



THE CLASSIFICATION OF SLOVAK GRASSLAND COMMUNITIES TO THE HIGHER SYNTAXONOMICAL UNITS

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ABSTRACT – Formal classification of Slovak grassland communities belonging to the classes *Molinio-Arrhenatheretea*, *Festuco-Brometea*, and partly the *Nardetea strictae* (*Nardo strictae-Agrotion tenuis*, *Violion caninae*) was performed in 2007. The classification of several associations within the alliances appeared to be ambiguous. As the membership of these associations to alliances is not unified in the national syntaxonomical reviews of European countries, an attempt was done for its re-evaluation based on the results of numerical classification and ordination.

KEY WORDS – grassland communities, phytosociology, classification, alliances, diagnostic species

INTRODUCTION

In 2007, we performed numerous analyses of grassland communities of Slovakia resulting in the revised classification of the classes *Molinio-Arrhenatheretea*, *Festuco-Brometea* and *Nardetea strictae* (Janišová et al. 2007). Formal definitions were created for individual associations. They were subsequently applied in the expert system for identification of Slovak grassland communities. As the data source served the Central Phytosociological Database of Slovakia by May 1, 2007 containing 32 729 relevés, in which 11 552 relevés belonged to the grassland communities of the studied classes.

The application of expert system based on the formal definitions gives us explicit information, to which association the analysed relevé belongs. If the relevé is not matched by any definition, the similarity indices may be calculated to the group

of relevés matched by the available definitions. Although the classification of relevés to associations is rather explicit, the classification of relevés to alliances remains rather vague. It is not uncommon, that relevés with transitional position not matched by any definition show the highest similarity indices to associations belonging to different alliances or even to different classes. Similar discrepancies appear, when we attempt to group associations into alliances. The hierarchical syntaxonomical system of higher syntaxa is frequently based on other than floristic criteria including e.g. species dominance, significant ecological factors (moisture, type of bedrock), habitat development and management. The effect of these factors is not always reflected in pure differences of species composition between grassland community types. Thus the grouping of associations to higher syntaxonomical units re-

mains a somewhat artificial procedure.

In this paper we try to evaluate the homogeneity of the distinguished higher syntaxonomical units for the grassland communities. Using the numerical classification, ordination and evaluation of Ellenberg indicator values we consider the position of associations along main environmental gradients. We bring an overview of diagnostic species generated for classes and alliances by fidelity analysis in program JUICE. We stress the transitional position of certain associations and discuss their alternative classification into the higher syntaxa.

MATERIAL AND METHODS

The data set was based on the Slovak Central Phytosociological Database (<http://ibot.sav.sk/cdf/index.html>, Hegedúšová 2007, Janišová & Škodová 2007). The data have been stratified geographically so that in the defined geographical grid with cells sized 1.25 minutes of longitude and 0.75 minutes of latitude (approximately 1.5×1.4 km) only one relevé of a given syntaxon has been selected. The stratified data set contained 16640 phytosociological relevés belonging to all syntaxa recorded in Slovakia. For our analyses, only relevés classified to the grassland associations based on formal definitions (cf. Janišová et al. 2007) were chosen (3890 relevés, 1536 species). The synoptic table based on species percentage frequency in clusters containing relevés of individual associations was used for the numerical classification and ordination in order to find the relationships between associations. For detrended correspondence analysis (DCA) the program package CANOCO 4.5 (ter Braak & Šmilauer 2002) was used. For ecological interpretation of the ordination axes, average Ellenberg indicator values (Ellenberg et al. 1992) for clusters representing individual associations were plotted onto DCA ordination diagram as supplementary environmental data. Classification was performed by cluster analysis (SYNTAX 2000, Podani 2001), using relative Euclidean distance as a distance measure and the Beta-flexible method with $\beta = -$

0.25.

The synoptic table of classes and alliances (Table 1) focuses on differences in the floristic composition between the alliances and classes. Fidelity was calculated in program JUICE (Tichý 2002). The table shows the percentage frequency of individual taxa ranked by the fidelity to the listed alliances and classes. For alliances, only species with $\phi_i > 0.15$ (Fisher's test at $P < 0.001$) and frequency 20 % or more were shown. Values in columns are highlighted dark grey if $\phi_i \geq 0.30$, and pale grey if $0.15 \leq \phi_i < 0.30$. For classes, only diagnostic species with frequency over 30 % and fidelity to the given class determined by $\phi_i > 0.35$ are shown. Plant taxa nomenclature has been unified according to Marhold & Hindák (1998), the names of syntaxa has been unified according to Janišová et al. (2007), while not included syntaxa are cited with the authors.

RESULTS AND DISCUSSION

Within the classes *Molinio-Arrhenatheretea*, *Festuco-Brometea* and partly *Nardetea strictae* (*Nardo strictae-Agrostion tenuis*, *Violion caninae*) 76 grassland associations were formally defined belonging to 17 alliances. In some associations their membership to alliance was problematic.

One of the most heterogeneous alliances was the *Cynosurion cristati*. Based on the floristic similarity the association *Anthoxantho odorati-Agrostietum tenuis* (No. 25) was classified within the alliance *Arrhenatherion elatioris* (Fig. 1).

The association *Lolietum perennis* (No. 27) is obviously related to communities of the alliance *Potentillion anserinae* (Fig. 1). The *Alopecureto pratensis-Festucetum pseudovinae* (No. 29) shows some similarity to associations ranked to the alliance *Deschampsion cespitosae* (Fig. 1). Fig. 2 demonstrates that in comparison with communities of the alliance *Deschampsion cespitosae* the association *Alopecureto pratensis-Festucetum pseudovinae* occurs on drier habitats with lower nutrient content. The grazing is an important factor affecting the species composition of these

grasslands, but the influence of other ecology factors (e.g. moisture, nutrients, bedrock) is still very strong. That is why the alliance *Cynosurion cristati*, which includes grazed grasslands, is very widely defined.

The alliance *Deschampsion cespitosae* includes lowland alluvial meadows which are strongly affected by spring floods. In Slovakia flooded meadows were traditionally classified to several alliances (*Alopecurion pratensis*, *Cnidion venosi*, *Deschampsion cespitosae*, *Veronico longifoliae-Lysimachion vulgaris*). As the original descriptions of these alliances partly overlap, we accepted the results of the latest research (Botta-Dukát et al. 2005, Hájková et al. 2007) and we present only the alliance *Deschampsion cespitosae*. The alliance *Potentillion anserinae* includes mostly trampled and flooded grasslands. In Slovakia the association *Epilobio palustri-Juncetum effusii* was originally ranged to the order *Agrostetalia stoloniferae* Oberd. in Oberd. et al. 1967 and to the alliance *Juncion effusi* Westhoff et van Leeuwen ex Hejný et al. 1979 as its only association (Mucina & Maglocký 1985). In our review we classify this community within the alliance *Potentillion anserinae*, but the results of our analyses show strong relationships to the communities of the *Calthion palustris* (Fig. 1, 2). Mucina et al. (1993) and Oberdorfer (1983) ranked the association *Epilobio palustri-Juncetum effusii* to the alliance *Calthion palustris*. Chytrý (2007) did not recognize this association. In the review of Hungarian plant communities (Borhidi 1996) the sub-alliance *Juncenion effusi* Westhoff et van Leeuwen ex Hejný et al. 1979 is listed belonging to the alliance *Potentillion anserinae*. However, the association *Epilobio palustri-Juncetum effusii* is not mentioned here.

In Slovakia the distinguishing of the alliance *Plantagini-Prunellion* is still rather questionable because its communities (No. 64, 65) are floristically and ecologically very close to the grasslands of the alliance *Potentillion anserinae* (No. 56-63, Fig. 1

and 2). The results of numerical classification and ordination show that there are not significant ecological and floristic differences between these alliances. In the future, it is necessary to reevaluate the validity and content of alliances *Plantagini-Prunellion* and *Potentillion anserinae* based on the revision of the phytosociological material from the whole Europe.

