

## Some herbaceous plant communities from the Bukovské vrchy hills in NE Slovakia

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ABSTRACT: The paper deals with 12 plant communities, belonging, according to the Zurich-Montpellier school, to the alliances *Brachypodium pinnati*, *Cynosurion*, *Violion caninae*, *Caricion fuscae*, *Caricion lasiocarpae*, *Calthion*, *Spergulo - Oxalidion*, *Rumicion obtusifolii* and *Rumicion alpini*. Four of the communities are described as new ones. The area investigated, the Bukovské vrchy hills, belongs to the Biosphere Reserve East Carpathians.

KEYWORDS: herbaceous plant communities, East Carpathians, nature protection

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### Introduction

Plant communities of the Bukovské vrchy hills were studied by BLAŽKOVÁ (1971, 1991), HADAČ, ANDRESOVÁ & KLESCHT (1988), HADAČ & TERRAY (1989) and HADAČ & SOLDÁN (1989), but its phytocoenological inventarisation is not yet complete. Our paper will contribute to this inventarisation by describing some herbaceous plant communities, not known from this area so far.

### Methods

We have used the eleven grade scale of DOMIN (slightly adapted) for assessment of the abundance and dominance of species (cf. HADAČ & al. 1986): mosses were determined by Dr. Z. SOLDÁN, Charles University, Prague), soil reaction was measured by RNDr. VĚRA HADAČOVÁ, CSc., (pH-H<sub>2</sub>O values relate to the soil surface layer about 1-5 cm deep).

Nomenclature of vascular plants follows the paper by HADAČ & TERRAY (1991), mosses are named after NEUHÄUSLOVÁ & KOLBEK (1982). Natural conditions of the area investigated were described in HADAČ & TERRAY (1989).

## Plant communities

### *Brachypodium pinnati* HADAČ et KLIKA in KLIKA et HADAČ 1944

Plant communities of this alliance are relatively common on sunny slopes with subneutral soil reaction. *Brachypodium pinnatum*, *Origanum vulgare*, *Clinopodium vulgare*, *Ononis arvensis* and *Salvia verticillata* are diagnostically important species.

Two associations belonging to this alliance were observed in the Bukovské vrchy hills: *Prunello laciniatae - Dorycnietum herbacei* and *Origano - Brachypodietum pinnati*.

#### *Prunello laciniatae - Dorycnietum herbacei*, ASS. nova hoc loco.

Tab. I. Nomenclatural type reléve: no. 3. /390, T. I.

This community occurs on steep sunny slopes in the neighbourhood of the *Origano - Brachypodietum* on shallow soils. It is characterized by the dominance of *Dorycnium herbaceum* and by the occurrence of *Prunella laciniata*, *P. × intermedia*, *Poterium sanguisorba*, *Orchis ustulata*, *Arabis hirsuta*, *Potentilla heptahylla*. It occurs on the hill Gazdoraň above the water reservoir Starina at about 500 m altitude.

Herbaceous layer covers about 80-100% of the surface, moss layer is scarcely developed or lacking. Average species number in one relvé is 40, in 4 relevés 67 species were observed.

#### *Origano - Brachypodietum pinnati* MEDWECKA-KORNAŠ et KORNAŠ 1963

(Tab. II.)

This community is relatively frequent in the Bukovské vrchy hills on sunexposed slopes, especially in places where the vegetation has been recently burnt. It contains a number of subxerothermic elements, rarely occurring in other associations, like *Viola hirta*, *Salvia verticillata*, *Veronica teucrium*, etc. Soil reaction is pH 6.6 - 7.3.

Average number of species is 43, in 5 relevés 122 species were found.

### *Cynosurion* TÜXEN 1947

Plant communities of this alliance were studied by PLÁTEK (1969) who found in pastures along the river Ulička the association *Lolio - Cynosuretum* TÜXEN 1937. The most frequent community, belonging to this alliance in the area investigated, is the *Anthoxantho - Agrostietum tenuis*.

#### *Anthoxantho - Agrostietum tenuis* SILLINGER 1933 (Tab. III.)

This community belongs to the most frequent herbaceous ones in the area investigated. Out of 61 plant species in the table given by SILLINGER (1933), 35 occur in the table of this community in the Bukovské vrchy hills, including all the species with higher constancy. The *Anthoxantho - Agrostietum* occurs on slightly acid soils (pH 4.5 - 5.3), loamy, fresh. It is a mezophilous community, occurring at 335 - 700 m alt.

The herb layer covers usually 100% of the surface, coverage of the moss layer is insignificant. Average number of species in one relvé is 43, in 5 relevés 91 species were found.

### ***Violion caninae* SCHWICKERATH 1944**

This alliance in the Bukovské vrchy hills is represented by the association *Carici leporinae - Agrostietum tenuis*.

