sparse but *Mylia anomala, Lophozia ventricosa* and *Calypogeia sp.* occur frequently and there are occasional records for *Odontoschisma sphagni* and *Kurzia sp.*

This is a widespread community within the surveyed sites and is represented by a number of types; one not ascribed to a sub-community, and two types ascribed to the *Carex panicea* and Typical sub-communities. It is generally found with a variety of other community types e.g., M9 *C. rostrata-C. cuspidatum* mire, M10 *C. dioica-P. vulgaris* mire and M21 *N. ossifragum-S. papillosum* valley mire. Examples seen at Subberthwaite are located on the slopes leading into the basins and valleys.

The *Carex panicea* sub-community is frequently found with north-west Britain and may cover extensive areas such as Inverpolly NNR, Scotland.

Two nationally scarce species have been recorded by the M15 quadrats; *Equisetum variegatum* and *Hammarbya paludosa*.

End group S25

* Contains 7 quadrats: 60, 81, 149, 151, 245, 260, 262

M18 *Erica tetralix-Sphagnum papillosum* raised and blanket mire.

Sphagnum papillosum and *S. recurvum* predominate in this vegetation occasionally accompanied by *S. cuspidatum.* Other bryophytes are subordinate and include *Polytrichum commune, P.*

alpestre, Aulacomnium palustre, Hypnum sp. and *Dicranum sp.* Scattered individuals of *Odontoschisma sphagni* are often found. The most common vascular species are *Erica tetralix,* which is often abundant, *Eriophorum angustifolium, E. vaginatum, Narthecium ossifragum* and *Drosera rotundifolia.* Sparse *Vaccinium oxycoccus, Deschampsia flexuosa* and *Agrostis canina* occur frequently and there are occasional records for *Potentilla erecta* and *Carex echinata.*

End-group S28

* Contains 6 quadrats: 133, 254, 255, 272, 275, 280

M18 *Erica tetralix-Sphagnum papillosum* raised and blanket mire.

Eriophorum vaginatum, Calluna vulgaris and *Erica tetralix* predominate over frequent *Vaccinium oxycoccus, Andromeda polifolia* and *Narthecium ossifragum. Empertrum nigrum* and *Vaccinium myrtilis* occur occasionally. Rich mixtures of *Sphagnum recurvum, S. cuspidatum, S. tenellum, S. capillifolium, S. magellanicum* and *S. papillosum* characterise the ground layer but *Hypnum cupressiforme, Pleurozium schreberi, Aulacomnium palustre* and *Dicranum scoparium* occur frequently and can be locally abundant. Liverworts such as *Lophozia ventricosa, Odontoschisma sphagni* and *Mylia anomala* and the lichen *Cladonia impexa* can be prominent.

End-group S27

* Contains 29 quadrats: 7, 12, 13, 14, 18, 45, 56, 80, 107, 148, 152, 153, 195, 205, 206, 207, 236, 239, 250, 251, 252, 253, 277, 278, 279, 281, 282, 283, 284

M18a *Erica tetralix-Sphagnum papillosum* raised and blanket mire: *Sphagnum magellanicum-Andromeda polifolia* sub-community.

Sphagna dominate this vegetation with *Sphagnum papillosum, S. magellanicum, S. tenellum, S. capillifolium* and *S. cuspidatum* all common and often abundant in a varying pattern of predominance between stands. Other bryophytes occurring frequently include *Polytrichum alpestre, Aulacomnium palustre* and *Hypnum sp.* Liverworts can be quite prominent: *Mylia anomala, Odontoschisma sphagni* and *Kurzia sp* occur frequently with occasional *Cephalozia sp..* The most common vascular species are *Erica tetralix, Calluna vulgaris, Eriophorum vaginatum, Eriophorum angustifolium, Scirpus cespitosus, Narthecium ossifragum, Drosera rotundifolia* and *Vaccinium oxycoccus. Andromeda polifolia* and *Molinia caerulea* occur frequently and scattered individuals of *Vaccinium myrtilis, Carex pauciflora, C. magellanica, Rhynchospora alba* and *Deschampsia flexuosa* are occasionally found.

End-group S30

* Contains 7 quadrats: 95, 132, 141, 145, 146, 156, 181

M18a *Erica tetralix-Sphagnum papillosum* raised and blanket mire: *Sphagnum magellanicum-Andromeda polifolia* sub-community.

