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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 releves 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 synataxonomical 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, Hegedüšová 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 $phi > 0.15$ (Fisher's test at $P<0.001$) and frequency 20 % or more were shown. Values in columns are highlighted dark grey if $phi \geq 0.30$, and pale grey if $0.15 \geq phi \geq 0.30$. For classes, only diagnostic species with frequency over 30 % and fidelity to the given class determined by $phi > 0.35$ 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-Agrotion 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 aluvial meadows which are strongly affected by spring floods. In Slovakia flooded meadows were traditionally clasiffied 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 *Deschamsion 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 *Agrostietalia stoloniferae* Oberd. in Oberd. et al. 1967 and to the alliance *Juncion effusi* Westhoff et van Leeuven 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 Leeuven 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 phythosociological material from the whole Europe.

The association *Carici albae-Brometum monocladi* (No. 20) which was described from Slovakia (Ujházy et al. 2007), has a transitional position between the alliances *Cirsio-Brachypodion 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-Brachypodion 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 neumanniana*) are rare or absent. On the other hand, some sub-continental species typical for alliance *Cirsio-Brachypodion 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. *Alysso 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. *Orthantho luteae-Caricetum humilis* Kliment et Bernátová 2000
10. *Campanulo divergentiformis-Festucetum pallentis* Zólyomi (1936) 1966
11. *Poo badensis-Caricetum humilis* (Dostál 1933) Soó ex Michálková 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. *Saxifrago 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-Brachypodion 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 flavescentis* 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 flavescentis* Br.-Bl. et Tüxen ex Marshall 1947 nom. rs. propos.**

30. *Campanulo glomeratae-Geranietum sylvatici* Ružičková 2002
31. *Geranio sylvatici-Trisetetum flavescentis* 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-Tuláčková 1973
37. *Chaerophyllo hirsuti-Calthetum palustris* Balátová-Tuláčková 1985
38. *Scirpetum sylvatici* Ralski 1931
39. *Angelico sylvestris-Cirsietum oleracei* Tüxen 1937 nom. invers. propos.
40. *Scirpo sylvatici-Cirsietum cani* Balátová-Tuláčková

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* Neuhäuslová-Novotná 1968
58. *Ranunculo repentis-Alopecuretum geniculati* Tüxen 1937
59. *Rorippo austriacae-Agropyretum repentis* Tüxen 1950
60. *Junco compressi-Trifolietum repentis* Eggler 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* Kornaś ex Pawłowski et al. 1960
69. *Hypochaerido uniflorae-Nardetum strictae* (Pałczyński 1962) Winnicki 1999
70. *Antennario dioicae-Nardetum strictae* (Svoboda 1939) Ujházy et Kliment in Janišová et al. 2007
71. *Anemono narcissiflorae-Deschampsietum cespitosae* (Klika 1926) Kliment et Ujházy in Janišová et al. 2007
72. *Helictotricho planiculmes-Nardetum strictae* Grebenščikov 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