#### ***Carici leporinae - Agrostietum tenuis* HADAČ et SÝKORA 1971 (Tab. IV.)**

This community is relatively frequent on forest roads and paths at about 800 m alt. Its soil is loamy, sufficiently wet, acid (pH 4.6 - 4.7). It can be characterized by the combination of *Carex ovalis* (= *C. leporina*), *Agrostis capillaris* and *Juncus effusus*.

This community is poor in species, the average number in one relevé is 26, in 5 relevés 66 species only were found.

#### ***Caricion fuscae* KOCH 1926 emend. KLIKA 1934**

This alliance is represented by the association *Caricetum goodenowii* in the area investigated. Species like *Carex echinata*, *C. nigra*, *Juncus effusus*, *Bryum pseudotriquetrum* and *Calliergonella cuspidata* show that it belongs doubtlessly to the alliance *Caricion fuscae*.

#### ***Caricetum goodenowii* J. BRAUN 1915 (Tab. V.)**

This is a community of shallow moors. Its list of species is very similar to the other *Cariceta goodenowii* in the Central Europe, but contains also some Carpathian elements, like *Valeriana simplicifolia* or *Senecio papposus*. Average number of species in one relevé is 29, in 4 relevés 48 species were found. The *Caricetum goodenowii* was found at 440 - 660 m alt.

#### ***Caricion lasiocarpae* VANDEN BERGHEN in LEBRUN et al. 1949**

To this alliance belong wetland communities of mosses and sedges on subneutral soils in hilly regions. It is represented in the area investigated by the association *Carici flavae - Eriophoretum latifolii*.

#### ***Carici flavae - Eriophoretum latifolii* SOÓ 1944 (Tab. VI.)**

This community, which is possibly identical with the *Valeriano - Caricetum flavae* PAWL. (1949) 1960 occurs frequently on spring fens on the slopes with subneutral or slightly acid soils at 450 - 670 m alt. Among the species, typical for this association according to RYBNÍČEK et al. 1984, the following ones appear here: *Eriophorum latifolium*, *Carex nigra*, *C. echinata*, *C. panicea*, *Linum catharticum*, *Caltha palustris* agg., *Juncus articulatus*, *Lythrum salicaria*, *Myosotis palustris* agg., *Prunella vulgaris*, *Lysimachia numularia*, *Filipendula ulmaria*, *Potentilla erecta*, *Briza media*, *Campyllum stellatum*, *Fissidens adianthoides* and *Calliergonella cuspidata*.

*Epipactis palustris*, frequent in this community in the Bukovské vrchy hills, can be labeled as locally characteristic species. It occurs in this association only.

Herb layer covers about 80%, moss layer about 75% of the surface. Average number of species in one relevé is 35, in 5 relevés 75 species were found.

#### ***Calthion* TUXEN 1937**

This alliance was divided in two suballiances, the *Calthenion* (TUXEN 1937) BAL.-TUL. 1978 and *Filipendulenion ulmariae* (LOHMEYER 1967) BAL.-TUL. 1978. The associations *Scirpetum sylvatici* and *Epilobio - Juncetum effusi*, belonging to the

*Calthenion* suballiance, were observed in the Bukovské vrchy hills by BLAŽKOVÁ (1971). We found the third association of this suballiance, *Cirsietum rivularis*.

***Cirsietum rivularis* NOVIŇSKI 1927 (Tab. VII.)**

This community is relatively rare in the area investigated. Among the diagnostically important species of this association, mentioned by RYBNIČEK & al. (1984), the following ones occur in our association table: *Cirsium rivulare*, *Myosotis palustris* agg., *Scirpus sylvaticus*, *Caltha palustris* agg., *Lychnis flos-cuculi*, *Deschampsia caespitosa*, *Equisetum palustre*, *Filipendula ulmaria*, *Ranunculus acris*, *Lathyrus pratensis*, *Holcus lanatus*, *Poa trivialis*, *Festuca rubra*, *F. pratensis*, *Cerastium holosteoides*, *Prunella vulgaris*, *Carex panicea*, *Anthoxanthum odoratum* and *Aulacomnium palustre*.

*Cirsietum rivularis* needs regular mowing. As soon as mowing ceases, the abundance of *Filipendula* increases and *Cirsietum rivularis* changes after a relatively short period in *Lythro - Filipenduletum* or another similar community.

*Cirsietum rivularis* is well supplied with water. Water appears in spring even on soil surface and during the whole vegetation season sufficient water reserve is at hand. It was observed at 330 - 410 m alt.

Herb layer covers about 100% of the surface, moss layer about 35%. Average number of species in one relevé is 36, in 4 relevés 73 species were observed.