Erica tetralix, Eriophorum angustifolium, E. vaginatum, Narthecium ossifragum, Calluna vulgaris and *Myrica gale* predominate over a mixed *Sphagnum* lawn comprising *Sphagnum papillosum, S. capillifolium, S. auriculatum, S. magellanicum* and *S. tenellum*. Of the remaining vascular species *Carex panicea, Andromeda polifolia, Drosera rotundifolia* and *Betula pubescens* seedlings occur occasionally. Amongst the *Sphagna, Polytrichum alpestre* and *Hypnum cupressiforme* occur frequently.

Examples of this community have been recorded in a number of surveyed sites. Some sites are characterised by M18 and are likely to be raised or blanket mires; Midgeholme Moss, Hooker Moss, Birkbank Moss, Red Moss, Long Moss, Spadeadam Mires (probably blanket mire complex), Peat Moss, Wakebarrow Peat Moss, Egholme Peat Moss, Tarn Moss, Bowscale Moss and White Moss. It is found with examples of M21 *N. ossifragum-S. papillosum* mire at Foxbield Moss and with flushes at Tottlebank Moss, Great Ludderburn Moss and Mickle Moss.

This is the main raised mire community type, especially M18a, in Britain of the less damaged sites.

The nationally scarce *Andromeda polifolia* is constant in these samples.

End-group S22

* Contains 4 quadrats: 212, 214, 215, 218

M17 *Scirpus cespitosus-Eriophorum vaginatum* blanket mire.

Molinia caerulea is prominent in this vegetation attaining quite high cover but not becoming tussocky. *Scirpus cespitosus, Erica tetralix, Narthecium ossifragum, Drosera rotundifolia* and *Potentilla erecta* occur frequently and *Carex rostrata* is occasionally found. *Calluna vulgaris* is scarce and is usually short and stunted. *Sphagnum papillosum* is usually quite abundant and can be accompanied by *S. cuspidatum, S. capillifolium, S. imbricatum* and *S. subnitens*. *Sphagnum auriculatum* is often found in pools in the *Sphagnum* lawn with *Eriophorum angustifolium*.

End-group S26

* Contains 11 quadrats: 48, 55, 66, 67, 111, 136, 202, 270, 271, 274, 276

M17 *Scirpus cespitosus-Eriophorum vaginatum* blanket mire.

Erica tetralix, Calluna vulgaris, Vaccinium myrtilis and

Vaccinium oxycoccus form a sometimes dense canopy over tussocky *Eriophorum vaginatum* and *Molinia caerulea*. *Eriophorum angustifolium* occurs frequently and scattered individuals of *Carex nigra, C. curta, C. echinata, Potentilla erecta* and *Drosera rotundifolia* are found occasionally. The ground layer is dominated by *Sphagna* with abundant *S. papillosum, S. capillifolium* and *S. recurvum*. *Aulocomnium palustre, Polytrichum commune, P. alpestre* and *Pleurozium schreberi* occur frequently and can be quite abundant and there is occasionally some *Dicranum scoparium*. *Lophozia ventricosa* and *Odontoshisma sphagni* can be quite prominent amongst the bryophytes.

End-group S29

* Contains 6 quadrats: 15, 50, 86, 130, 142, 186

M17 *Scirpus cespitosus-Eriophorum vaginatum*

Scirpus cespitosus, Eriophorum vaginatum, Calluna vulgaris and *Erica tetralix* co-dominate in these stands. *Eriophorum angustifolium, Molinia caerulea* and *Vaccinium myrtilis* occur frequently and sparse *Vaccinium oxycoccus* is occasionally found. *Myrica gale* and *Narthecium ossifragum* can be locally prominent.

There are isolated records of *Andromeda polifolia* and *Erica cinerea*. *Sphagna* are the most common bryophytes: *S. papillosum, S. tenellum, S. capillifolium* and *S. subnitens* occur frequently and can be moderately abundant. *Leucobryum glaucum, Dicranum scoparium, Polytrichum alpestre* and *Pleurozium schreberi* are found occasionally. *Odontoschisma sphagni* occurs frequently and can be prominent as can the lichen *Cladonia impexa*.

