

# SYNTAXONOMY OF THE FRINGE VEGETATION IN SLOVAKIA IN RELATION TO SURROUNDING AREAS – PRELIMINARY CLASSIFICATION

Milan VALACHOVIČ\*

## Izvešček

V članku je predstavljen kratek pregled sintaksonov razreda *Trifolio-Geranietea* in primerjava z ostalimi deli Evrope. Prikazane so ekološke in strukturne posebnosti robne vegetacije, njena razširjenost s poudarkom na značilnostih posameznih rastlinskih združb. Izpostavljena je razširjenost robnih rastlinskih vrst in združb na nivoju zvez v povezavi z nadmorsko višino in nekaterimi fitogeografskimi aspekti. Pojavljanje na različnih nadmorskih višinah se povečuje od Skandinavije, kjer se sestoji ne pojavljajo višje kot 100 m, do visokih gorovij Balkanskega polotoka. Podobno kot v ostalih predelih srednje Evrope je optimum uspevanja na Slovaškem na nadmorski višini med 300 in 600 m. Obravnavano je tudi dejstvo, da so robne vrste v južni Evropi močno navezane na senčne gozdove oziroma vlažna rastišča, medtem ko se v severni pojavljajo na odprtih traviščih. Na Slovaškem je bil kmalu sprejet koncept dveh ločenih redov, podobno kot v ostalih srednjeevropskih državah z izjemo Madžarske. (Sub)kontinentalne kserofilne in mezofilne, tudi termofilne robne združbe reda *Origanetalia vulgaris* uvrščamo v zvezi *Geranion sanguinei* in *Trifolion medii*, ki prehajata druga v drugo. Acidofilne robove s subatlantsko razširjenostjo pa uvrščamo v poseben red *Melampyro-Holcetalia* z eno samo zvezo *Teucrion scorodoniae*.

## Abstract

A brief overview of syntaxa of the class *Trifolio-Geranietea* in Slovakia in comparison with the other parts of Europe is presented. Fringe vegetation is discussed in terms of its ecological and structural peculiarities, manifestation in distribution, with the major emphasis on characteristics of individual plant communities. The distribution of fringe species and plant communities at the alliances level in relation with the altitude and some phytogeographical aspects is pointed out. The altitudinal occurrence increases from Scandinavia, where the stands do not exceed 100 m, to the high mountains of the Balkan Peninsula. Comparably to other Central European countries, in Slovakia the optimum level is 300–600 m. The fact that, in southern Europe, fringe species are closely bound to shady forests or to more humid habitats, compared to central and northern Europe, where they relate to the open grasslands, is also discussed. In Slovakia, similarly to the other Central European countries (except Hungary), the concept of separate orders was adopted very quickly. For the (sub)-continental xerophilous and mesophilous, through thermophilous fringes of the order *Origanetalia vulgaris* the two alliances, *Geranion sanguinei* and *Trifolion medii*, with a delicate transition from one to another, were recognised. The acidophilous fringes with sub-Atlantic distribution were classified separately into the order *Melampyro-Holcetalia* with only one alliance *Teucrion scorodoniae*.

**Ključne besede:** klasifikacija, European Vegetation Survey, rastlinske združbe, *Trifolio-Geranietea*

**Key words:** classification, European Vegetation Survey, plant communities, *Trifolio-Geranietea*

## 1. INTRODUCTION

The class *Trifolio-Geranietea* embraces (sub)-heliophilous, (sub)-xerophilous and (sub)-thermophil-

ous tall-herb and tall-grass communities. Special light and moisture microclimatic conditions create the narrow strips and linear belts fringing the deciduous forests in Central Europe and areas which

\* Institute of Botany, Slovak Academy of Sciences, Dúbravská cesta 14, 845 23 Bratislava, Slovak Republic; e-mail: milan.valachovic@savba.sk

surround it. The aim of the paper is to present the current overview of syntaxa in Slovakia in comparison with the other parts of Europe. The fringe vegetation is discussed in terms of the ecological and structural peculiarities, manifestation in distribution, with major emphasis on the classification of individual plant communities.

## 2. METHODS

All relevés were made using traditional methods of the Zürich-Montpellier school (Braun-Blanquet 1964), stored into database TURBOVEG (Hennekens 1995), and classified using the divisive polythetic classification program TWINSpan (Hill 1979). The final columns were hand-made re-arranged. The nomenclature of vascular plants generally follows the Central-European checklist used in TURBOVEG in Slovakia and surrounding countries.

## 3. RESULTS

### 3.1 Original ecology in fringes

The temperature in fringes is stable and the air humidity is higher compared to the grasslands. Also the light conditions here are more suitable, compared to the dark forest, and at the same time the negative effect of direct light is reduced due to shade. These intermediate conditions form an optimal environment for the development and survival of the so-called **fringe species** (Dierschke 1974).

The real existence of the true fringe species has not been approved. This is because the **diagnostic taxa** of the class *Trifolio-Geranietea* and subordinate units are quite widely distributed in Europe, e.g. *Trifolium medium* s.l., *Agrimonia eupatoria* and other species (see also Table 1).

By acceptance of the fringe species, the coenological shift of taxa in Europe is becoming visible, because the species with demands for light, humidity and temperature in northern Europe prefer the **open grasslands and pastures**. In southern Europe they are shifting under a canopy of trees and are sometimes considered as typical **forest species** (van Gils & Keysers 1977), e.g. *Brachypodium sylvaticum*. After all, the direct existence of the forest is not inevitable condition. These species really occupy the places with specific microclimatic (light) conditions, growing also in the shade of rocky walls or

along forest roads, so they are not definitely connected with the forest's existence. Very similar communities occupy shady strips in the clump of shrubs, bushes or solitary trees.

### 3.2 Structure of fringes

At first sight, the fringes reflect the floristic and multicoloured diversity. Mesophilous herbs dominate here, grasses are less frequent, apart from some clonal species with polycormon strategy, e.g. *Brachypodium pinnatum* and *Holcus mollis*. The typical feature in forest edges are polycormons (the model of polycormon climax, described by Jakucs (1972)), clonal population and plants, which are (still) connected through living tissues. Moderation is also typical for fringes – species with the extreme requirements are actually absent. Moreover, endemic species are untypical and the taxa widely distributed, and species with intermediate requirements between conditions in non-forest vegetation and forests dominate. Fringes are a good example of ecotone habitats – species rich, with one or more dominants, with wide and heterogeneous groups of accompanied species, affected from neighbouring stands (meadows, grasslands, bushes and forests). Similarly, some human activities (mowing of meadows, clearing of forest margins) can obscure the microclimatic differences between them.

### 3.3 Classification

Before 1961, fringes were considered as a part of grasslands or forests, e.g. *Dictamno-Geranietum sanguinei* described by Wendelberger, 1954, from the Hainburger Berge Mts was classified into *Festucion valesiaca*. Especially mesophilous fringes were traditionally associated with forest communities of *Carpinion* and *Fagion*. On the acid parent material they were in contact with *Quercetalia roboris* and *Calluno-Ulicetea*, respectively. Later, the concept of Müller and Tüxen was accepted, except by the Hungarian author Jakucs (1961). He considers the ecotone fringe-mantle-forest as one functional system, without unequivocal floristic differences, and rejects the existence of fringe species. Also Michalko (1970) directs attention to fact that the continental climate wipes out differences between forests and fringes. The position of the Hungarian authors reflects the irreconcilable differences in opinions up to now (Borhidi 1996).

Against this opinion are some arguments: 1/ the majority of suggested fringe plant species show a more or less clear affinity with the mild ecology without extremes (semidarkness, semimoisture, etc.). Only in intermediate conditions do these species have the ecological optimum for development, resulting in quantitative parameters – high abundance of fringe species, 2/ all tree habitats (fringe-mantle-forest) are in nature usually well distinguishable, and the selection of plots for relevés is relatively simple.