***Filipendulenion ulmariae* (LOHMEYER 1967) BAL.-TUL. 1978**

Communities of this suballiance are mainly herbaceous; mosses play an insignificant role here. They occur on mineral, moist or wet soils relatively rich in nutrients. We have found two communities belonging to this suballiance: *Lythro - Filipenduletum* and *Carici pendulae - Eupatorietum*.

***Lythro - Filipenduletum ulmariae* ass. nova hoc loco**

Tab. VIII. Nomenclatural type relevé is n. 3/113.

*Lythro-Filipenduletum ulmariae* occurs in the area investigated at 270 - 675 m alt. on moist to wet soils with pH 4.7 - 6.7 in the neighbourhood of the communities of *Alnion incanae*.

Herb layer covers nearly 100%, mosses about 25% of the surface. Average number of species in one relevé is 40, in 5 relevés 113 species were found.

Characteristic species combination of this association is *Filipendula ulmaria*, *Lythrum salicaria*, *Eupatorium cannabinum*, *Lycopus europaeus*, *Juncus effusus* and *Galium rivale*.

*Lythro - Filipenduletum* is close to *Filipendulo ulmariae - Menthetum longifoliae*, described by ZLINSKÁ (1989) from the Slovak W Carpathians. The two communities have a number of species in common, e. g. *Filipendula ulmaria*, *Lythrum salicaria*, *Mentha longifolia*, *Scirpus sylvaticus*, etc., but there is also high number of differential species, like *Myosotis nemorosa*, *Galium rivale*, *Cirsium rivulare*, *Chaerophyllum hirsutum*, *Juncus inflexus*, *Carex flava*, *Valeriana simplicifolia*, *Veronica beccabunga*, *Potentilla laxiflora*, *Alopecurus pratensis*, *Colchicum autumnale*, *Galium uliginosum*, *Dactylis glomerata*, *Aegopodium podagraria*, *Myosoton aquaticum*, *Geum urbanum*, *Galium maculatum*, *Chaerophyllum aromaticum*, *Rubus caesius*, *Scrophularia umbrosa*, etc. in

*Filipendulo - Menthetum*. Their similarity index according to JACCARD (with respect to constancy) is 29, showing that they belong to the same alliance but not to the same association.

To find probable differences in ecology between the two communities we used indicator values of H. ELLENBERG (1974) concerning differential species, occurring only in one of the two communities. There is scarcely any difference in their „light figures“, both showing their optimum at L7 („half light plants“). Similarly their temperature figures:  $T \pm 7$  are about identical and their continentality figures are mostly around K3; as to the soil reaction, plants in the East Carpathians community show R (2)-3-8, the West Carpathian ones R (4)-5-9, the *Filipendulo-Menthetum* being less acid. The main difference seems to be the relation to soil nitrates, *Lythro - Filipenduletum* showing N (1)-2-7, whereas *Filipendulo-Menthetum* N (4)-5-9, the first community growing on the soils poor to relatively rich in nitrates, whereas the second one prefers the soils intermediate to very rich in nitrogen.

### ***Carici pendulae - Eupatorietum cannabini* ass. nova hoc loco**

Tab. IX. Nomenclatural type relevé is n. 3/190

This community occurs in the neighbourhood of forest springs or in permanently wet places, on soils with pH 7.0 - 7.3 at 415 - 580 m altitude. It has some few species in common with *Eupatorietum cannabini* TÜXEN 1937, e. g. *Juncus effusus*, *Lythrum salicaria* or *Cirsium palustre*, but its ecology is fairly different, this is not a community of clearings.

Characteristic combination of species is *Carex pendula*, *Eupatorium cannabinum* and *Mentha longifolia*. Moss layer is obsolete or lacking entirely due to the massive herb layer, covering 95 - 100% of the area. Average number of species in one relevé is 30, in 4 relevés 71 species were observed. *Carici pendulae - Eupatorietum* was observed also in Vihorlat Mts. and near the village Palota in the Nízke Beskydy Mts., as well as in the Ukrainian Stužica Reserve.

### ***Spergulo - Oxalidion* GÖRSS in OBERD. et al. 1967**

This alliance includes communities of weeds on sandy and loamy, non calcareous soil. The presence of three species: *Chenopodium polyspermum*, *Xanthoxalis fontana* and *Spergula arvensis* confirms that our community belongs to this alliance (cf. MORAVEC & al. 1983)

### ***Oxalo - Chenopodietum polyspermi* TÜXEN 1950 (Tab. X.)**

This community is frequent in the area investigated in potato and oat fields at 430 - 520 m alt. on slightly sloping terrain. Herbaceous layer covers 70 - 90% of the surface, moss layer covers up to 20%, but sometimes it is lacking.

Average number of species in one relevé is 36, in 5 relevés 85 species were found.

### ***Rumicion obtusifolii* GUTTE 1972**

This alliance is represented in the area investigated by community dominated by *Rumex obtusifolius* subsp. *obtusifolius* and *Cirsium arvense*, originating from degradation of various herb communities by heavy trampling of cattle.