This blanket mire community was widely sampled by the survey. It is found in conjunction with M18 *E. tetralix-S. papillosum* raised and blanket mire and M21 *N. ossifragum-S. papillosum* valley mire at Foxbield, M18 *E. tetralix-S. papillosum* raised and blanket mire at Red Moss, Blawith Fells and Peat Moss and with flushes at a large number of sites including Subberthwaite and Outley.

This community is largely confined to western Britain and can be widespread and cover large areas. Samples include two scarce species; *Andromeda polifolia* and *Sphagnum imbricatum* (Great Moss).

End-group S3a

* Contains 10 quadrats: 112, 114, 120, 157, 162, 166, 189, 199, 226, 244

M23a *Juncus effusus/acutiflorus* rush pasture: *Juncus acutiflorus* sub-community.

These stands are generally dominated or co-dominated by *Juncus acutiflorus* except two quadrats (199, 244). *Molinia caerulea* co-dominates in two quadrats (120, 157). The vegetation is

typically species-rich with frequent *Festuca ovina, Holcus lanatus, Agrostis spp., Lotus uliginosus, Rumex acetosa, Viola palustris, Succisa pratensis, Ranunculus acris, Valeriana dioica, Mentha aquatica, Lychnis flos-cuculi, Caltha palustris, Cardamine pratensis* and *Epilobium palustre, Crepis paludosa, Juncus bulbosus, Narthecium ossifragum* and *Drosera rotundifolia* occur occasionally. Sedges are prominent particularly in the stands lacking *Juncus acutiflorus* (199, 244). The most frequent are *Carex nigra, C. panicea, C. echinata* with more occasional *C. flacca, C. demissa, C. hostiana* and *C. curta. Carex elata* and *C. rostrate* are prominent in quadrats 199 and 244, respectively. Bryophytes can be quite abundant the most frequent being *Rhytidiadelphus squarrosus, Calliergon cuspidatum, C. stramineum, Plagiomnium undulatum, S. palustre* and *S. subnitens.* The liverwort *Lophocolea bidentata* is often present.

End-group S6b

* Contains 5 quadrats: 33, 47, 138, 139, 177

M23 *Juncus effusus/acutiflorus* rush pasture.

The herb layer of these stands in usually rich in sedges and rushes, which may or may not attain high cover. *Carex rostrata* and *C. nigra* are often prominent although in most stands the cover is not dense and no species is clearly dominant. *Juncus acutiflorus, J. effusus, Menyanthes trifoliata, Ranunculus flammula* and *Eriophorum angustifolium* are common and *Cardamine pratensis, Viola palustris, Epilobium palustre* and *Potamogeton polygonifolius* occur frequently. There are occasional records of *Juncus articulatus, J. conglomeratus, J. bulbosus, Triglochin palustris, Veronica beccabunga, Stellaria alsine, Ranunculus omiophyllus* and *Eleocharis quinqueflora.* The ground layer consists of a wide range of bryophytes none of which is particularly constant or prominent, the most abundant being *Sphagnum contortum* and *Calliergon cuspidatum. Philonotis fontana* occurs frequently, and *Sphagnum warnstorfii, Aulacomnium palustre, Rhizomnium pseudopunctatum* and *Bryum psudotriquetrum* are occasionally found. All these species can be quite abundant but are usually of low cover.

End-group S7b

* Contains 3 quadrats: 34, 134, 190.

M23b *Juncus effusus/acutiflorus* rush pasture: *Juncus effusus* sub-community.

Generally sedges and rushes predominate with *Juncus effusus* more prominent than the accompanying *J. acutiflorus. J. conglomeratus* and *J bulbosus* also occur in some stands, but at low cover. *Carex nigra* is constant and can co-dominate, and *C. echinata* is often present. *Cardamine pratensis* and *Galium palustre* occur throughout as scattered individuals. Of the remaining vascular associates *Cirsium palustre, Viola palustris, Equisetum fluviatile, Caltha palustris, Veronica scutellaria, Ranunculus repens, Potentilla palustris, Potentilla erecta, Valeriana officionalis* and *Stellaria alsine* occur frequently. Grasses are

generally scarce but *Anthoxanthum odoratum, Agrostis canina* and *Holcus lanatus* are occasionally found. The bryophyte flora is variable but is generally impoverished with occasional sparse cover of *Calliergon cuspidatum, Rhytidiadelphus squarrosus, Polytrichum commune, Eurhynchium praelongum* and *Brachythecium rivulare.* Quadrat 134 contains only *Calliergon cuspidatum.*

This community has been sampled from 10 surveyed sites where it may be found as the sole sampled community such as South of Rostherne Heights, or with other mire communities as at Stable Harvey Moss and Thwaite Head Fell Moss.