The association *Carici albae-Brometum monocladii* (No. 20) which was described from Slovakia (Ujházy et al. 2007), has a transitional position between the alliances *Cirsio-Brachypodium pinnati* and *Bromion erecti* (Fig. 1 and 2). It contains species typical for both alliances. Environmental conditions of this community are more similar to the grasslands of *Cirsio-Brachypodium pinnati*. As Slovakia is located in the centre of Europe with rather continental conditions, in the associations of *Bromion erecti* the typical sub-atlantic species (*Gentianella germanica* agg., *Gentianopsis ciliata*, *Potentilla neummanniana*) are rare or absent. On the other hand, some sub-continental species typical for alliance *Cirsio-Brachypodium pinnati* as *Cirsium pannonicum*, *Polygala major*, *Scorzonera purpurea* can occur in the *Bromion erecti* communities. The differences between these two alliances in the Slovakia are not so clear as in the western or the eastern Europe.

The alliances *Arrhenatherion elatioris* and *Cynosurion cristati* are very weakly differentiated by diagnostic species in comparison to the other alliances (Tab. 1). Communities of these two alliances occur on sites with intermediate values of environmental gradients (moisture, nutrients, soil reaction, temperature, etc., Fig. 1) and that is why mostly the common species with wide ecological niches are present. As no specialist plant species are bounded to these grasslands, the alliances *Arrhenatherion elatioris* and *Cynosurion cristati* are mostly negatively differentiated from communities of other alliances.

CONCLUSION

In this paper we focused on some problems in ranking of grassland communities to the alliances in Slovakia. We attempted to follow the reviews of grassland plant communities of the surrounding countries, but in some cases we proposed new solution. For a good communication between the phytosociologists in Europe it is necessary to unify the conception and content of each alliance. The best way in our opinion is to perform larger-scale analyses of phytosociological material (accessible in national databases) covering at least the central Europe as was for example made in Botta-Dukát et al. (2005) or Illyés et al. (2007).

The list of formally defined syntaxa of grassland communities

Festuco-Brometea Br.-Bl. et Tüxen ex Soó 1947

Festucion valesiacae Klika 1931

1. *Festuco valesiacae-Stipetum capillatae* Sillinger 1930
2. *Alyso heterophylli-Festucetum valesiacae* (Dostál 1933) Kliment in Kliment et al. 2000
3. *Festuco rupicolae-Caricetum humilis* Klika 1939 nom. mut. propos.
4. *Potentillo arenariae-Festucetum pseudovinae* Soó 1955
5. *Inulo oculi christi-Festucetum pseudodalmaticae* Májovský et Jurko 1956
6. *Potentillo arenariae-Festucetum pseudodalmaticae* Májovský 1955 nom. invers. propos.

Bromo pannonici-Festucion pallentis Zólyomi 1966

7. *Poo badensis-Festucetum pallentis* Klika 1931 corr. Zólyomi 1966 nom. invers. os.
8. *Festuco pallentis-Caricetum humilis* Sillinger 1930 corr. Guterman et Mucina 1993
9. *Orphantho luteae-Caricetum humilis* Kliment et Bernátová 2000
10. *Campanulo divergentiformis-Festucetum pallentis* Zólyomi (1936) 1966
11. *Poo badensis-Caricetum humilis* (Dostál 1933) Soó ex Micháľková in Janišová et al. 2007
12. *Seslerietum heuflerianae* (Soó 1927) Zólyomi 1936

Diantho lumnitzeri-Seslerion (Soó 1971) Chytrý et Mucina 1993 in Mucina et al.

13. *Saxifraga aizoi-Seslerietum calcariae* Klika 1941 nom. invers. propos.
14. *Minuartio setaceae-Seslerietum calcariae* Klika 1931 nom. invers. propos. et nom. propos.

15. *Festuco pallentis-Seslerietum calcariae* Futák 1947 corr. Janišová 2007 nom. invers. os.

Bromion erecti Koch 1926

16. *Brachypodio pinnati-Molinietum arundinaceae* Klika 1939
17. *Onobrychido viciifoliae-Brometum erecti* T. Müller 1966
- Cirsio-Brachypodium pinnati* Hadač et Klika ex Klika 1951**
18. *Scabioso ochroleucae-Brachypodietum pinnati* Klika 1933
19. *Polygalo majoris-Brachypodietum pinnati* Wagner 1941
20. *Carici albae-Brometum monocladi* Ujházy et al. 2007
- Koelerio-Phleion phleoidis* Korneck 1974**
21. *Astero linosyris-Festucetum rupicolae* Maglocký in Chytrý et al. 1997

Molinio-Arrhenatheretea Tüxen 1937

Arrhenatherion elatioris Luquet 1926

22. *Pastinaco sativae-Arrhenatheretum elatioris* Passarge 1964
23. *Ranunculo bulbosi-Arrhenatheretum elatioris* Ellmauer in Mucina et al. 1993
24. *Poo-Trisetetum flavescens* Knapp ex Oberdorfer 1957
25. *Anthoxantho odorati-Agrostietum tenuis* Sillinger 1933
26. *Lilio bulbiferi-Arrhenatheretum elatioris* Ru-i ková 2002

Cynosurion cristati Tüxen 1947 nom. cons. propos.

27. *Lolietum perennis* Gams 1927
28. *Lolio perennis-Cynosuretum cristati* Tüxen 1947
29. *Alopecureto pratensis-Festucetum pseudovinae* Juhász-Nagy 1957

Polygono bistortae-Trisetion flavescens Br.-Bl. et Tüxen ex Marshall 1947 nom. rs. propos.

30. *Campanulo glomeratae-Geranietum sylvatici* Ružičková 2002
31. *Geranio sylvatici-Trisetetum flavescens* Knapp ex Oberdorfer 1957
32. *Crepido mollis-Agrostietum capillaris* Ružičková 2004
33. *Geranio-Alchemilletum crinitae* Hadač et al. 1969

Poion alpinae Oberdorfer 1950

34. *Alchemilletum pastoralis* Szafer et al. 1927

Calthion palustris Tüxen 1937

35. *Cirsietum rivularis* Nowiński 1927
36. *Angelico sylvestris-Cirsietum palustris* Darimont ex Balátová-Tuláčeková 1973
37. *Chaerophyllo hirsuti-Calthetum palustris* Balátová-Tuláčeková 1985
38. *Scirpetum sylvatici* Ralski 1931
39. *Angelico sylvestris-Cirsietum oleracei* Tüxen 1937 nom. invers. propos.
40. *Scirpo sylvatici-Cirsietum cani* Balátová-Tuláčeková

1973

41. *Caricetum cespitosae* Steffen 1931

42. *Crepido paludosae-Juncetum acutiflori* Oberdorfer 1957

43. *Filipendulo-Caricetum buekii* Háberová ex Balátová-Tuláčková in Rybníček et al.

44. *Filipendulo ulmariae-Geranietum palustris* Koch 1926

45. *Chaerophyllo hirsuti-Filipenduletum ulmariae* Niemann et al. 1973

46. *Lysimachio vulgaris-Filipenduletum ulmariae* Balátová-Tuláčková 1978

47. *Filipendulo ulmariae-Menthetum longifoliae* Zlinská 1989

48. *Junco inflexi-Menthetum longifoliae* Lohmeyer ex Oberdorfer 1957

***Molinion caeruleae* Koch 1926**

49. *Molinietum caeruleae* Koch 1926

***Deschampsion cespitosae* Horvati 1930**

50. *Lathyro palustris-Gratioletum officinalis* Balátová-Tuláčková 1966

51. *Cnidio dubii-Deschampsietum cespitosae* Passarge 1960

52. *Serratulo tinctoriae-Plantaginetum altissimae* Ilijanić 1968

53. *Poo trivialis-Alopecuretum pratensis* Regel 1925

54. *Holcetum lanati* Issler 1934

55. *Agrostio stoloniferae-Deschampsietum cespitosae* Ujvárosi 1947

***Potentillion anserinae* Tüxen 1947**

56. *Rumici crispi-Agrostietum stoloniferae* Moor 1958

57. *Festuco arundinaceae-Althaeetum officinalis* Neuhauslová-Novotná 1968

58. *Ranunculo repentis-Alopecuretum geniculati* Tüxen 1937

59. *Rorippo austriacae-Agropyretum repentis* Tüxen 1950

60. *Junco compressi-Trifolietum repentis* Egger 1933

61. *Potentilletum anserinae* Rapaics 1927

62. *Loto tenuis-Potentilletum anserinae* Vicherek 1973

63. *Epilobio palustri-Juncetum effusii* Oberdorfer 1957

66. *Potentilletum reptantis* Eliáš 1978

***Plantagini-Prunellion* Eliáš 1980**

64. *Juncetum tenuis* Brun-Hool 1962 nom. mut. propos.