The concept of separate classes in Central Europe has been today commonly accepted (Pott 1992; Mucina & Kolbek 1993; Kolbek in Moravec & al. 1995; Čarni 1997; Mucina 1997; Sanda & al. 1999; Rodwell & al. 2002; Boublík & Kučera, in press). Also from the aspects of mapping of the vegetation units or biotopes (EUNIS, NATURA 2000 etc.), the existence of fringe vegetation is practical.

In Slovakia, two orders are recognised, namely *Origanetalia vulgaris* for subcontinental xerophilous and mesophilous, but thermophilous fringes. Inside, two alliances – *Geranion sanguinei* and *Trifolion medii*, with delicacy transitions one to another – are recognized in Slovakia. Acidophilous fringes with subatlantic distribution are classified separately into the *Teucrium scorodoniae* (order *Melampyro-Holcetalia*). In NW-England the fringes with dominant *Teucrium scorodonia* growing on limestone form a transition between *Geranion sanguinei* (Čarni 2000) and *Teucrium scorodoniae*. The structure of higher syntaxa and the % ratio used in Figure 1. are modified according publications cited in the references.

### 3.4 Distribution along latitude and altitude

Comparing area-sets of the *Geranion sanguinei* and *Trifolion medii* diagnostic species (character and differential taxa) it was found that general distribution of the forest edge communities is restricted more or less to the **western and central part of Europe** with a humid-temperate climate (van Gils & Keyzers 1977). The centre of occurrence of the forest edge communities is concentrated in Germany and Austria, with more than 20 different communities. Especially, the collection of mesophilous *Trifolion medii* communities is notable.

The relatively good situation in occurrence of thermophilous *Geranion sanguinei* in **southern Scandinavia** was elucidated by Diekmann (1997)

as an influence of continental climate (low winter temperatures but relatively high summer temperatures, low annual precipitation) in Sweden, compared to the more humid and mild climate in Germany.

In the **Mediterranean** and Eu-continental Europe, due to the seasonal droughts, the fringes are rare habitats or they are replaced by other formations, e.g. phrygana. Towards the east the fringes become weak, representing only a small number of associations and limited diagnostic taxa.

As for Slovakia, it was defined precisely that here the *Geranion* units are the most frequently occurring communities. This is undeniable fact that, more towards the south, the ratio improves gradually in favour of *Geranion* (see Fig. 1).

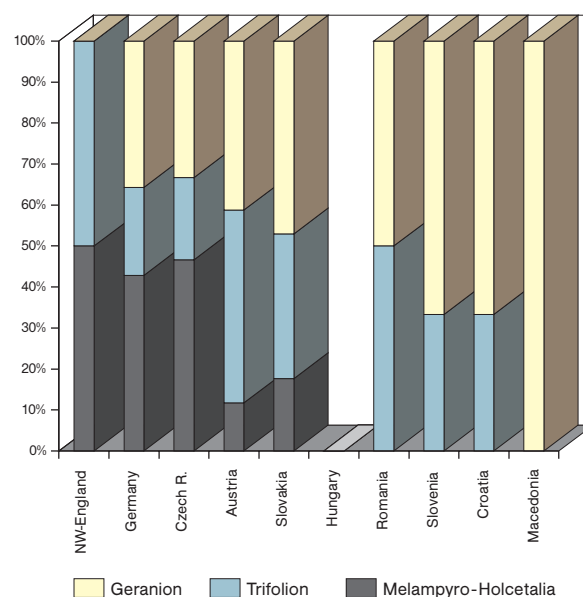


Figure 1: The % ratio of mesophilous and xerophilous fringe-communities occurred from northwest to south Europe (sources see in references)

Slika 1: Odstotek mezofilnih in kserofilnih robnih združb od severozahoda do juga Evrope (vir glej v literaturi)

Besides latitudinal distribution, the shift towards the south is visible also in **altitudinal distribution**. In Scandinavia, for example, the occurrence is limited to the lowlands (on isle Öland, not exceeding 100 m), similar like in England – max. 80 m (Čarni 2000). When in Central Europe the typical fringe community with *Trifolium alpestre* find its optimum on 400–600 m, in the Balkan peninsula (Macedonia) the altitude is much higher and reaches 1000–1500 m and even more (Fig. 2).

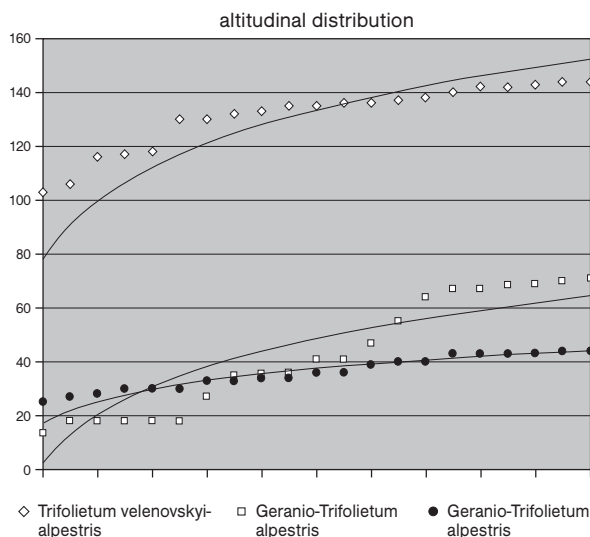


Figure 2: The altitudinal distribution (in  $m \times 10$ ) of relevés with *Trifolium alpestre* in Macedonia (rhombi, Čarni & al. 2000), Slovakia (square, Valachovič ined.), and Germany (circle, Pott 1992)

Slika 2: Višinska razporeditev (v  $m \times 10$ ) popisov z vrsto *Trifolium alpestre* iz Makedonije (romb, Čarni & al. 2000), Slovaške (kvadrat, Valachovič ined.) in Nemčije (krog, Pott 1992)

Currently, the diversity is higher and inner variability results in separation of the endemic sub-alliances, e.g. *Dictamno-Ferulagenion* in Adriatic coast on the Slovenia and Croatia (Čarni 1999), or *Lathyro-Trifolienion velenovskiyi* in Macedonia (Čarni & al. 2000). In peripheral parts of the class area (Balkan peninsula, Spain, Russia etc.), the endemism of sub-units is much higher. The structure and floristic composition in peripheral parts is strongly influenced by the different forest and non-forest vegetation. In Slovakia as well, the floristic composition is rather different, being more similar to that of Central Europe.

**Preliminary survey of *Trifolio-Geranietea sanguinei* communities recognized in Slovakia** (without details on sub-associations, variants etc.)