The examples from the survey add to the western distribution of this community. It is widespread in western areas and may form large stands. Often these are fragmented, and lack of management has reduced the floristic 'quality' of many stands.

End-group S21

* Contains 8 quadrats: 2, 16, 17, 97, 210, 211, 230, 246

M21 *Narthecium ossifragum-Sphagnum papillosum* valley mire.

These stands represent species-poor vegetation of slightly sloping ground. *Narthecium ossifragum, Drosera rotundifolia, Eriophorum angustifolium* and *Molinia caerulea* are present throughout and can be quite abundant, particularly the *Eriophorum angustifolium. Scirpus cespitosus* is quite frequent but usually sparse. *Carex panicea, C. echinata, Calluna vulgaris* and *Vaccinium oxycoccus* are occasionally found. The ground layer is dominated by a mixture of *Sphagna* including *S. auriculatum var. auriculatum* and *S. papillosum* which both occur frequently and can be abundant, locally accompanied by *S. cuspidatum, S. capillifolium, S. tenellum* and *S. subnitens.*

End-group S13a

* Contains 6 quadrats: 6, 59, 88, 109, 180, 200

M21 *Narthecium ossifragum-Sphagnum papillosum* valley mire.

These stands are generally hummock-hollow complexes with shrubby vegetation dominating the hummocks and *Sphagnum* lawns occupying the hollow areas. They can also contain pools which support species such as *Rhynchospora alba* and *Potomogeton polygonifolius. Erica tetralix* is common and can be abundant and is often accompanied by *Vaccinium oxycoccus* and sometimes *Myrica gale. Drosera rotundifolia, Narthecium ossifragum* and *Eriophorum angustifolium* occur throughout and *Molinia caerulea, Menyanthes trifoliata* and *Carex rostrata* all occur frequently and *Carex nigra, C. panicea* and *C. echinata* are found occasionally. *Carex dioica* and *C. magellanica* are recorded in one stand (200). *Sphagnum papillosum* is usually present in the *Sphagnum* lawns and can be dominant. It is often accompanied by combinations of *S. auriculatum var. auriculatum, S. subnitens, S palustre* and *S. recurvum.*

End-group S20

* Contains 12 quadrats: 5, 10, 28, 43, 116, 167, 168, 169, 185, 201, 227, 237

M21b *Narthecium ossifragum-Sphagnum papillosum* valley mire: *Vaccinium oxycoccus-Sphagnum recurvum* sub-community.

The most common vascular species are *Erica tetralix, Molinia caerulea, Narthecium ossifragum, Drosera rotundifolia, Vaccinium oxycoccus* and *Eriophorum angustifolium* which can all be abundant. *Carex rostrata, Myrica gale, Menyanthes trifoliata, Carex panicea, C. echinata* and *C. nigra* are often found and there are occasional records of *Agrostis canina, Rhynchospora alba* and *Potentilla erecta*. The bryophyte flora is dominated by *Sphagna*, particularly *Sphagnum papillosum, S. capillifolium* and *Polytrichum alpestre. Sphagnum recurvum, S. subnitens* and *S. magellanicum* are sometimes found and can be quite abundant. There are occasional records for *Calliergon stramineum* and the liverworts *Mylia anomala* and *Odontoschisma sphagni*. Some of these stands are grazed.

This has been recorded from a number of the surveyed sites. There is a large range in species richness of examples, 14-30 species / $2m^2$ and the least species-rich quadrats are largely dominated by *Sphagnum auriculatum*. It is associated with M10 *C. dioica-P. vulgaris* flushes and M9 *C. rostrata-C. cuspidatum* mire.

See section 5.2 for discussion of the national context of these stands.

End-group S2a

* Contains 2 quadrats: 76, 163

M25 *Molinia caerulea-Potentilla erecta* mire.