65. *Prunello vulgaris-Ranunculetum repentis* Winterhoff 1963

***Nardetea strictae* Rivas Goday et Borja Carbonell 1961**

***Nardo strictae-Agrostion tenuis* Sillinger 1933**

67. *Homogyno alpinae-Nardetum strictae* Mráz 1956

68. *Hieracio lachenalii-Nardetum strictae* Kornaš ex Pawłowski et al. 1960

69. *Hypochaerido uniflora-Nardetum strictae* (Pałczyński 1962) Winnicki 1999

70. *Antennario dioicae-Nardetum strictae* (Svoboda 1939)

Ujházy et Kliment in Janišová et al. 2007

71. *Anemone narcissiflorae-Deschampsietum cespitosae* (Klika 1926) Kliment et Ujházy in Janišová et al. 2007

72. *Helictotricho planiculmes-Nardetum strictae* Grebenščíkov et al. ex Šomšák 1971

73. *Phleo alpini-Nardetum strictae* Klika 1934 nom. invers. propos.

74. *Violo sudeticae-Agrostietum capillaris* Ujházy in Janišová et al. 2007

***Violion caninae* Schwickerath 1944**

75. *Campanulo rotundifoliae-Dianthetum deltoidis* Balátová-Tulá

ková 1980

76. *Festuco capillatae-Nardetum strictae* Klika et Šmarda 1944

ACKNOWLEDGEMENTS

This contribution was supported by grant APVT-51-015804.

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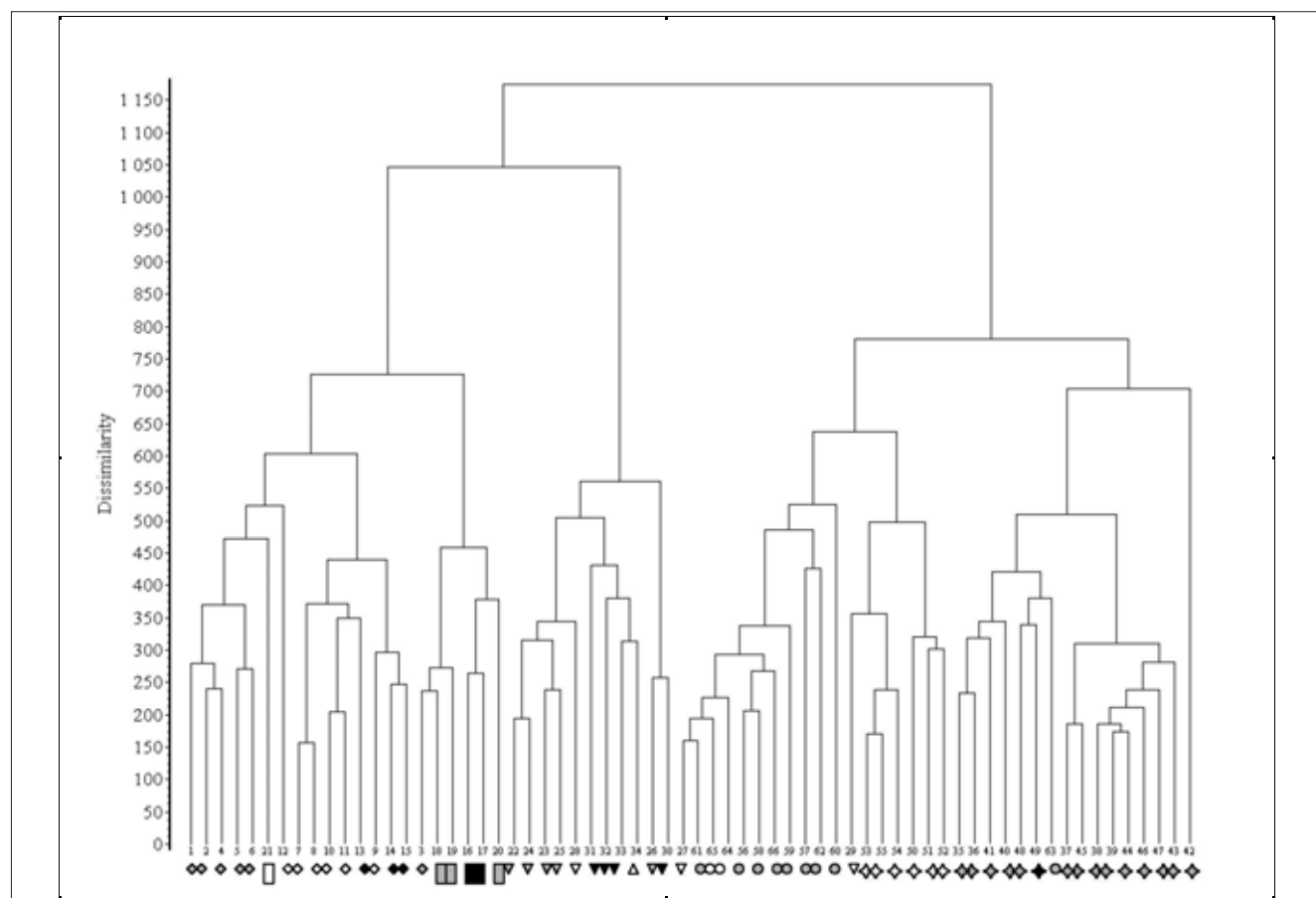


Fig. 1 Numerical classification of associations belonging to the *Molinio-Arrhenatheretea* and *Festuco-Brometea*. The associations are numbered as in the list above.