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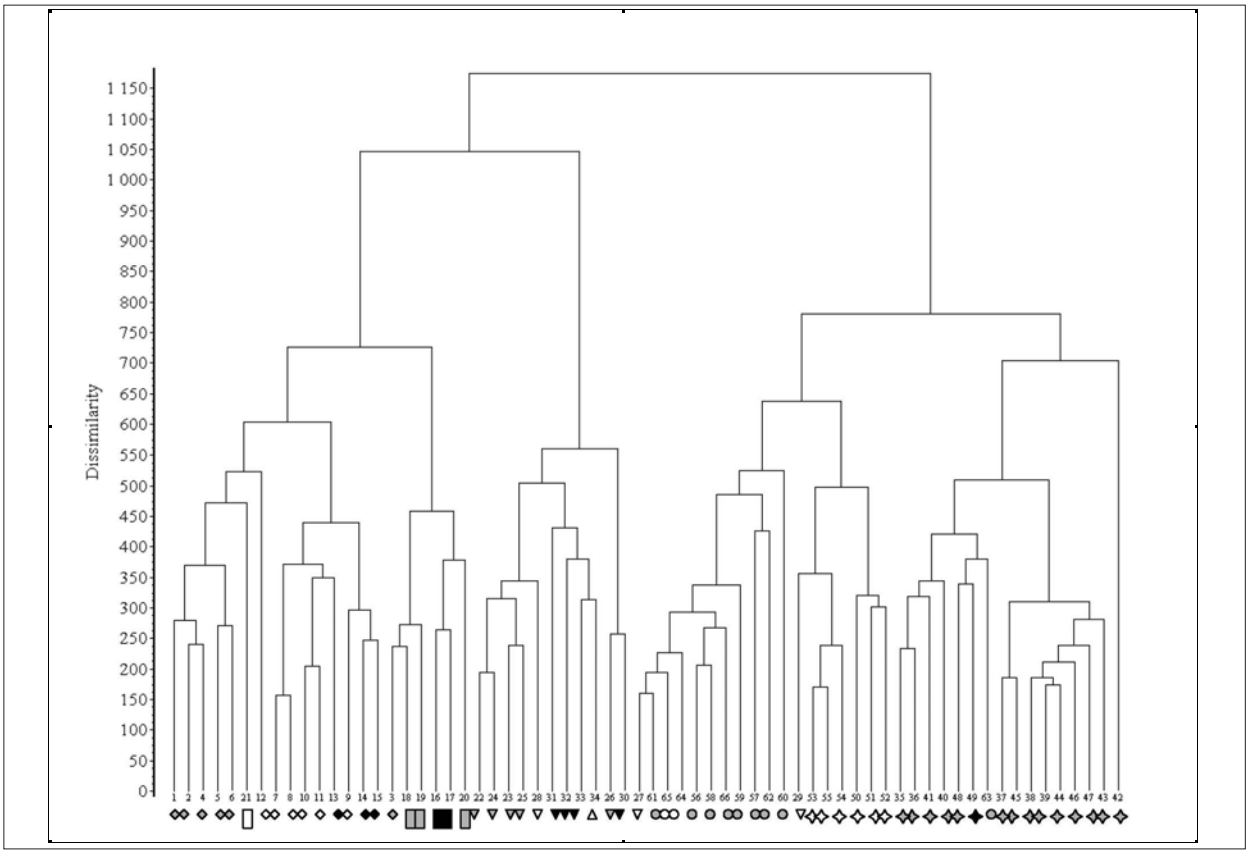

Fig. 1 Numerical classification of associations belonging to the *Molinio-Arrhenatheretea* and *Festuco-Brometea*. The associations are numbered as in the list above.