This consists of stands co-dominated by *Juncus acutiflorus* and *Molinia caerulea*. The vegetation is species rich and includes weakly base-tolerant sedges such as *Carex hostiana, C. pulicaris* and *C. panicea,* with frequent small dicots most noticeably *Potentilla erecta, Parnassia palustris, Prunella vulgaris* and *Succisa pratensis*. Bryophytes are well represented particularly in quadrat 76 which contains *Sphagnum palustre, S. recurvum, S. contortum* and *S. subnitens* with *Campylium stellatum, Calliergon stramineum* and *Polytrichum commune. Rhytidiadelphus squarrosus, Eurhynchium praelongum, Aulacomnium palustre* and *Calliergon cuspidatum* occur in both. *Erica tetralix* is present but not abundant in both stands. *Calluna vulgaris* is absent.

End-group S2b

* Contains 6 quadrats: 93, 101, 102, 103, 129

M25c *Molinia caerulea - Potentilla erecta* mire: *Angelica sylvestris* sub-community.

These stands are characterised by dominant or co-dominant *Juncus acutiflorus, Molinia caerulea* and *Myrica gale*. Where present *M.*

gale usually forms a dense canopy and *M. caerulea* and *J. acutiflorus* are reduced. The vegetation is generally very rich in herbs, particularly dicots including *Angelica sylvestris, Prunella vulgaris, Succisa pratensis, Hydrocotyle vulgaris, Mentha aquatica, Viola palustris, Galium palustre, Valeriana dioica* and *Potentilla erecta. Erica tetralix* is present but not abundant. The ground cover consists of bryophytes such as *Rhytidiadelphus squarrosus, Calliergon cuspidatum, Eurhynchium praelongum* and *Rhizomnium pseudopunctatum.* Some wetter stands contain some *Sphagna: S. subnitens* is most frequent but rarely attains high cover particularly where *M. caerulea* is prominent. Liverworts are often present, but again rarely abundant. The most frequent are *Lophocolea bidentata* and *Pellia sp..*

End-group S10b

* Contains 1 quadrat: 75

M25 *Molinia caerulea-Potentilla erecta* mire.

Myrica gale forms an open canopy over abundant *Molinia caerulea. Carex panicea* is quite abundant, but other vascular species such as *Hydrocotyle vulgaris, Galium palustre, Anagallis tenella, Narthecium ossifragum,* and *Juncus acutiflorus* are sparse.

There is a rich complement of bryophytes the most prominent being *Campylium stellatum, Sphagnum contortum, Bryum pseudotriquetrum* and *Calliergon stramineum.* Liverworts include *Pellia sp.* and *Lophocolea bidentata.*

This community is the main recorded community at Blawith Common (sites both next to the tarn and footpath and Upper Beck Track side mire). It occurs with flush communities at Crock Moss, Winster and Burnsbeck Moss. It is found with heath at Bethacar Moss. The range of species recorded per quadrat is 21-46. The higher species number may reflect a flushing by base-rich water as more base-tolerant sedges and bryophytes are found in these quadrats.

This is a widespread community in western England, where large tracts of the species-poor type can be found.

End-group S3c

* Contains 3 quadrats: 265, 266, 268

M26 *Molinia caerulea-Crepis paludosa* mire.

These stands are dominated by *Juncus acutiflorus* and contain a suite of very distinctive herbs comprising *Serratula tinctoria, Trollius europaeus, Crepis paludosa, Sanguisorba officionalis, Filipendula ulmaria, Geum rivale, Betonica officionalis* and *Lathyrus pratensis.* Other common vascular species include *Molinia caerulea, Holcus lanatus, Festuca spp., Lotus uliginosus, Valeriana dioica, Ranunculus repens, R. acris, Equisetum arvense, Carex panicea* and *Carex hostiana.* Bryophytes are frequent but rarely abundant, particularly in the drier stands, and include *Calliergon cuspidatum, Climacium dendroides, Rhytidiadelphus squarrosus* and *Plagiomnium sp.* The liverwort *Lophocolea*

bidentata can also be present.

This community was sampled from a limited number of sites; High Whinhowe, High Lickbarrow and School Knott where it is associated with flush communities.

This community has a very local distribution in Britain. Other notable sites where it has been recorded are Malham Tarn Moss, Yorks and Whitlaw Mosses NNR, Scotland.