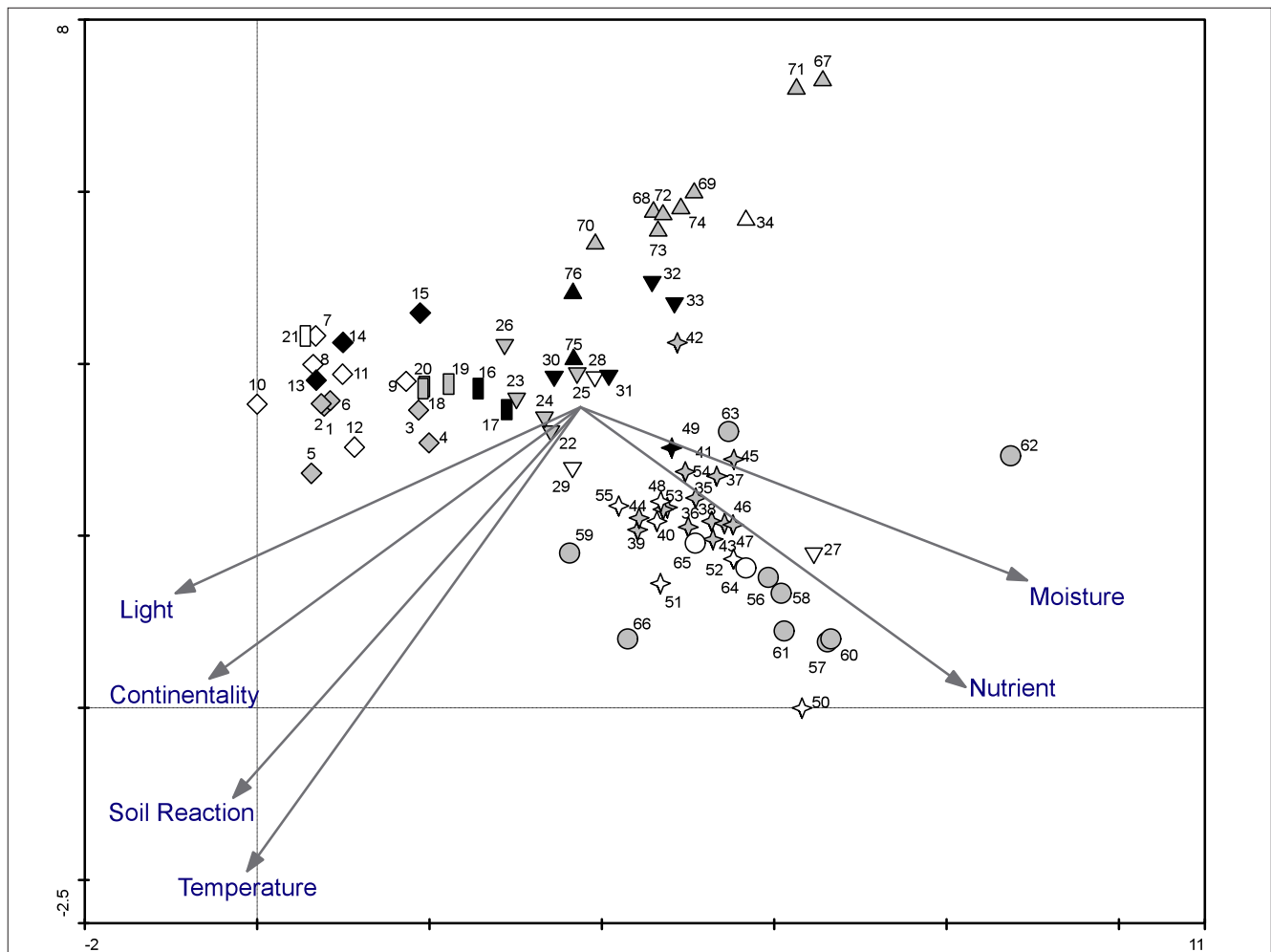


Fig. 2 Detrended Correspondence Analysis of 76 grassland associations (based on percentage frequency of species in synoptic table) showing their ecological relationship to six superimposed environmental factors. The associations are numbered as in the list above.

Legend:

- | | |
|--|--|
| ◊ <i>Festucion valesiacae</i> | △ <i>Poion alpinae</i> |
| ◊ <i>Bromo pannonici-Festucion pallentis</i> | ✦ <i>Calthion palustris</i> |
| ◆ <i>Diantho lumnitzeri-Seslerion</i> | ✦ <i>Molinion caeruleae</i> |
| ■ <i>Bromion erecti</i> | ✦ <i>Deschampsion cespitosae</i> |
| ▤ <i>Cirsio-Brachypodion pinnati</i> | ○ <i>Potentillion anserinae</i> |
| □ <i>Koelerio-Phleion phleoidis</i> | ○ <i>Plantagini-Prunellion</i> |
| ▽ <i>Arrhenatherion elatioris</i> | △ <i>Nardo strictae-Agrostion tenuis</i> |
| ▽ <i>Cynosurion cristati</i> | ▲ <i>Violion caninae</i> |
| ▼ <i>Polygono bistortae-Trisetion flavescens</i> | |

Tab. 1 - Synoptic table of classes and alliances of grassland communities in Slovakia based on species percentage frequencies ranked by their decreasing fidelity. The alliances are numbered as follows:

Festuco-Brometea	9. Polygono bistortae-Trisetion flavescens																
1. Festucion valesiacae	10. Poion alpinae																
2. Bromo pannonici-Festucion pallentis	11. Calthion palustris																
3. Diantho lumnitzeri-Seslerion	12. Molinion caeruleae																
4. Bromion erecti	13. Deschampsion cespitosae																
5. Cirsio-Brachypodion pinnati	14. Potentillion anserinae																
6. Koelerio-Phleion phleoidis	15. Plantagini-Prunellion																
Molinio-Arrhenatherete	Nardetea strictae																
7. Arrhenatherion elatioris	16. Nardo strictae-Agrostion tenuis																
8. Cynosurion cristati	17. Violion caninae																
Alliance	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
No. of relevés	232	165	67	293	108	6	909	202	62	13	837	122	278	186	26	252	132
Festuco-Brometea																	
Teucrium chamaedrys	59	68	48	25	81	100	3	1	.	.	.	.	.	.	.	.	.
Asperula cynanchica	58	64	52	20	76	33	2	1	.	.	.	.	.	.	.	.	1
Anthericum ramosum	11	54	70	20	34	.	1	.	.	.	1	1	.	.	.	.	.
Potentilla arenaria agg.	54	64	21	2	11	33	1	1	.	.	.	.	.	.	.	.	1
Medicago falcata	38	18	1	46	50	.	7	3	3	.	.	.	.	.	.	.	.
Sanguisorba minor	53	62	52	46	80	50	18	4	10	.	1	.	.	.	.	1	9
Tithymalus cyparissias	71	73	63	48	75	100	18	18	2	.	1	.	.	1	8	1	21
Salvia pratensis	31	27	9	88	45	17	30	3	10	.	1	2	.	.	.	.	2
Festucion valesiacae																	
Festuca valesiaca	59	18	3	1	9	.	1	1	.	.	.	.	1	.	.	.	4
Thymus pannonicus	53	16	1	4	15	17	1	1	.	.	.	.	.	.	.	.	.
Eryngium campestre	56	16	.	4	6	33	1	2	.	.	.	.	.	1	.	.	.
Achillea nobilis	29	7	.	.	3	17	1	1	.	.	.	.	.	.	.	.	.
Convolvulus arvensis	22	2	.	15	11	17	11	8	.	.	1	1	5	5	.	.	.
Bromo pannonici-Festucion pallentis																	
Linum tenuifolium	7	47	15	1	5	.	.	.	.	.	.	.	.	.	.	.	.
Campanula sibirica	6	47	4	1	7	17	.	.	.	.	.	.	.	.	.	.	.
Fumana procumbens	2	32	9	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Alyssum montanum	10	41	15	1	1	.	.	.	.	.	.	.	.	.	.	.	.
Melica ciliata	16	45	3	1	3	17	.	.	.	.	.	.	.	.	.	.	.
Poa badensis	9	29	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Stipa pulcherrima	4	21	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Silene otites agg.	9	24	6	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Dorycnium pentaphyllum agg.	12	22	10	9	14	17	1	.	.	.	.	.	.	.	.	.	1
Diantho lumnitzeri-Seslerion																	
Sesleria albicans	1	12	100	1	2	.	.	3	.	.	.	.	.	.	.	12	.
Biscutella laevigata	2	8	37	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Acinos alpinus	1	10	37	3	8	.	1	2	.	.	.	.	.	.	.	.	.
Campanula rotundifolia agg.	5	18	46	3	6	.	2	1	3	15	.	.	.	.	.	4	8
Dianthus praecox	1	11	25	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Polygala amara agg.	.	2	28	5	5	.	1	1	2	.	1	11	.	.	.	.	.
Phyteuma orbiculare	.	4	28	5	5	.	4	.	11	23	1	.	.	.	.	2	.
Bromion erecti																	
Bromus erectus	8	4	3	77	13	.	6	1	.	.	1	9	.	.	.	1	.
Cirsium pannonicum	.	2	1	51	7	.	1	.	.	.	1	.	.	.	.	.	2
Primula veris	3	6	9	67	16	.	17	1	2	.	2	.	.	.	.	.	4
Carex montana	1	2	3	56	19	.	3	.	2	.	.	.	.	.	.	.	9
Lathyrus latifolius	1	.	.	27	.	.	1	.	.	.	.	.	.	.	.	.	.
Filipendula vulgaris	9	1	3	60	6	.	21	3	2	.	3	20	5	1	.	.	5
Trommsdorffia maculata	.	3	1	38	4	.	2	.	3	.	.	1	.	.	.	2	11
Trifolium montanum	6	5	4	74	26	.	34	2	26	.	2	16	2	.	.	4	30
Onobrychis viciifolia agg.	1	1	.	25	8	.	3	.	.	.	.	.	.	.	.	.	.
Chamaecytisus supinus	1	1	.	18	3	.	1	.	.	.	.	.	.	.	.	.	.
Knaulia kitaibelii	3	5	7	39	17	.	9	1	11	.	1	6	.	.	.	2	3
Ranunculus polyanthemus	3	.	.	51	11	.	26	3	27	.	1	7	3	1	.	8	27
Polygala comosa	3	2	.	23	7	.	6	.	.	.	1	.	1	.	.	1	1
Koeleria pyramidata agg.	1	.	1	23	6	17	1	.	.	.	.	2	.	.	.	.	1
Campanula persicifolia	1	1	1	22	4	.	6	1	3	23	.	.	.	.	.	1	6
Trifolium medium agg.	2	1	.	20	6	.	11	1	13	.	3	5	1	.	.	2	14
Pyrethrum corymbosum	1	3	3	20	12	17	1	.	16	.	.	.	.	.	.	5	2
Thesium linophyllum	12	13	15	22	16	17	3	.	2	.	.	2	.	.	.	.	1
Arabis hirsuta agg.	13	18	9	25	18	17	7	1	6	15	.	.	.	.	.	.	.
Cirsio-Brachypodion pinnati																	
Salvia verticillata	16	7	1	17	53	.	3	1	3	.	.	.	.	.	.	.	1
Carlina vulgaris	12	12	9	5	53	17	2	7	2	.	.	.	.	.	.	1	10
Securigera varia	30	8	6	26	60	50	11	4	6	.	1	.	.	.	.	.	1
Carex michelii	4	2	.	10	20	.	1	.	2	.	.	.	.	.	.	.	.
Daucus carota	13	1	.	26	35	17	30	28	.	.	2	20	16	10	8	1	5
Koelerio-Phleion phleoidis																	