#### *Origanetalia vulgaris* T. Müller 1961

##### *Geranion sanguinei* R. Tx. in T. Müller 1961

1. *Geranio sanguinei-Dictamnenum albae* Wendelberger 1954
2. comm. *Carex humilis-Inula ensifolia*
3. *Rosetum gallicae* Kaiser 1926
4. *Peucedanetum cervariae* Kaiser 1926
5. comm. *Trifolium-Brachypodium pinnatum*

6. *Origanum vulgaris-Vincetoxicetum hirundinariae* Kolbek 2001
7. comm. *Oryzopsis virescens*
8. *Geranio-Trifolietum alpestris* T. Müller 1962

##### *Trifolion medii* T. Müller 1961

9. *Trifolio medii-Agrimonetum eupatoriae* T. Müller 1961
10. comm. *Pteridium aquilinum*
11. *Campanulo-Vicetium tenuifoliae* Krausch in T. Müller 1962
12. comm. *Trifolium montanum*
13. *Trifolio medii-Melampyretum nemorosi* Dierschke 1973
14. *Vicetium sylvaticae* Oberd. et T. Müller in T. Müller 1961
15. comm. *Peucedanum oreoselinum*

#### *Melampyro-Holcetalia* Passarge 1979

##### *Teucrium scorodoniae* de Foucault et al. 1979

16. *Galeopsio ladani-Teucrietum scorodoniae* Eliáš 1993
17. *Cruciato glabrae-Melampyretum pratense* Passarge 1979 (incl. *Galio veri-Lembotropetum nigricans* prov. Eliáš 1987)

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- Appendix 1.** Relevés used for synthesis of 17 communities incl. inner division into clusters. Published data with short citation (see references) and unpublished relevés with orographic units. Number of relevés are in parenthesis.
- Geranio-Dictamnenum* (7): (2) Zlinská 2000; (2) Mucina, unpubl. Malé Karpaty; (1) Maglocký, unpubl. Malé Karpaty; (2) Valachovič, unpubl. Biele Karpaty.
  - comm. *Carex-Inula* (19) – 2a (10): (1) Futák 1960; (5) Baláz 1991; (2) Kochjarová 1997; (1) Kochjarová unpubl. Muránska planina; (1) Valachovič, unpubl. Biele Karpaty. – 2b (9): (5) Jarošová & Mucina 1988; (2) Mochnacký & Maglocký 1993; (2) Valachovič, unpubl. Malé Karpaty, Muránska planina.
  - Rosetum gallicae* (22) – 3a (11): (1) Michalko 1957; (1) Májovký & Jurko 1958; (4) Mochnacký & Maglocký 1993; (4) Kliment & al. 2000; (1) Valachovič, unpubl. Krupinská planina; – 3b (11): (3) Mucina, unpubl. Malé Karpaty, Strážovské vrchy, Slovenský kras; (6) Maglocký unpubl. Malé Karpaty.

paty (2), Nitrianská pahorkatina, Štiavnické vrchy, Krupinská planina, Cerová vrchovina; (2) Valachovič & Ripka unpubl. Krupinská planina, Cerová vrchovina.

4. *Peucedanetum cervariae* (17): (1) Májovký & Jurko 1958; (1) Ružičková 1982; (1) Chytrý 1994; (4) Kliment & al. 2000; (2) Maglocký unpubl. Malé Karpaty, Považský Inovec; (2) Mucina, unpubl. Považský Inovec; (6) Valachovič unpubl. Malé Karpaty (3), Štiavnické vrchy, Krupinská planina, Cerová vrchovina.

5. comm. *Trifolium-Brachypodium* (63) – 5a (18): (3) Mochnacký & Maglocký 1993; (1) Kochjarová 1997; (1) Kliment & al. 2000; (1) Kliment 2002; (12) Kochjarová unpubl. Muránska planina (10), Veľká Fatra (2); – 5b (45): (28) Ružičková 1982; (2) Eliáš 1987; (15) Jarošová & Mucina 1988.

6. *Origano-Vincetoxicetum* (14): (1) Ružičková 1982; (1) Eliáš 1987; (1) Baláž 1991; (2) Kliment 2002; (7) Valachovič unpubl. Strážovské vrchy (2), Tríbeč, Vtáčnik, Nízke Tatry, Cerová vrchovina, Slovenský kras; (1) Jarolímek unpubl. Slovenský kras; (1) Ripka unpubl. Biele Karpaty.

7. comm. *Oryzopsis virescens* (6): (5) Maglocký unpubl. Považský Inovec (3); Malé Karpaty, Strážovské vrchy; (1) Maglocký & Valachovič unpubl. Malé Karpaty.

8. *Geranio-Trifolietum* (82) – 8a (6): (4) Kliment 2002; (2) Valachovič unpubl. Žiar; – 8b (53): (13) Ružičková 1982; (1) Eliáš 1987; (18) Jarošová & Mucina 1988; (3) Mochnacký & Maglocký 1993; (2) Kliment & al. 2000; (10) Mucina, unpubl. Trnavská pahorkatina (6), Nitrianská pahorkatina, Slovenský kras (2), Liptovská kotlina; (5) Valachovič unpubl. Borská nížina (3), Malé Karpaty, Kremnické vrchy; (1) Kochjarová unpubl. Veľká Fatra; (1) Maglocký unpubl. Tríbeč; – 8c (23): (1) Májovký & Jurko 1958; (1) Eliáš 1987; (1) Maglocký unpubl. Malé Karpaty; (3) Mucina, unpubl. Malé Karpaty (2), Biele Karpaty; (16) Valachovič unpubl. Burda (2), Štiavnické vrchy (2), Kremnické vrchy, Poľana (3), Krupinská planina (3), Cerová vrchovina (3), Slánske vrchy, Pohronský Inovec; (1) Ripka unpubl. Pohronský Inovec.

9. *Trifolio-Agrimonetum* (11): (1) Eliáš 1987; (3) Mochnacký & Maglocký 1993; (5) Mucina, unpubl. Liptovská kotlina, Trnavská pahorkatina, Krupin-

ská planina, Slovenský kras (2); (1) Maglocký & Valachovič unpubl. Cerová vrchovina; (1) Kochjarová unpubl. Muránska planina.

10. comm. *Pteridium aquilinum* (5): (2) Eliáš 1987; (3) Fajmonová unpubl. Stážovské vrchy.

11. *Campanulo-Vicetum* (7): (3) Mochnacký & Maglocký 1993; (3) Mucina, unpubl. Žitavská pahorkatina, Krupinská planina, Slovenský kras; (1) Valachovič unpubl. Tríbeč.

12. comm. *Trifolium montanum* (6): (3) Mochnacký & Maglocký 1993; (3) Kochjarová unpubl. Muránska planina.

13. *Trifolio-Melampyretum* (21): (1) Ružičková 1982; (2) Mochnacký & Maglocký 1993; (1) Kliment 1998; (4) Kliment & al. 2000; (3) Mucina, unpubl. Liptovská kotlina, Veľká Fatra, Hronská pahorkatina; (2) Maglocký unpubl. Malé Karpaty, Ondavská vrchovina; (2) Valachovič unpubl. Kremnické vrchy, Popradská kotlina; (1) Jarolímek unpubl. and (5) Kochjarová unpubl. all Muránska planina.

14. *Vicetum sylvaticae* (2): (2) Mucina unpubl. Liptovská kotlina.

15. comm. *Peucedanum oreoselinum* (6): (6) Valachovič unpubl. Borská nížina.

16. *Galeopsio-Teucrietum* (15): (15) Eliáš 1986.

17. *Cruciato-Melampyretum* (5): (3) Eliáš 1987; (2) Kochjarová unpubl. Muránska planina.