End-group S14

* Contains 7 quadrats: 1, 11, 90. 117, 121, 171, 172

M29 *Hypericum elodes-Potomogeton polygonifolius* soakway.

These stands all represent soakway vegetation. The most frequent species throughout are *Potomogeton poligonifolius, Ranunculus flammula, Juncus bulbosus, Eleocharis multicaulis, Carex demissa, C. panicea, Juncus acutiflorus* and *Eriophorum angustifolium.* Of these the first four are most prominent. *Hypericum elodes* is frequent and often abundant. *Mentha aquatica, C. echinata* and *Potentilla palustris* occur frequently, and *C. nigra, C. rostrata, Juncus articulatus* and *J. conglomeratus* are found more occasionally. Bryophytes are mainly found along the edges of the stands and include *Sphagnum auriculatum, Drepanocladus revolvens, Campylium stellatum, S. contortum, Polytrichum commune* and *Calliergon cuspidatum.*

Further discussion on the national context of the community is included in section 5.2.

End-group S1

* Contains 1 quadrat: 233

M32b *Philonotis fontana - Saxifraga stellaris* spring: *Montia fontana-Chrysosplenium oppositifolium* sub-community.

This stand represents steeply sloping mountain flush vegetation characterised by abundant *Bryum pseudotriquetrum* with *Drepanocladus vernicosus, Brachythecium rivulare* and well grazed grasses and sedges, notably *Holcus lanatus, Festuca spp., Carex echinata* and *Carex demissa. Philonotis fontana* and *Chrysosplenium oppositifolium* are characteristic of this community.

This community has been recorded by only one quadrat at Birkhouse Moor. It is usually confined to high elevations where it is associated with springs and rills. Stands are usually small, though they are widespread in these upland areas.

End-group S9a

* Contains 1 quadrat: 232

M37 *Cratoneuron commutatum-Festuca rubra* spring.

This stand is situated on sloping gravel at the edge of a valley mire. *Cratoneuron commutatum* is dominant and other species are sparse. Vascular species include *Festuca rubra, Mentha aquatica, Hydrocotyle vulgaris, Galium palustre, Cardamine pratensis, Veronica beccabunga, Carex demissa* and *Juncus articulatus. Bryum pseudotriquetrum* is present as are the liverworts *Aneura pinguis* and *Pellia sp.*

This is a very localised community within the British uplands, at elevations often above 650m, and therefore its occurrence at Birkhouse Moor (at 525m) is likely to be significant.

End-group S7a

* Contains 7 quadrats: 119, 122, 123, 124, 125, 160, 161

S27a *Carex rostrata Potentilla palustris* fen: *Carex rostrata-Equisetum fluviatile* sub-community

Juncus acutiflorus is constant in the herb layer in these stands and is sometimes dominant. *Carex rostrata* tends to dominate in stands where the *Juncus acutiflorus* is less vigorous. *Mentha aquatica, Menyanthes trifoliata, Galium palustre* and *Hydrocotyle vulgaris* form a constant suite, present throughout. *J. effusus, Epilobium palustre, Cirsium palustre* and *Ranunculus flammula* occur frequently and there are occasional records of *Eriophorum angustifolium, Phragmites australis, Lychnis flos-cuculi, Utricularia sp.* and *Myosotis secunda.* Where *J. acutiflorus* is dominant, sedges are much reduced, and may be absent but generally *Carex rostrata, C. nigra, C. curta* and *C. echinata* are quite frequent but not abundant. The rush dominated stands often support more grasses than those with prominent sedges, including *Molinia caerulea, Agrostis canina* and *Holcus lanatus.* Bryophyte cover is generally very low the most abundant species being *Calliergon cuspidatum,* sometimes with *Calliergon stramineum* and very occasionally *Sphagnum contortum. Calliergon cordifolium* and *C. giganteum* occur in quadrat 160 and *Sphagnum squarrosum* is abundant in quadrat 122.

This community has been quite widely sampled by the survey. It is associated with flushes at sites such as Brundrigg Moss, High Lickbarrow-School Knott and in the Subberthwaite complex.

S27 *C. rostrata-C. cuspidatum* fen is found within basin fens and flood plains in north-west England. In general, it is a widespread community and in Scotland may occupy fairly extensive areas e.g. the Insh Marshes of the Spey valley.