Cirsio-Brachypodium pinnati

Salvia verticillata	16	7	1	17	53	.	3	1	3	.	.	.	.	.	.	.	1
Carlina vulgaris	12	12	9	5	53	17	2	7	2	.	.	.	.	.	.	1	10
Securigera varia	30	8	6	26	60	50	11	4	6	.	1	.	.	.	.	.	1
Carex michelii	4	2	.	10	20	.	1	.	2	.	.	.	.	.	.	.	.
Daucus carota	13	1	.	26	35	17	30	28	.	.	2	20	16	10	8	1	5

Koelerio-Phleion phleoidis

Vicia lathyroides	1	.	.	1	.	83	1	1	.	.	.	.	.	.	.	.	.
Phleum phleoides	14	6	1	5	12	100	1	1	.	.	.	.	.	.	.	.	.
Linaria genistifolia	10	13	1	.	.	83	.	.	.	.	.	.	.	.	.	.	.
Verbascum chaixii ssp. austriacum	15	4	1	.	5	83	1	.	.	.	.	.	.	.	.	.	.
Jasione montana	.	.	.	.	.	50	1	.	.	.	.	.	.	.	.	.	.
Acetosella multifida agg.	.	.	.	.	.	50	1	.	.	.	.	.	.	.	.	.	.

Alliance

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Pulsatilla pratensis	.	1	.	.	.	50	.	.	.	.	.	.	.	.	.	.	.
Orphantha lutea	1	2	.	1	2	50	.	.	.	.	.	.	.	.	.	.	.
Steris viscaria	3	.	.	2	1	67	15	1	3	.	1	.	.	.	.	3	10
Petrorhagia prolifera	12	1	.	.	.	50	.	.	.	.	.	.	.	.	.	.	.
Crinitina linosyris	8	4	.	1	3	50	.	.	.	.	.	.	.	.	.	.	.
Trifolium campestre	20	1	1	6	6	67	4	3	.	1	2	5	.	.	.	1	1
Odontites vulgaris agg.	1	.	.	1	3	50	1	7	.	.	1	2	1	7	.	.	.
Trifolium alpestre	8	5	3	22	10	67	5	2	.	1	.	.	.	.	.	2	5
Saxifraga bulbifera	.	.	.	.	.	33	1	.	.	.	.	.	.	.	.	.	.
Rosa gallica	3	.	.	2	.	33	1	.	.	.	.	.	.	.	.	.	.
Arabidopsis thaliana	4	1	.	1	.	33	.	.	.	.	.	1	.	.	.	.	.
Ornithogalum kochii	3	.	.	1	.	33	1	.	.	.	2	2	.	.	.	.	.
Hieracium umbellatum	.	.	3	1	3	33	1	1	.	.	.	2	1	.	.	1	.
Potentilla recta	7	1	1	1	1	33	1	.	.	.	.	.	.	.	.	.	.

Molinio-Arrhenatheretea

Ranunculus repens	1	.	.	1	.	.	12	33	8	46	45	30	75	53	81	.	1
Lychnis flos-cuculi	.	.	.	1	.	.	19	2	27	.	57	26	67	2	.	.	4
Alopecurus pratensis	1	.	.	4	.	.	25	13	34	8	29	16	90	8	4	.	.
Myosotis scorpioides agg.	8	2	.	.	.	33	14	2	24	.	71	19	17	16	.	2	1

Arrhenatherion elatioris

Rhinanthus minor	3	.	.	33	11	.	54	14	27	8	14	11	19	2	4	3	27
Galium mollugo agg.	5	12	4	25	31	17	49	11	27	8	14	7	15	1	.	2	11
Ranunculus bulbosus	6	6	1	19	12	.	23	17	2	.	1	1	1	.	4	1	11

Cynosurion cristati

Cynosurus cristatus	.	.	.	16	6	.	27	54	10	.	10	3	4	1	15	2	17
Cichorium intybus	5	.	.	.	8	17	1	19	.	.	.	.	1	6	.	.	.
Cirsium arvense	2	.	.	4	1	.	11	23	6	.	7	3	10	9	8	1	8
Prunella vulgaris	2	1	1	42	27	.	39	59	29	54	24	52	21	20	58	10	50

Polygono bistortae-Trisetion flavescentis

Geranium sylvaticum	.	.	.	1	.	.	2	.	82	8	1	.	1	.	4	5	1
Phyteuma spicatum	.	.	1	5	.	.	5	.	69	8	1	.	1	.	.	7	11
Crepis mollis	.	.	.	1	1	.	4	.	65	15	8	4	.	.	.	5	.
Heracleum sphondylium	.	.	.	16	3	.	22	1	60	8	4	.	2	2	8	2	2
Pimpinella major	1	1	1	4	2	.	8	1	56	31	3	6	1	1	.	12	2
Cardaminopsis halleri	.	.	.	.	1	.	7	.	42	23	1	.	1	.	.	2	8
Crocus discolor	.	.	.	.	.	.	2	1	29	8	1	.	.	.	.	1	2
Vicia sepium	1	.	.	6	3	.	14	1	37	.	8	1	3	2	.	1	4
Cirsium erisithales	.	.	.	1	1	.	2	.	18	.	.	.	.	.	.	.	.
Knautia maxima	.	.	.	1	1	.	1	.	19	.	1	.	.	.	.	4	1

Poion alpinae

Poa alpina	.	.	1	.	.	.	1	1	3	100	.	.	.	.	.	21	1
Thymus pulcherrimus	1	1	.	.	.	.	.	.	31	.	.	.	.	.	.	2	.
Ligusticum mutellina	.	.	.	.	.	.	1	.	5	38	.	.	.	.	.	13	.
Oreogeuum montanum	.	.	.	.	.	.	.	.	31	.	.	.	.	.	.	6	1
Aconitum variegatum	.	.	.	.	.	.	.	.	23	1	.	.	.	.	.	.	.

Calthion palustris

Scirpus sylvaticus	.	.	.	.	.	.	1	.	.	.	58	1	5	3	.	.	.
Caltha palustris	.	.	.	.	.	.	1	1	2	.	63	11	15	2	.	.	.
Equisetum palustre	.	.	.	.	.	.	1	1	.	.	57	9	9	1	.	.	.
Cirsium rivulare	.	.	.	.	.	.	4	1	.	.	56	19	3	.	.	.	.
Crepis paludosa	.	.	.	.	.	.	1	.	.	.	32	1	.	.	.	.	.
Filipendula ulmaria	.	.	.	1	.	.	2	.	3	.	54	20	13	1	.	1	.
Valeriana simplicifolia	.	.	.	.	.	.	.	.	.	.	26	.	.	.	.	.	.
Cirsium oleraceum	.	.	.	1	.	.	1	.	.	.	20	.	3	.	.	.	.
Mentha longifolia	.	.	.	1	1	.	1	1	.	.	30	.	2	13	4	.	.
Angelica sylvestris	.	.	.	.	.	.	3	.	5	.	30	9	1	3	.	2	.
Dactylorhiza majalis	.	.	.	1	.	.	1	.	.	8	27	7	1	.	.	.	1
Lathyrus pratensis	1	.	.	17	1	.	27	4	44	.	65	39	30	.	.	1	8
Juncus conglomeratus	.	.	.	.	.	.	2	1	.	.	26	14	3	1	.	1	1
Juncus effusus	.	.	.	1	.	.	1	1	.	.	25	8	4	5	4	1	.
Cirsium palustre	.	.	.	1	.	.	1	1	.	.	21	9	1	1	.	1	2
Geum rivale	.	.	.	.	.	.	3	1	15	31	33	6	1	.	.	.	.
Plagiomnium affine agg.	.	.	.	1	2	.	3	2	3	15	26	10	1	1	.	2	5