Recieved 3. 10. 2003  
Revision recieved 4. 2. 2004  
Accepted 6. 2. 2004

**Table 1:** Shortened synoptic table of all *Trifolio-Geranietea* relevés available in Turboveg database in Slovakia (C – character taxa, t – transgressive, D – differential taxa with number of syntaxon, see survey of plant communities)**Tabela 1:** Skrajšana sinoptična tabela vseh popisov razreda *Trifolio-Geranietea* bazi Turboveg na Slovaškem (C – značilna vrsta, t – transgressivna vrsta, D – razlikovalna vrsta s številko sintaksona, glej pregled rastlinskih združb)

Syntaxon Code	1	2a	2b	3a	3b	4	5a	5b	6	7	8a	8b	8c	9	10	11	12	13	14	15	16	17	
Number of relevés	7	10	9	11	11	17	18	45	14	6	6	53	23	11	5	7	6	21	2	6	15	5	
<b>Diagnostic species of association</b>																							
<i>Dictamnus albus</i>	C1	100	.	11	.	9	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.
<i>Allium flavum</i>	D1	57	10	11	18	.	.	13	7	67	.	11	.	.	.	14	.	.	.	.	17	47	.
<i>Lamium purpureum</i>	D1	43	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.
<i>Crataegus monogyna</i>	D1	43	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.
<i>Inula ensifolia</i>	tC2	29	80	100	9	.	35	17	2	14	.	11	13	.	.	.	.	.	.	.	.	.	.
<i>Carex humilis</i>	D2	14	80	78	.	.	18	6	24	21	50	.	15	.	.	.	.	.	.	.	.	.	.
<i>Sesleria albicans</i>	D2a	.	60	.	.	.	.	.	.	14	.	.	.	.	.	.	.	5	.	.	.	.	.
<i>Asperula tinctoria</i>	D2a	.	60	.	9	.	6	.	4	7	.	50	2	.	.	.	.	.	.	.	17	.	.
<i>Pulsatilla slavica</i>	D2a	.	60	11	.	.	6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Coronilla coronata</i>	D2a	.	50	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.
<i>Allium ochroleucum</i>	D2a	.	40	11	.	.	.	.	.	14	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Potentilla incana</i>	D2b	.	.	78	9	.	12	6	16	.	33	.	36	17	.	.	.	5	.	.	67	.	.
<i>Teucrium montanum</i>	D2b	.	.	78	.	.	.	.	13	.	17	.	25	.	.	.	.	.	.	.	.	.	.
<i>Festuca pallens</i> s.l.	D2b	.	.	67	.	.	.	.	2	.	.	.	8	.	.	.	.	.	.	.	.	.	.
<i>Melica ciliata</i>	D2b	.	.	56	9	.	.	.	.	7	.	.	8	.	.	.	.	.	.	.	.	13	.
<i>Helianthemum nummularium</i>	D2b	.	10	44	.	.	.	6	27	7	17	.	15	.	.	.	17	.	.	.	.	.	.
<i>Rosa gallica</i>	C3	.	.	.	100	100	6	.	.	.	.	.	6	.	9	.	14	17	.	.	.	.	.
<i>Elymus hispidus</i>	D3a	.	10	22	82	.	12	6	16	.	.	.	26	13	9	.	29	.	.	.	.	.	.
<i>Achillea nobilis</i>	D3a	.	.	11	64	18	.	.	16	.	.	.	21	30	.	.	57	.	.	.	.	.	.
<i>Verbascum lychnitis</i>	D3b	.	.	11	18	46	6	.	.	.	.	.	2	4	.	.	14	.	.	.	50	.	.
<i>Peucedanum cervaria</i>	tC4	14	50	.	18	.	100	.	2	.	.	2	9	18	.	14	.	.	.	.	33	.	.
<i>Salvia verticillata</i>	D5a	.	30	.	9	9	.	56	7	.	.	.	.	9	60	.	33	33	.	.	.	.	20
<i>Galium mollugo</i>	D5b	.	.	44	.	9	.	51	.	.	.	25	.	40	14	.	10	.	.	17	.	.	20
<i>Glechoma hederacea</i> agg.	D5b	.	.	22	.	.	6	44	14	.	.	6	.	9	.	.	.	5	.	.	.	.	.
<i>Euphorbia amygdaloides</i>	D5b	.	.	22	.	.	.	31	.	.	.	2	.	.	.	.	.	10	50	.	.	.	.

	7	10	9	11	11	17	18	45	14	6	6	53	23	11	5	7	6	21	2	6	15	5	
<i>Cardaminopsis arenosa</i>	D6	.	.	11	.	6	6	2	36	.	17	2	30	.	.	.	.	.	.	.	.	.	.
<i>Oryzopsis virescens</i>	C7	.	11	.	.	.	.	4	7	100	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Asarum europaeum</i>	D8a	.	.	.	.	6	6	.	14	83	67	2	.	9	.	.	.	24	.	.	.	.	.
<i>Primula veris</i>	D8a	29	.	.	.	6	17	.	21	.	67	.	4	9	.	.	17	19	.	.	.	.	20
<i>Pulmonaria mollis</i>	D8a	.	.	.	.	.	.	2	29	.	67	.	.	9	20	.	.	5	.	.	.	.	.
<i>Achillea collina</i>	D8b	14	.	22	9	18	6	27	7	17	.	32	9	.	.	14	.	10	.	.	.	.	.
<i>Festuca pseudodalmatica</i>	D8c	.	.	.	27	12	.	2	14	.	.	19	35	.	.	14	.	5	.	.	.	.	.
<i>Lychnis viscaria</i>	D8c	14	10	.	18	12	11	.	.	.	.	2	44	9	.	29	50	5	.	.	.	.	.
<i>Viola arvensis</i>	D8c	14	.	.	9	6	.	2	14	.	.	11	26	.	.	.	.	.	.	17	.	.	.
<i>Cruciata pedemontana</i>	D8c	.	.	.	9	6	.	.	.	.	.	.	22	.	.	.	.	.	.	.	.	.	.
<i>Poa *scabra</i>	D8c	.	.	.	9	18	6	.	.	.	.	.	26	.	.	.	.	.	.	.	.	.	.
<i>Pteridium aquilinum</i>	C9	.	.	.	.	.	.	.	.	.	.	.	.	100	.	.	.	.	.	.	.	.	.
<i>Vicia sylvatica</i>	C14	.	.	.	.	.	.	.	.	.	.	.	.	9	.	.	.	.	100	.	.	.	.
<i>Peucedanum oxeoselinum</i>	C15	.	.	.	.	.	.	.	7	.	.	.	.	.	.	.	.	.	.	100	.	.	.
<i>Koeleria glauca</i>	D15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	50	.	.	.
<i>Teucrium scorodonia</i>	C16	.	.	.	.	.	.	.	7	.	.	.	.	.	.	.	.	.	.	.	100	.	.
<i>Galeopsis ladanum</i>	D16	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	73	.	.
<i>Polytrichum piliferum</i> E0	D16	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	47	.	.
<i>Cytisus nigricans</i>	tC17	.	40	22	9	9	6	2	.	.	17	4	13	9	20	.	.	.	.	17	.	100	.
<i>Melampyrum pratense</i>	tC17	.	.	.	.	.	.	2	.	.	.	4	.	.	.	.	.	5	.	.	.	40	.
<b>Geranium sanguinei</b>																							
<i>Trifolium alpestre</i>	tC	43	10	.	36	55	47	29	36	.	33	47	87	9	.	14	17	14	.	.	17	.	20
<i>Geranium sanguineum</i>	tC	100	80	44	55	18	65	6	43	.	83	87	52	9	.	14	.	.	.	.	50	.	.
<i>Anthericum ramosum</i>	tC	14	60	56	.	41	39	29	7	.	17	23	13	9	.	.	.	10	.	.	17	.	.
<i>Polygonatum odoratum</i>	C	71	50	33	.	9	12	6	11	50	33	67	11	4	.	.	.	5	.	.	33	13	.
<i>Thalictrum minus</i> agg.	C	14	.	.	.	.	.	13	14	.	.	9	.	.	.	.	.	.	.	.	.	.	.
<i>Aster amellus</i>	C	.	10	.	.	.	6	11	14	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Vicia pannonica</i>	C	.	.	.	9	9	6	.	.	.	.	2	9	.	.	.	.	.	.	.	.	.	.
<i>Melampyrum cristatum</i>	C	.	.	11	.	12	.	11	.	.	.	4	4	.	.	14	.	.	.	.	.	.	.
<i>Laserepitium latifolium</i>	C	.	10	.	.	6	6	.	21	.	50	.	.	9	.	.	.	.	.	.	.	.	.
<i>Linum flavum</i>	C	.	.	.	9	9	6	6	7	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Trifolium rubens</i>	C	.	.	.	9	12	6	.	.	.	.	.	.	.	.	.	.	5	.	.	.	.	.
<i>Anemone sylvestris</i>	C	.	.	.	.	.	11	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.