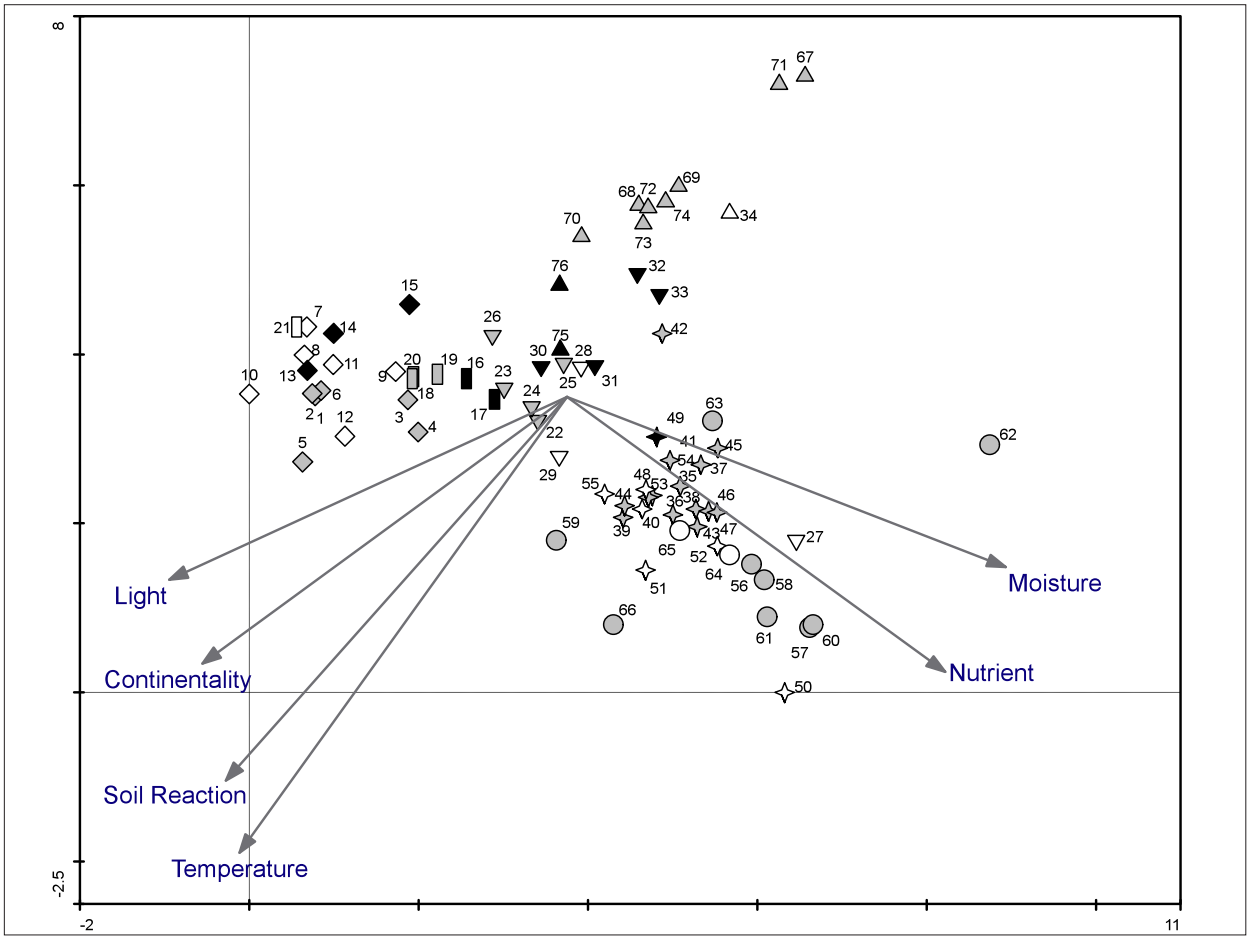

Fig. 2 Detrended Correspondence Analysis of 76 grassland associations (based on percentage frequency of species in synoptic table) showing their ecological relationship to six superimposed environmental factors. The associations are numbered as in the list above.

Legend:

- *Festucion valesiacae*
- *Bromo pannonici-Festucion pallentis*
- *Diantho lumnitzeri-Seslerion*
- *Bromion erecti*
- *Cirsio-Brachypodion pinnati*
- *Koelerio-Phleion phleoidis*
- *Arrhenatherion elatioris*
- *Cynosurion cristati*
- *Polygono bistortae-Trisetion flavescentis*
- *Poion alpinae*
- *Calthion palustris*
- *Molinion caeruleae*
- *Deschampsion cespitosae*
- *Potentillion anserinae*
- *Plantagini-Prunellion*
- *Nardo strictae-Agrostion tenuis*
- *Violion caninae*

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
1. Festucion valesiacae
2. Bromo pannonici-Festucion pallentis
3. Diantho lumnitzeri-Seslerion
4. Bromion erecti
5. Cirsio-Brachypodion pinnati
6. Koelerio-Phleion phleoidis
Molinio-Arrhenatherete
7. Arrhenatherion elatioris
8. Cynosurion cristati
9. Polygono bistortae-Trisetion flavescentis
10. Poion alpinae
11. Calthion palustris
12. Molinion caeruleae
13. Deschampsion cespitosae
14. Potentillion anserinae
15. Plantagini-Prunellion
Nardetea strictae
16. Nardo strictae-Agrostion tenuis
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
Trommsdorfia 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	.	.	.	.	.	.	.	.	.	.
Knautia kitaibelii	3	5	7	39	17	.	9	1	11	.	1	6	.	.	.	2	3
Ranunculus polyanthemos	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 linophyllon	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-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																	
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**	.	.	.	.	.	.	.	.	.	.	.
Orthantha 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	.
Oreogeum 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

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

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

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