<i>Molinia caerulea</i> agg.	.	.	.	3	.	.	1	.	.	.	8	93	1	.	.	1	.
<i>Succisa pratensis</i>	.	.	1	1	1	.	3	.	.	12	80	1	1	.	4	3	.
<i>Galium boreale</i>	.	.	.	4	.	.	1	1	.	.	5	76	16	.	.	1	1
<i>Serratula tinctoria</i>	.	.	.	6	1	17	1	.	.	.	4	75	21	.	.	.	1
<i>Valeriana dioica</i>	.	.	.	.	.	.	.	.	.	.	8	35	1	.	.	.	.
<i>Carex hostiana</i>	.	.	.	.	.	.	.	.	.	.	5	28	.	.	.	.	.
<i>Tetragonolobus maritimus</i>	.	.	.	2	.	.	.	.	.	.	1	25	.	1	.	.	.
<i>Carex flacca</i>	.	1	3	19	17	.	3	8	.	.	10	38	1	.	.	.	2
<i>Holcus lanatus</i>	.	.	.	12	.	.	17	5	.	.	19	25	19	.	.	1	3
Deschampsion cespitosae																	
<i>Carex vulpina</i> agg.	.	.	.	1	.	.	1	1	.	.	3	.	42	2	.	.	.
<i>Gratiola officinalis</i>	.	.	.	.	.	.	.	.	.	.	1	2	36	3	.	.	.
<i>Symphytum officinale</i>	.	.	.	1	.	.	1	.	.	.	6	7	36	3	.	.	.
<i>Lythrum virgatum</i>	.	.	.	.	.	.	.	1	.	.	.	2	25	2	.	.	.
<i>Pseudolysimachion longifolium</i>	.	.	.	.	.	.	.	.	.	.	1	2	22	.	.	1	.
<i>Eleocharis palustris</i> agg.	.	.	.	.	.	.	.	.	.	.	5	6	28	2	.	.	.
<i>Trifolium hybridum</i>	1	.	.	1	1	.	5	4	.	.	8	5	37	3	8	.	.
<i>Carex praecox</i>	2	1	.	.	1	33	1	3	.	.	1	.	38	.	.	.	.
<i>Potentilla reptans</i>	5	.	.	5	5	.	3	25	.	.	9	13	54	23	19	.	.
<i>Poa palustris</i>	.	.	.	.	.	.	1	1	.	.	9	2	27	6	.	.	.
<i>Inula britannica</i>	4	.	.	.	.	.	.	1	.	.	1	7	24	9	.	.	.
<i>Glechoma hederacea</i> agg.	1	2	.	7	1	.	11	6	.	.	11	3	21	16	8	.	2
Alliance	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Potentillion anserinae																	
<i>Rorippa sylvestris</i>	.	.	.	1	.	.	.	1	.	.	.	.	13	37	8	.	.
<i>Capsella bursa-pastoris</i>	.	.	.	.	.	.	1	9	.	.	.	.	1	21	8	.	1
Plantagini-Prunellion																	
<i>Juncus tenuis</i>	.	.	.	.	.	.	.	2	.	.	1	.	2	2	65	.	.
<i>Juncus bufonius</i> agg.	.	.	.	.	.	.	.	1	.	.	.	.	.	5	23	.	.
Nardetea myrtillus																	
<i>Vaccinium myrtillus</i>	1	.	.	.	.	.	1	1	5	15	.	.	.	.	.	87	17
<i>Avenella flexuosa</i>	.	.	.	1	.	.	1	.	2	8	.	.	.	.	.	80	20
<i>Nardus stricta</i>	.	.	.	6	.	.	16	12	13	15	8	16	.	.	.	90	100
<i>Vaccinium vitis-idaea</i>	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	52	8
<i>Luzula luzuloides</i>	1	.	.	5	2	.	7	.	35	8	1	1	.	.	.	74	48
<i>Potentilla aurea</i>	.	.	.	.	.	.	5	2	39	46	.	.	.	.	.	65	19
<i>Veronica officinalis</i>	1	.	.	9	2	.	15	7	6	.	1	2	1	1	15	46	83
<i>Carex pilulifera</i>	.	.	.	1	.	.	4	1	.	8	1	.	.	.	.	22	52
<i>Hypericum maculatum</i>	1	.	.	18	5	.	38	7	73	62	12	11	1	1	.	78	72
<i>Campanula serrat</i>	.	.	.	2	.	.	5	.	39	38	1	.	.	.	.	48	4
Nardo strictae-Agrostion tenuis																	
<i>Homogyne alpina</i>	.	.	.	.	.	.	.	.	6	8	.	.	.	.	.	52	1
<i>Avenula paniculmis</i>	.	.	.	.	.	.	.	.	2	.	.	1	.	.	.	31	.
<i>Solidago virgaurea</i>	1	.	.	2	3	.	3	.	2	.	1	.	.	.	.	40	6
<i>Hieracium lachenalii</i>	.	.	.	1	2	.	1	.	3	15	1	.	.	.	.	40	6
<i>Soldanella carpatica</i>	.	.	.	.	.	.	.	1	5	15	1	.	.	.	.	34	1
<i>Pleurozium schreberi</i>	2	1	1	2	.	17	1	2	2	.	1	.	.	.	.	37	12
<i>Allium victorialis</i>	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	17	.
<i>Calluna vulgaris</i>	.	.	.	.	1	.	1	.	.	.	1	5	.	.	.	26	11
<i>Trommsdorffia uniflora</i>	.	.	.	.	.	.	1	.	11	8	.	.	.	.	.	28	5
<i>Omalotheca sylvatica</i>	.	.	.	.	.	.	1	2	2	.	.	.	.	.	8	23	9
<i>Viola lutea</i>	.	.	.	.	.	.	1	.	5	15	.	.	.	.	.	23	.
<i>Ranunculus nemorosus</i>	1	.	3	4	2	.	1	3	8	8	1	.	.	.	.	26	3
<i>Crepis conyzifolia</i>	.	.	.	.	.	.	1	.	13	8	.	1	.	.	.	23	7
Violion caninae																	
<i>Viola canina</i>	1	.	.	25	5	.	27	9	11	15	3	11	.	1	.	22	58
<i>Danthonia decumbens</i>	1	.	.	13	11	.	11	12	.	.	1	15	.	.	.	12	83
<i>Polygala vulgaris</i>	2	1	1	14	14	.	30	11	18	8	1	11	1	.	.	15	67
<i>Pilosella officinarum</i>	32	23	15	9	28	50	14	21	2	8	1	.	1	.	.	27	76
<i>Carex pallescens</i>	1	.	.	17	.	.	29	10	19	.	22	20	3	.	.	21	59
<i>Dianthus deltoides</i>	3	.	.	1	3	.	12	3	3	.	.	.	1	.	.	2	24
<i>Silene nutans</i>	1	1	.	11	6	.	14	.	2	.	1	.	1	.	.	5	20
<i>Fragaria vesca</i>	3	2	3	17	17	.	13	7	13	8	1	.	1	.	19	6	27
species diagnostic for more than one alliance																	
<i>Koeleria macrantha</i>	56	32	1	5	20	50	1	1	.	.	.	.	.	.	.	.	2
<i>Arenaria serpyllifolia</i> agg.	35	22	3	3	4	.	1	1	.	.	.	.	.	1	4	.	.
<i>Echium vulgare</i>	34	21	3	2	17	17	2	1	.	.	.	.	.	1	.	.	.
<i>Bothriochloa ischaemum</i>	33	26	1	2	7	33	.	.	.	.	.	.	.	.	.	.	.
<i>Festuca pseudovina</i>	21	.	.	2	4	.	1	13	.	.	.	3	4	.	.	.	.
<i>Sedum acre</i>	21	16	4	1	5	.	1	.	.	.	.	1	.	.	.	.	1
<i>Sedum sexangulare</i>	36	21	4	6	6	83	3	1	.	.	.	.	.	.	.	.	2
<i>Trifolium arvense</i>	22	1	.	1	1	50	1	.	.	.	.	.	.	.	.	.	.
<i>Acosta rhenana</i>	36	21	3	2	7	100	1	.	.	.	.	.	.	.	.	.	.
<i>Hypericum perforatum</i>	47	19	3	33	43	67	22	3	2	.	1	2	1	2	4	.	23
<i>Potentilla argentea</i> agg.	30	.	.	1	2	83	4	10	.	.	.	.	1	2	.	.	1
<i>Stachys recta</i>	23	30	10	3	8	17	.	.	.	.	.	.	.	.	.	.	.
<i>Festuca pallens</i> s.lat.	7	71	40	.	1	.	.	.	.	.	.	.	.	.	.	.	.
<i>Carex humilis</i>	16	82	72	1	5	.	1	.	.	.	.	.	.	.	.	.	.