	7	10	9	11	11	17	18	45	14	6	6	53	23	11	5	7	6	21	2	6	15	5	
<i>Gentiana cruciata</i>	D	.	.	.	.	.	11	.	.	.	17	.	.	9	.	.	33	10	.	.	.	20	
<i>Festuca pratensis</i> agg.	D	.	.	.	.	.	11	.	7	.	.	4	.	18	.	14	33	10	50	.	.	.	
<i>Campanula patula</i>	D	.	.	.	.	.	6	.	.	.	.	.	.	9	.	.	33	10	100	17	.	.	
<i>Prunella vulgaris</i>	D	.	.	.	.	.	6	.	.	17	.	.	.	9	.	.	.	.	50	.	.	20	
<i>Ranunculus acris</i>	D	.	.	.	.	.	6	2	.	.	.	2	4	27	.	.	.	10	100	.	.	.	
<i>Stellaria graminea</i>	D	.	.	.	.	6	.	.	.	.	.	2	.	18	.	.	.	19	50	17	.	20	
<i>Hypericum maculatum</i>	D	.	.	.	.	.	11	.	.	.	.	.	.	9	20	.	.	10	50	.	.	.	
<i>Luzula luzuloides</i>	D	.	.	.	.	.	11	2	7	.	.	2	.	.	.	.	.	5	50	.	20	40	
<i>Lathyrus sylvestris</i>	D	.	.	.	.	.	.	.	.	.	.	.	4	9	.	14	.	.	.	.	.	.	
<i>Phleum pratense</i>	D	.	.	.	.	.	.	.	.	.	.	.	.	.	20	.	.	5	.	.	.	.	
<i>Euphrasia *rostkoviana</i>	D	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.	50	17	.	.	
<i>Rhynchospora triquetrus</i> E0	D	.	.	.	.	.	11	.	.	.	.	.	.	.	.	.	17	19	.	.	.	20	
<i>Festuca ovina</i> agg.	D	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.	60	
<i>Sarothamnus scoparius</i>	D	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	33	20	.	
<i>Jasione montana</i>	D	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	33	27	.	
<b>Teucrion scorodoniae</b>																							
<i>Hieracium racemosum</i>	D	.	.	.	.	.	.	.	7	.	.	.	9	.	.	.	.	10	.	.	.	13	20
<i>Hieracium lachenalii</i>	D	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	20	40
<i>Hypericum montanum</i>	D	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	7	20
<i>Avenella flexuosa</i>	D	.	.	.	.	.	.	.	14	.	.	2	.	.	.	.	.	.	.	.	.	100	40
<i>Agrostis capillaris</i>	D	.	.	.	.	9	.	.	21	.	.	2	9	18	.	.	.	14	50	.	.	80	40
<b>Origanetalia, Trifolio-Geranietea</b>																							
<i>Origanum vulgare</i>	C	29	30	56	18	9	47	39	49	36	17	17	32	30	18	60	14	67	38	.	.	.	40
<i>Securigera varia</i>	C	29	30	22	27	18	41	72	16	50	33	83	13	30	9	60	14	50	52	.	.	.	20
<i>Viola hirta</i>	C	43	70	33	.	18	35	44	38	14	83	33	34	9	27	60	57	83	57	17	.	.	20
<i>Clinopodium vulgare</i>	C	14	20	22	9	9	12	50	33	36	.	33	36	17	46	.	.	33	57	.	33	7	
<i>Vincetoxicum hircundinaria</i>	C	14	40	78	.	9	12	22	51	100	50	67	53	9	18	40	.	.	.	.	33	40	
<i>Tanacetum corymbosum</i>	C	29	10	.	9	18	71	22	18	7	17	33	9	13	.	.	14	.	24	.	.	40	
<i>Betonica officinalis</i>	C	.	10	.	.	18	24	28	24	14	.	33	21	9	18	.	14	17	38	.	50	.	20
<i>Veronica teucrium</i>	C	43	10	11	9	18	53	17	2	14	.	33	8	13	.	.	14	.	5	.	.	.	
<i>Campanula persicifolia</i>	C	.	10	.	.	.	18	17	.	21	.	17	6	17	9	.	.	.	10	50	.	.	
<i>Melampyrum arvense</i>	C	.	.	22	9	.	12	6	2	.	.	6	.	.	.	.	14	17	5	.	.	20	
<i>Silene nutans</i> s.l.	C	.	.	11	.	.	6	.	.	.	.	.	17	.	.	.	.	.	.	33	.	40	

<i>Inula hirta</i>	C	.	.	.	18	.	24	.	2	7	.	17	8	17	.	14	17	5	.	.	.	.	
<i>Brachypodium pinnatum</i>	D	29	20	11	9	36	82	100	100	29	.	50	45	4	36	60	14	33	62	.	.	60	
<i>Fragaria viridis</i>	D	43	20	11	27	18	59	11	18	14	67	.	45	39	46	.	43	50	19	.	.	7	
<i>Galium album</i> s.l.	D	14	30	11	.	27	24	61	.	57	17	67	4	9	36	.	14	33	48	.	.	20	
<i>Brachypodium sylvaticum</i>	D	14	10	11	.	.	.	.	2	21	17	.	2	.	9	40	14	17	5	.	17	.	
<i>Dactylis polygama</i>	D	29	.	.	9	18	24	6	20	7	17	17	6	9	18	.	.	.	14	.	.	.	
<i>Fragaria vesca</i>	D	.	20	11	.	.	6	33	22	50	33	50	8	4	46	40	43	.	52	100	50	.	
<i>Campanula rapunculoides</i>	D	.	30	11	9	9	6	11	2	36	33	50	.	4	18	.	.	.	19	.	.	.	
<i>Fragaria moschata</i>	D	.	.	.	9	.	6	11	24	7	17	17	11	4	9	40	.	.	.	.	.	.	
<i>Pseudolysimachion spicatum</i>	D	.	.	.	18	.	12	11	9	.	.	.	19	26	.	.	14	.	.	.	50	.	
<i>Chamaecytisus hirsutus</i>	D	.	40	.	.	9	6	.	.	.	.	.	2	4	.	.	14	.	.	.	.	.	
<i>Chamaecytisus supinus</i>	D	.	.	.	.	9	18	.	.	.	17	.	2	4	.	.	.	.	14	.	.	.	
<i>Chamaecytisus albus</i>	D	.	.	11	18	.	18	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Chamaecytisus austriacus</i>	D	14	.	.	9	.	.	.	.	.	17	.	9	.	.	.	.	.	.	.	.	.	
<i>Chamaecytisus ratisbonensis</i>	D	.	.	.	.	.	6	6	.	.	17	.	4	.	.	14	.	.	.	.	33	.	
<i>Campanula bononiensis</i>	tC	.	.	.	.	9	6	.	.	.	.	.	.	9	.	.	14	.	.	.	.	.	
<i>Inula salicina</i>	tC	.	.	.	.	.	.	11	.	7	.	.	.	.	.	40	.	.	19	.	.	.	
<i>Lathyrus transsylvanicus</i>	tC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10	.	.	.	.
<b>Festuco-Brometea</b>																							
<i>Teucrium chamaedrys</i>		86	90	89	73	64	77	39	67	86	33	50	77	70	18	60	86	.	33	.	100	.	20
<i>Euphorbia cyparissias</i>		71	30	89	73	55	65	39	53	57	67	.	53	70	46	.	57	50	24	.	83	33	20
<i>Poa angustifolia</i>		57	10	.	64	55	59	6	11	14	.	.	40	35	27	.	43	50	5	.	33	.	.
<i>Asperula cynanchica</i>		14	40	67	18	18	24	22	13	21	17	.	23	4	18	.	43	33	10	.	33	.	40
<i>Sanguisorba minor</i>		14	20	44	.	.	12	11	7	14	33	33	19	.	9	40	.	17	19	.	.	.	40
<i>Salvia pratensis</i>		29	40	.	27	9	65	22	36	43	.	83	47	13	9	.	57	17	14	.	17	.	.
<i>Eryngium campestre</i>		29	10	11	18	18	24	.	2	7	50	.	13	22	.	60	43	.	.	.	.	.	.
<i>Achillea pannonica</i>		29	.	11	18	27	6	6	4	7	.	.	17	4	18	.	29	.	.	.	.	.	.
<i>Dorycnium pentaphyllum</i> agg.		29	.	.	9	36	29	6	20	.	17	.	8	17	.	60	14	.	.	.	.	.	.
<i>Bromus erectus</i>		14	10	.	.	.	29	6	.	.	.	.	2	4	.	40	.	17	.	.	.	.	.
<i>Festuca rupicola</i>		14	.	.	27	27	53	17	18	29	.	33	28	26	18	20	43	.	5	.	.	.	.
<i>Helianthemum ovatum</i>		14	30	11	.	18	24	11	.	14	33	33	8	4	9	.	.	.	5	.	.	.	.
<i>Linaria genistifolia</i>		14	10	11	9	36	12	.	.	21	.	.	6	22	.	.	.	.	.	.	50	40	.
<i>Festuca valesiaca</i>		14	.	.	.	9	18	.	.	.	17	.	4	.	.	.	14	17	5	.	.	.	.
<i>Bromus *monocladus</i>		14	10	.	.	.	.	.	.	14	.	50	.	.	.	.	.	.	5	.	.	.	.

	7	10	9	11	11	17	18	45	14	6	6	53	23	11	5	7	6	21	2	6	15	5
<i>Pimpinella saxifraga</i>	.	40	33	.	18	29	61	7	14	17	17	13	22	36	40	43	67	62	.	.	.	60
<i>Galium verum</i>	.	10	.	18	27	47	22	18	7	.	.	21	22	36	40	86	50	33	.	67	13	40
<i>Medicago falcata</i>	.	10	11	9	.	35	56	9	14	.	50	11	9	18	60	.	33	33	.	.	.	20
<i>Koeleria macrantha</i>	.	10	22	18	9	24	6	7	.	.	.	15	13	.	.	57	33	5	.	.	.	.
<i>Anthyllis vulneraria</i>	.	10	11	.	.	6	.	2	.	.	33	.	.	.	20	14	17	10	.	.	.	20
<i>Linum catharticum</i>	.	10	11	.	.	.	6	2	.	17	17	.	.	.	.	.	17	10	50	.	.	20
<i>Centaurea scabiosa</i>	.	40	11	18	9	41	28	18	36	.	33	13	4	.	40	14	17	19	.	.	.	40
<i>Scabiosa ochroleuca</i>	.	30	33	.	.	6	11	9	.	.	.	19	.	.	40	.	.	.	.	50	.	.
<i>Hippocrepis comosa</i>	.	10	.	.	.	6	.	2	.	.	33	.	.	.	.	.	.	10	.	.	.	20
<i>Buphthalmum salicifolium</i>	.	20	.	.	.	6	6	.	.	.	33	.	.	.	.	.	.	5	.	.	.	.
<i>Carduus collinus</i>	.	.	.	18	.	6	6	.	.	.	.	4	9	.	.	.	.	5	.	.	.	.
<i>Phleum phleoides</i>	.	.	.	9	.	35	.	4	29	.	33	15	4	.	14	.	.	.	.	.	.	.
<i>Filipendula vulgaris</i>	.	.	.	18	18	24	.	13	29	.	.	19	4	9	57	.	10	.	.	.	.	.
<i>Briza media</i>	.	.	.	.	.	24	28	7	.	.	17	4	4	18	40	29	50	29	50	.	.	40
<i>Carlina acaulis</i>	.	.	.	.	.	.	17	2	7	.	33	2	.	9	20	.	33	19	.	.	.	40
<i>Carlina vulgaris</i> agg.	.	.	11	.	.	.	17	.	.	.	.	.	4	9	.	.	17	.	.	.	.	.
<b>Molinio-Arrhenatheretea</b>																						
<i>Arrhenatherum elatius</i>	57	20	.	.	18	41	28	4	21	17	83	15	17	55	20	29	67	52	.	17	20	40
<i>Achillea millefolium</i> agg.	14	10	.	.	9	29	50	4	21	.	50	11	13	55	40	43	83	48	.	83	7	40
<i>Veronica chamaedrys</i> agg.	29	10	.	9	.	12	22	9	29	.	.	15	30	46	.	29	33	43	50	33	.	20
<i>Plantago lanceolata</i>	14	.	.	.	.	6	11	2	.	.	.	9	17	.	.	14	17	24	50	.	.	.
<i>Carex praecox</i>	14	.	.	9	.	6	.	2	7	.	.	4	13	.	29	17	.	.	33	.	.	.
<i>Leontodon hispidus</i>	.	10	.	.	.	12	17	2	.	.	17	2	9	18	60	43	33	14	.	.	.	20
<i>Plantago media</i>	.	10	.	.	.	41	6	4	7	.	17	8	.	27	60	29	50	24	.	.	.	20
<i>Primula elatior</i>	.	.	11	.	.	17	24	7	.	.	.	9	4	.	.	.	.	10	50	.	.	.
<i>Hieracium bauiinii</i>	.	.	.	27	27	35	.	11	7	.	.	8	35	.	29	33	.	.	17	27	.	.
<i>Thymus pannonicus</i> agg.	.	.	.	46	27	24	6	.	.	.	.	11	13	9	.	33	.	5	.	.	.	.
<i>Rumex acetosa</i>	.	.	.	9	9	6	11	.	21	.	17	2	4	.	14	.	14	14	.	17	60	.
<i>Centaurea jacea</i>	.	.	.	9	.	.	6	2	.	17	.	2	13	18	40	14	.	14	.	17	.	.
<i>Poa pratensis</i> agg.	.	.	.	9	.	.	17	.	14	.	17	8	4	9	.	.	.	14	.	.	.	.
<i>Festuca rubra</i> agg.	.	.	.	.	.	28	.	.	.	.	17	.	.	9	.	33	24	.	.	.	.	.
<i>Campanula trachelium</i>	.	.	.	.	9	.	6	7	7	17	17	4	.	27	40	.	.	43	50	.	.	.
<i>Carex tomentosa</i>	.	.	.	.	18	12	22	.	.	.	.	.	.	9	.	.	.	.	.	.	.	.