<i>Teucrium montanum</i>	10	69	70	2	12	.	.	.	.	.	.	.	.	.	.	.	.
<i>Thymus praecox</i>	19	64	42	1	5	17	1	1	.	.	.	.	.	.	.	.	.
<i>Jovibarba globifera</i>	10	50	33	.	4	.	.	.	.	.	.	.	.	.	.	.	.
<i>Globularia punctata</i>	5	41	34	4	6	.	.	.	.	.	.	.	.	.	.	.	.
<i>Leontodon incanus</i>	2	43	63	1	1	.	.	.	.	.	.	.	.	.	.	.	.
<i>Scorzonera austriaca</i>	1	25	16	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Rhodax canus</i>	2	27	19	.	2	.	.	.	.	.	.	.	.	.	.	.	.
<i>Allium flavum</i>	19	35	10	.	1	50	.	.	.	.	.	.	.	.	.	.	.
<i>Sedum album</i>	6	19	16	.	2	.	1	.	.	.	.	.	.	.	.	.	.
<i>Vincetoxicum hirundinaria</i>	7	30	49	2	13	.	1	.	.	.	.	1	1	.	.	.	.
<i>Asplenium ruta-muraria</i>	3	17	22	1	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Pilosella bauhinii</i>	20	42	25	15	43	33	13	2	3	.	1	.	1	.	.	1	12
<i>Hippocrepis comosa</i>	6	24	27	8	18	.	1	.	.	.	.	.	.	.	.	.	.
<i>Genista pilosa</i>	3	25	66	8	10	.	1	.	.	.	.	.	.	.	.	.	5
<i>Allium senescens</i>	10	13	24	.	1	.	.	.	.	.	.	.	.	.	.	.	.
<i>Bupleurum falcatum</i>	5	17	33	5	21	.	1	.	2	.	.	.	.	.	.	.	.
<i>Galium pumilum agg.</i>	2	7	25	6	5	.	2	.	11	46	.	.	.	.	.	7	.
<i>Campanula glomerata agg.</i>	1	3	1	52	17	.	10	.	35	.	1	.	.	.	.	5	.
<i>Brachypodium pinnatum</i>	6	15	9	66	98	.	11	1	2	.	1	.	.	.	.	.	14
<i>Arrhenatherum elatius</i>	19	2	.	71	27	50	55	4	23	.	5	3	4	2	.	1	2
<i>Viola hirta</i>	11	15	15	57	57	.	19	3	6	.	1	1	1	.	.	1	6
<i>Betonica officinalis</i>	3	1	3	42	15	17	12	1	3	.	7	34	1	.	.	1	9
<i>Polygala major</i>	3	4	1	20	13	.	1	.	.	.	2	.	.	.	.	.	1
<i>Colymbada scabiosa</i>	16	16	10	37	42	.	10	1	3	.	1	.	.	.	.	.	.
<i>Colchicum autumnale</i>	1	.	1	44	8	17	33	1	24	8	19	25	13	.	.	.	2
<i>Galium verum agg.</i>	33	5	1	61	54	50	30	17	3	.	11	43	16	1	.	3	35
<i>Jacea pratensis</i>	7	.	.	48	8	17	33	22	2	.	9	53	26	3	.	1	14
<i>Linum catharticum</i>	11	8	28	47	67	.	21	15	16	.	6	24	1	1	.	.	11
<i>Ononis spinosa</i>	6	1	1	23	27	.	1	14	.	.	4	1	1	.	.	.	.
<i>Ajuga reptans</i>	1	.	.	28	2	.	14	2	15	.	18	2	3	.	.	10	23
<i>Carex caryophyllea</i>	21	12	3	37	31	17	19	10	2	.	.	2	.	.	.	4	28
<i>Dianthus carthusianorum agg.</i>	21	13	13	42	36	33	30	2	24	.	1	.	1	.	.	11	9
Alliance	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>Knautia arvensis agg.</i>	8	.	.	33	21	.	37	9	23	.	1	2	1	.	.	1	24
<i>Carex tomentosa</i>	1	2	.	22	22	.	4	1	2	.	8	17	8	.	.	.	2
<i>Agrimonia eupatoria</i>	21	2	.	25	56	.	12	12	.	.	1	1	1	.	.	.	5
<i>Thymus pulegioides</i>	11	2	3	39	64	.	42	25	32	15	1	5	.	.	.	23	86
<i>Medicago lupulina</i>	25	6	4	19	37	17	18	41	3	.	3	2	7	12	27	.	2
<i>Festuca rubra agg.</i>	5	.	.	46	17	17	78	46	61	31	45	52	10	1	15	48	80
<i>Festuca pratensis</i>	7	.	.	47	26	.	67	42	35	15	45	48	52	10	15	2	27
<i>Anthoxanthum odoratum agg.</i>	3	.	.	60	16	33	79	29	56	77	40	35	16	1	.	53	86
<i>Carum carvi</i>	1	1	.	15	2	.	40	29	39	15	12	1	9	8	19	2	8
<i>Jacea phrygia agg.</i>	.	1	1	13	8	.	33	4	40	.	9	15	4	1	.	4	12
<i>Cerastium holosteoides</i>	8	.	.	32	7	17	55	53	34	8	23	19	27	9	38	19	36
<i>Phleum pratense</i>	1	.	.	4	3	.	29	19	34	.	12	12	4	2	12	1	10
<i>Anthriscus sylvestris</i>	.	.	.	3	.	.	16	1	23	.	2	.	4	8	4	.	.
<i>Poa pratensis agg.</i>	33	6	3	46	33	83	64	48	23	23	33	43	72	8	19	6	23
<i>Bellis perennis</i>	1	.	.	2	.	.	8	57	8	23	2	2	1	14	38	.	1
<i>Leontodon autumnalis</i>	3	.	1	2	10	.	13	60	.	15	1	12	28	13	42	5	19
<i>Euphrasia rostkoviana agg.</i>	1	.	3	6	17	.	12	27	5	15	1	9	.	2	8	5	30
<i>Primula elatior</i>	.	.	.	3	2	.	14	1	65	62	14	7	1	.	.	10	8
<i>Senecio subalpinus</i>	.	.	.	.	.	.	1	.	32	46	2	.	.	.	.	8	.
<i>Poa chaixii</i>	.	.	.	1	.	.	2	.	27	8	1	.	.	.	.	35	10
<i>Trollius altissimus</i>	.	.	.	2	.	.	2	.	19	8	11	21	1	.	.	3	2
<i>Gentiana asclepiadea</i>	.	.	.	1	.	.	1	1	16	.	1	.	.	.	.	35	2
<i>Chaerophyllum hirsutum</i>	.	.	.	.	.	.	1	.	18	31	17	.	.	.	4	1	.
<i>Geranium phaeum</i>	.	.	.	.	.	.	1	1	11	23	1	.	.	.	.	.	.
<i>Myosotis sylvatica agg.</i>	.	1	.	1	.	.	3	.	15	31	1	.	.	1	4	.	1
<i>Phleum rhaeticum</i>	.	.	.	.	.	.	1	1	.	69	.	.	.	.	.	35	3
<i>Thymus alpestris</i>	.	.	.	.	.	.	.	.	5	23	.	.	.	.	.	19	1
<i>Carex nigra</i>	.	.	.	.	.	.	1	2	.	.	43	30	3	1	.	3	1
<i>Poa trivialis</i>	1	.	.	1	.	.	12	4	21	.	52	1	29	4	19	.	.
<i>Galium uliginosum</i>	.	.	.	.	.	.	1	.	.	.	32	28	3	1	.	.	1
<i>Carex panicea</i>	.	1	.	12	6	.	6	1	.	.	48	73	6	2	.	1	15
<i>Galium palustre agg.</i>	.	.	.	.	.	.	1	.	.	.	30	10	34	6	.	.	.
<i>Lysimachia vulgaris</i>	.	.	.	1	.	17	1	.	.	.	32	44	14	1	.	1	1
<i>Calliergonella cuspidata</i>	.	.	.	1	1	.	1	1	.	.	21	24	2	2	.	1	.
<i>Carex flava agg.</i>	1	.	.	.	3	.	1	1	.	.	21	21	.	4	8	.	.
<i>Lysimachia nummularia</i>	.	.	.	9	.	.	10	5	.	.	37	17	68	5	8	.	.
<i>Cardamine pratensis agg.</i>	.	.	.	1	.	.	9	1	16	.	31	11	57	3	.	8	3
<i>Carex hirta</i>	1	.	.	5	.	.	8	17	.	.	33	16	37	17	19	.	2
<i>Ranunculus auricomus agg.</i>	.	.	.	12	.	.	16	1	19	.	28	20	40	1	.	2	3
<i>Carex davalliana</i>	.	.	.	.	.	.	.	.	.	.	13	29	.	.	.	.	.
<i>Mentha aquatica</i>	.	.	.	1	.	.	1	.	.	.	15	26	8	5	.	.	.
<i>Sanguisorba officinalis</i>	1	.	.	9	2	.	8	1	2	.	17	61	34	.	.	1	.
<i>Cirsium canum</i>	.	.	.	2	.	.	2	3	.	.	11	40	33	.	.	.	.
<i>Carex acuta</i>	.	.	.	.	.	.	.	.	.	.	9	17	29	.	.	.	.
<i>Rumex crispus</i>	1	.	.	.	.	.	5	9	2	.	4	.	37	38	.	.	.