<i>Heracleum sphondylium</i>	.	.	.	.	.	.	.	.	17	.	.	.	.	24	.	.	.	.	.
<i>Allium scorodoprasum</i>	.	.	.	.	.	.	.	.	.	.	.	14	.	5	.	.	.	7	.
<i>Lotus corniculatus</i>	.	.	12	33	4	14	17	50	2	22	9	40	.	50	29	.	.	40	.
<i>Dactylis glomerata</i>	.	.	24	39	.	.	.	33	6	4	27	60	14	33	38	.	.	.	60
<i>Daucus carota</i>	.	.	6	6	2	.	17	.	2	4	18	40	14	17	5	.	.	.	.
<i>Ranunculus polyanthemus</i>	.	.	24	6	.	7	.	33	2	.	27	.	29	17	33	.	.	.	.
<i>Vicia sepium</i>	.	.	6	6	.	.	17	.	2	.	27	.	.	.	14	.	.	.	.
<i>Knautia arvensis</i>	.	.	6	6	2	.	.	.	.	9	.	.	.	50	19	.	.	.	.
<i>Tragopogon orientalis</i>	.	.	6	.	.	.	.	33	2	.	.	.	.	.	10	.	.	.	.
<i>Valeriana officinalis</i>	.	.	6	6	.	.	17	.	2	.	.	.	.	.	.	.	.	.	.
<i>Ajuga genevensis</i>	.	.	.	6	2	21	33	17	2	9	.	.	.	.	5	.	.	7	.
<i>Lathyrus pratensis</i>	.	.	.	11	2	7	.	17	4	.	9	.	.	.	5	50	.	.	.
<i>Centaurea phrygia</i> agg.	.	.	.	17	.	.	.	.	.	4	18	.	.	17	10	.	17	.	.
<i>Trifolium pratense</i>	.	.	.	11	.	.	.	.	.	.	.	.	.	33	33	100	.	.	.
<i>Leucanthemum vulgare</i> agg.	.	.	.	17	.	7	.	.	.	4	.	.	.	50	14	.	17	.	.
<i>Pimpinella major</i>	.	.	.	11	.	.	.	.	.	4	.	.	.	17	14	.	.	.	.
<i>Anthriscus sylvestris</i>	.	.	.	.	.	.	7	.	.	.	18	.	.	.	19	.	.	.	.
<i>Ajuga reptans</i>	.	.	.	.	.	.	.	17	.	2	13	.	14	.	19	.	.	20	.
<i>Plantago major</i>	.	.	.	.	.	.	.	17	.	.	9	.	.	.	.	50	.	.	.
<i>Allium schoenoprasum</i>	.	.	.	.	.	.	.	.	17	.	.	.	.	.	5	.	.	.	.
<i>Trifolium repens</i>	.	.	.	.	.	.	.	.	.	2	.	.	14	.	.	.	.	.	.
<b>Rhamno-Prunetea</b>																			
<i>Ligustrum vulgare</i> E2, E1	57	10	.	9	64	59	6	7	.	29	13	54	40	100	.	.	17	.	.
<i>Prunus spinosa</i> agg. E2, E1	29	.	.	27	18	35	6	4	7	17	15	9	.	29	.	19	.	.	.
<i>Rosa canina</i> agg. E2, E1	14	.	.	.	18	6	28	.	14	17	15	4	36	20	57	33	14	.	67
<i>Rosa</i> sp. E2, E1	14	10	11	.	.	24	.	20	50	17	13	22	9	.	43	.	.	.	.
<i>Crataegus monogyna</i>	29	.	.	.	9	12	.	4	7	.	6	4	.	.	43	.	.	20	.
<i>Corylus avellana</i>	.	20	.	.	.	.	28	7	.	17	4	.	9	.	.	14	.	.	20
<i>Pyrus communis</i> agg. E2, E1	.	.	11	.	18	.	.	.	.	.	17	.	.	.	.	.	.	7	.
<i>Crataegus laevigata</i> E2, E1	.	.	.	9	.	6	.	.	2	.	45	.	14	.	20	.	.	.	.
<i>Crataegus</i> sp.	.	.	.	.	.	12	17	.	14	.	.	.	14	.	10	.	.	.	.
<i>Cornus sanguinea</i>	.	.	.	.	.	.	17	.	7	.	18	.	.	.	33	.	.	7	20
<i>Prunus mahaleb</i>	.	.	.	.	.	.	.	9	.	2	4	.	.	.	.	.	.	.	.

Number of relevés	7	10	9	11	11	17	18	45	14	6	53	23	11	5	7	6	21	2	6	15	5	
<b>Calluno-Ulicetea</b>																						
<i>Genista tinctoria</i>	29	.	.	18	27	6	11	11	7	.	9	44	9	.	14	33	5	.	.	.	40	
<i>Veronica officinalis</i>	.	.	.	.	.	.	6	2	7	17	.	4	.	.	.	.	5	50	33	13	.	
<i>Carex pallescens</i>	.	.	.	.	.	.	6	.	.	17	.	4	9	.	.	17	14	50	.	.	.	
<i>Dianthus armeria</i>	.	.	.	.	.	.	.	.	.	.	.	.	9	.	.	17	.	.	.	.	.	
<i>Saxifraga bulbifera</i>	.	.	.	.	.	6	.	.	.	.	.	4	.	.	.	.	.	.	.	.	.	
<b>Quercetalia pubescentis</b>																						
<i>Cornus mas</i> E2, E1	29	20	11	9	.	18	.	4	7	17	.	9	27	.	.	.	.	.	.	.	.	
<i>Buglossoides purpureoerulea</i>	29	.	.	.	9	6	6	.	17	.	4	9	9	.	.	.	.	.	.	.	.	
<i>Acer campestre</i> E2, E1	14	10	.	.	18	18	.	4	7	17	.	8	9	36	.	.	24	.	.	.	20	
<i>Quercus cerris</i> E2, E1	.	.	.	36	.	18	.	2	.	.	2	26	.	.	.	.	10	.	.	.	40	
<i>Melittis melissophyllum</i>	.	20	.	.	.	.	.	2	7	.	33	4	9	.	.	.	14	.	.	.	.	
<i>Quercus pubescens</i> E2, E1	14	.	22	.	18	12	.	13	7	.	15	4	.	.	.	.	.	.	.	.	.	
<i>Quercus pubescens</i> E3	29	.	.	.	9	6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Euphorbia polychroma</i>	.	30	11	.	.	.	11	13	14	.	9	.	.	.	.	.	.	.	.	.	.	
<i>Fraxinus ornus</i> E2	.	10	.	.	.	.	.	.	14	.	.	9	.	.	.	.	.	.	.	.	.	
<i>Lactuca viminea</i>	14	.	.	9	18	.	.	.	.	.	.	4	.	.	.	.	.	.	.	.	.	
<i>Lathyrus niger</i>	.	.	.	9	9	.	.	11	.	.	2	4	.	.	.	.	5	.	.	.	.	
<i>Quercus dalechampii</i> E3, E2, E1	.	.	.	.	9	.	.	.	.	.	8	.	.	.	14	33	.	.	.	.	67	
<i>Lychnis coronaria</i>	.	.	.	.	.	.	.	.	.	.	13	.	.	.	.	.	.	.	.	.	.	
<i>Pyrus pyraister</i> E2	.	.	.	.	.	12	.	.	.	.	2	.	.	.	14	.	14	.	.	.	.	
<i>Quercus polycarpa</i> E3	.	.	.	.	.	.	.	.	.	.	.	.	9	.	.	.	.	.	.	.	.	
<i>Quercus polycarpa</i> E2, E1	.	.	.	.	.	.	.	.	.	.	.	.	36	.	.	.	5	.	.	.	.	
<i>Viburnum lantana</i> E2, E1	.	.	.	.	.	12	.	.	.	.	8	.	.	20	.	.	10	.	.	.	.	
<b>Quercio-Fagetea</b>																						
<i>Poa nemoralis</i> agg.	14	.	.	9	9	.	.	18	7	33	.	4	26	18	.	.	19	100	.	.	27	
<i>Prunus avium</i> E2, E1	28	.	.	.	.	.	.	.	.	.	6	.	18	.	28	.	.	.	.	.	.	
<i>Melica uniflora</i>	29	.	.	.	.	.	6	.	21	33	.	4	.	.	.	.	.	.	.	.	20	
<i>Fagus sylvatica</i> E2, E1	.	20	.	.	.	.	.	7	7	17	.	4	.	.	14	17	19	.	.	.	40	
<i>Lilium martagon</i>	.	10	.	.	.	12	11	.	14	.	50	.	.	.	.	.	10	50	.	.	.	
<i>Carex muricata</i> agg.	.	10	.	.	.	6	.	2	29	.	2	9	9	.	.	.	.	.	.	.	13	
<i>Hieracium sabaudum</i>	.	20	.	.	.	6	.	.	7	.	2	13	9	.	.	.	.	.	.	.	17	
<i>Convallaria majalis</i>	.	20	.	.	.	.	.	2	14	.	17	.	.	.	.	.	.	.	.	.	.	

<i>Hieracium murorum</i>	.	.	.	.	.	20	.	.	.	.	2	4	9	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	20
<i>Symphytum tuberosum</i> agg.	.	.	.	9	6	.	11	.	.	.	2	9	9	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Euonymus verrucosus</i> E2, E1	.	.	.	.	6	.	2	.	.	.	6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Lathyrus vernus</i>	.	.	.	9	.	6	.	.	.	17	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	20		
<i>Galium schultesii</i>	.	.	.	9	.	.	9	7	33	.	6	.	9	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	20		
<i>Melica nutans</i>	.	.	.	.	18	6	2	14	67	.	.	.	18	20	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	40	
<i>Carpinus betulus</i> E2, E1	.	.	.	.	6	22	16	.	.	.	4	4	18	20	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	20	
<i>Quercus petraea</i> E3, E2, E1	.	.	.	.	6	.	9	.	.	.	19	9	18	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	33	.	20	
<i>Fraxinus excelsior</i> E2, E1	.	.	.	.	12	.	9	.	.	17	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	10	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Acer pseudoplatanus</i> E2, E1	.	.	.	.	.	6	.	21	17	33	2	.	.	.	.	.	.	.	.	.	.	.	.	14	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Galium odoratum</i>	.	.	.	.	.	.	.	4	7	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Festuca heterophylla</i>	.	.	.	.	.	6	.	.	7	.	2	.	9	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	7	40	
<i>Mercurialis perennis</i>	.	.	.	.	6	.	2	.	17	33	.	.	.	20	.	.	.	.	.	.	.	.	.	14	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Stellaria holostea</i>	.	.	.	.	6	.	13	14	.	.	2	13	.	.	.	.	.	.	.	.	.	.	.	33	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	20	
<i>Viola reichenbachiana</i>	.	.	.	.	.	6	.	.	7	.	2	4	.	.	.	.	.	.	.	.	.	.	.	.	10	50	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Cerastium holosteoides</i>	.	.	.	.	.	.	.	.	.	.	2	.	9	.	.	.	.	.	.	.	.	.	.	17	14	50	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Waldsteinia geoides</i>	.	.	.	.	.	6	9	.	.	.	4	.	9	.	.	.	.	.	.	.	.	.	.	.	.	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Populus tremula</i> E2, E1	.	.	.	.	.	6	.	.	7	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	7	20
<i>Ranunculus lanuginosus</i>	.	.	.	.	.	6	.	.	.	17	.	.	9	.	.	.	.	.	.	.	.	.	.	.	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Ranunculus auricomus</i>	.	.	.	.	.	6	.	.	.	.	.	.	9	.	.	.	.	.	.	.	.	.	.	.	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Senecio ovatus</i>	.	.	.	.	.	.	.	.	7	17	.	.	9	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Viola mirabilis</i>	.	.	.	.	.	6	.	.	.	.	.	4	.	.	.	.	.	.	.	.	.	.	.	.	.	10	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<b>Other species</b>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Hypericum perforatum</i>	14	20	33	91	27	53	6	16	29	33	33	19	44	46	60	43	50	38	.	.	.	67	67	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Elymus repens</i>	14	.	.	27	9	6	.	.	7	.	.	11	13	18	.	29	.	5	.	.	.	17	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Taraxacum</i> sect. <i>Ruderalia</i>	14	.	.	.	9	.	.	2	7	17	.	13	4	18	20	14	.	10	100	17	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	20	
<i>Vicia cracca</i> agg.	14	.	.	27	9	12	50	.	.	.	.	6	9	27	.	.	.	50	5	50	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Rubus fruticosus</i> agg.	14	.	.	.	18	6	.	2	7	17	.	2	.	27	20	14	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	40	
<i>Calamagrostis epigejos</i>	.	.	.	.	18	.	6	2	.	.	9	4	27	20	29	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Potentilla argentea</i> agg.	14	.	.	27	27	.	.	.	.	.	8	13	9	.	.	14	.	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	7	
<i>Fallopia convolvulus</i>	.	.	.	18	18	6	.	16	36	.	.	6	9	.	20	14	33	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Rumex acetosella</i> s.l.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	14	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Vicia hirsuta</i>	14	.	.	9	9	12	.	.	7	.	4	22	9	.	.	.	.	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	20	
<i>Picris hieracioides</i>	.	.	.	.	9	.	.	2	.	.	4	.	9	40	.	.	17	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	20

	7	10	9	11	11	17	18	45	14	6	6	53	23	11	5	7	6	21	2	6	15	5	
<i>Trifolium campestre</i>				9		12		2				8	4			14							
<i>Hieracium pilosella</i>			11				11	2				2	9			14	50	10			50	20	
<i>Symphytum angustifolium</i>				9		12						2		18		29		19					
<i>Echium vulgare</i>			11		27	6		4	7			8			20						17		
<i>Alliaria petiolata</i>	29					6		9	21			2			20			10					
<i>Hytotelephium maximum</i>	14	10	11	46		6	6	20	14		17	15	22	9		14		10				13	20
<i>Medicago lupulina</i>					9	18	11	2				2	9	9	20			10	50				
<i>Lepidium campestre</i>				18		6		2					9										
<i>Thymus pulegioides</i>						12	11	2			33		13	18			17	19					20
<i>Helianthemum grandiflorum</i>	14						28	22	14		17	15					17	5				40	
<i>Dianthus carthusianorum</i>	14	10	22			53	50	4	21		50	17	4				17			17	17	20	
<i>Luzula campestris</i>							11					4	17			29	17	10			33		
<i>Senecio jacobaea</i>							6	2			17	4			20		17	5			33		
<i>Geum urbanum</i>					18			2	36		17	6		27				5					
<i>Knautia kitabelii</i>		20				6	17		21		50	2					17	10					
<i>Falcaria vulgaris</i>				9	9	18			7				9			14		5					
<i>Silene nemoralis</i>		10			9	6	6				33	4				14		10					
<i>Trifolium arvense</i>				9		6			7			2	9					5			50		
<i>Arabis sagittata</i>			11			6			14		33							5					
<i>Poa compressa</i>			11		9	6		2	7			9	13	18		29		5					
<i>Digitalis grandiflora</i>		20				6	11	13	36		67	6					17	14	50				
<i>Cruciata laevipes</i>				9			6	2				8				14	50						
<i>Achillea stricta</i>									7	17	50												
<i>Myosotis arvensis</i>	14	10		18		6	6		14		17		9										
<i>Arabis hirsuta</i>				9		12		2	14	17	17	4	9					5					
<i>Seseli libanotis</i>						6			7			2		9				14					
<i>Carex caryophyllea</i>		10				6	6			17	33		4			14	17					20	
<i>Galium aparine</i>	29			18	18	12	6	2	7			9	22			14		14				7	
<i>Genista pilosa</i>		20						4	7												60		
<i>Calamagrostis varia</i>		20	11				6		14		33			9				14	50			20	
<i>Phyteuma orbiculare</i>		20					6				17												
<i>Silene vulgaris</i>		40				18	17	2	7			6	9	9		14	33	19				20	
<i>Sorbus aria</i>	14	30				6		2	2,1	33	6,7	4										40	