<i>Poa annua</i>	.	.	.	1	.	.	1	23	.	15	1	.	.	59	77	1	.
<i>Matricaria discoidea</i>	.	.	.	.	.	.	.	6	.	.	.	.	.	30	19	.	.
<i>Polygonum aviculare agg.</i>	.	.	.	.	.	.	1	13	.	.	.	.	2	32	27	.	.
<i>Antennaria dioica</i>	.	1	9	2	2	.	2	2	.	15	1	.	.	.	.	24	22
<i>Acinos arvensis</i>	40	24	4	3	21	.	1	1	8	.	.	.	.	.	.	.	3
<i>Fragaria viridis</i>	39	6	1	31	38	33	8	5	.	.	.	1	2	.	.	.	1
<i>Scabiosa ochroleuca</i>	42	35	24	10	48	33	1	1	.	.	.	.	.	.	.	.	.
<i>Seseli osseum</i>	31	57	52	1	6	67	.	.	.	.	.	.	.	.	.	.	.
<i>Inula ensifolia</i>	9	32	43	4	24	.	.	.	.	.	.	.	.	.	.	.	.
<i>Anthyllis vulneraria</i>	19	39	39	35	56	.	24	1	23	.	1	1	.	.	.	2	8
<i>Potentilla heptaphylla</i>	18	28	42	44	53	.	15	7	15	.	.	.	1	1	.	.	11
<i>Tragopogon orientalis</i>	3	1	.	63	19	.	46	2	37	.	1	2	3	.	.	3	2
<i>Dactylis glomerata</i>	7	1	.	82	31	.	82	34	74	.	18	43	17	5	.	3	11
<i>Trisetum flavescens</i>	1	.	.	60	8	.	71	14	66	8	6	2	6	.	.	2	6
<i>Plantago media</i>	23	13	28	73	71	.	57	49	23	38	1	8	3	3	12	6	34
<i>Carlina acaulis</i>	5	10	19	58	51	.	27	6	39	31	.	1	.	.	.	38	55
<i>Vicia cracca</i>	3	1	.	51	20	.	50	14	55	.	22	30	34	2	.	3	14
<i>Crepis biennis</i>	1	.	.	23	.	.	28	5	29	.	1	3	4	.	.	.	.
<i>Campanula patula</i>	1	.	.	40	4	.	75	14	65	8	9	7	8	1	.	10	70
<i>Trifolium pratense</i>	9	.	4	46	36	.	90	73	73	54	21	23	38	6	19	19	58
<i>Acetosa pratensis</i>	7	1	1	51	4	.	78	20	58	15	62	32	54	8	.	22	71
<i>Veronica chamaedrys agg.</i>	7	1	4	49	19	17	76	27	68	54	25	7	15	11	15	26	60
<i>Taraxacum sect. Ruderalia</i>	8	7	1	43	18	.	74	67	47	38	10	10	66	47	46	4	12
<i>Trifolium repens</i>	13	.	.	27	13	.	77	91	55	77	16	10	33	45	96	17	59
<i>Stellaria graminea</i>	2	.	.	15	3	.	48	13	50	15	19	19	32	1	.	39	54
<i>Lolium perenne</i>	7	.	.	.	5	.	3	77	.	.	1	.	1	38	54	.	.
<i>Plantago major</i>	.	.	.	2	1	.	4	47	.	8	3	2	13	69	100	.	1
<i>Potentilla anserina</i>	1	.	.	.	.	.	1	33	.	.	7	20	14	66	50	.	.
<i>Acetosa arifolia</i>	.	.	.	1	1	.	1	.	32	38	1	.	.	.	.	21	2
<i>Lythrum salicaria</i>	.	.	.	.	.	.	1	.	.	.	22	28	23	10	.	.	.
<i>Potentilla erecta</i>	1	.	4	29	9	17	28	18	23	8	40	65	2	2	.	50	92
<i>Agrostis stolonifera s.lat.</i>	1	.	.	1	2	.	2	8	6	.	24	33	49	59	69	4	2
<i>Festuca rupicola</i>	46	14	12	60	68	100	21	5	.	.	1	1	3	.	.	1	23
<i>Helianthemum nummularium agg.</i>	21	63	55	42	42	50	9	1	3	.	1	2	.	.	4	2	17
<i>Leontodon hispidus</i>	10	3	18	72	54	17	78	26	60	23	6	41	7	.	4	18	61
<i>Pimpinella saxifraga agg.</i>	35	22	36	71	68	33	58	33	15	8	1	17	1	.	4	22	77
<i>Briza media</i>	9	5	22	72	67	.	60	20	40	31	36	58	4	.	.	28	85
<i>Leucanthemum vulgare agg.</i>	4	4	21	69	42	.	85	32	68	23	14	41	30	3	.	37	66
<i>Plantago lanceolata</i>	41	11	9	76	45	17	86	76	35	31	16	40	25	35	27	10	70
<i>Lotus corniculatus agg.</i>	32	13	22	75	71	33	76	62	52	23	13	28	39	9	12	29	73
<i>Luzula campestris s.lat.</i>	4	.	1	52	11	.	59	17	45	23	25	26	7	.	.	52	86
<i>Cruciata glabra</i>	2	2	3	55	25	.	64	11	87	38	32	16	3	.	.	45	76
Alliance	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>Achillea millefolium agg.</i>	49	16	6	83	80	33	86	88	65	77	22	49	40	28	19	56	86
<i>Alchemilla vulgaris s.lat.</i>	.	1	4	40	4	.	64	33	92	100	37	13	9	4	23	46	61
<i>Deschampsia cespitosa</i>	.	.	1	.	.	.	11	8	42	85	50	74	21	6	12	50	17
<i>Ranunculus acris</i>	1	.	3	30	6	.	73	48	73	46	68	86	66	6	15	13	55
<i>Agrostis capillaris</i>	9	.	.	42	22	17	65	53	77	85	18	18	2	1	15	73	89