### ***Rumicetum obtusifolii* ŠMARDÁ J. et al. 1963 (Tab. XI.)**

This community was described in the Belianské Tatry mountains at 1500 m alt. Our material is situated at about 500 m alt. They have several species in common, e. g. *Rumex obtusifolius*, *Ranunculus repens*, *Urtica dioica*, *Stellaria media*, *Veronica chamaedrys*, *Agrostis capillaris*, *Trifolium repens*, *Festuca pratensis*, *Elytrigia repens*. There are also some differential species, like *Veronica filiformis* or *Rorippa sylvestris*, but the similarity of both communities is high enough. Cover of the herb layer is about 90%, moss cover is insignificant.

Average number of species in one relevé is 35, in 4 relevés 79 species were observed.

### ***Rumicion alpini* RÜBEL ex KLIKA in KLIKA et HADAČ 1944**

Plant communities of this alliance occur on acid soils in mountains, where sheep or cattle is, or formerly was accumulated, i. e. in places with high concentrations of nitrogen. Characteristic species of this alliance are *Rumex alpinus*, *Poa chaixii*, *Geranium phaeum*, etc. It is not quite clear whether *Rumex alpinus* is indigenous in this part of the Carpathians or whether it was introduced by the Wallachian pastoral colonisation.

### ***Glechomo hirsutae* - *Rumicetum alpini* ASS. nova hoc loco**

Tab. XI. Nomenclatural type relevé is n. 2/28.

Communities with dominant *Rumex alpinus* occur in the whole Carpathians and Alps as well as in the Krkonoše mountains and elsewhere in various ecological and florogenetic conditions. Its dominant is the same, but it is not possible to unite them under one and the same association. The *Rumicetum alpini* BEGER 1922 can be characterized by typical alpine species like *Senecio alpinus*, *Cirsium spinosissimum*, etc., *Rumicetum alpini* in the Krkonoše mountains can be characterized by *Alchemilla monticola*, *A. subcrenata*, *A. acutiloba* etc., whereas in the Bukovské vrchy hills it has *Salvia glutinosa*, *Hylotelephium argutum*, sometimes *Tozzia carpatica* etc. The Jaccard similarity index of the *Chaerophyllo* - *Rumicetum alpini* from the Krkonoše mountains and the *Glechomo hirsutae* - *Rumicetum alpini* from the Bukovské vrchy hills is 26 only. They belong thus to different associations of the same alliance.

Average number of species in one relevé is 15, in 5 relevés only 33 species were found.

## **Summary**

The following plant communities were noted as an addition to the already published ones in the Bukovské vrchy hills:

*Brachypodium pinnati* HADAČ et KLIKA in KLIKA et HADAČ 1944

*Prunello laciniatae* - *Dorycnietum herbacei*, ass. nova hoc loco.

*Origano* - *Brachypodietum pinnati* MEDWECKA-KORNAŠ et KORNAŠ 1963

*Cynosurion* TÜXEN 1947

*Anthoxantho* - *Agrostietum tenuis* SILLINGER 1933

*Violion caninae* SCHWICKERATH 1944

*Carici leporinae* - *Agrostietum tenuis* HADAČ et SÝKORA 1971

*Caricion fuscae* KOCH 1926 emend. KLIKA 1934

- Caricetum goodenowii* J. BRAUN 1915  
*Caricion lasiocarpae* VANDEN BERGHEN in LEBRUN et al. 1949  
*Carici flavae - Eriophoretum latifolii* SOÓ 1944  
*Calthion* TÜXEN 1937  
*Cirsietum rivularis* NOVINSKI 1927  
*Filipendulenion ulmariae* (LOHMEYER 1967) BAL.-TUL. 1978  
*Lythro - Filipenduletum ulmariae* ass. nova hoc loco  
*Carici pendulae - Eupatorietum cannabini* ass. nova hoc loco  
*Spergulo - Oxalidion* GÖRSS in OBERD. et al. 1967  
*Oxalo - Chenopodietum polyspermi* TÜXEN 1950  
*Rumicion obtusifolii* GUTTE 1972  
*Rumicetum obtusifolii* ŠMARDÁ J. et al. 1963  
*Rumicion alpini* RÜBEL ex KLIKA in KLIKA et HADAČ 1944  
*Glechomo hirsutae - Rumicetum alpini* ass. nova hoc loco

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(Tab. I. - XI. on pages 198-220)

**Tab I. *Prunello laciniatae* - *Dorycnietum herbacei*, ass. nova**

Relevé n.	1	2	3	4
altitude [m]:	502	501	498	500
aspect:	S	S	S	SSE
slope [°]:	30	35	35	45
cover, herb layer [%]:	80	100	90	90
moss layer [%]:	10	-	-	-
number of species:	47	40	35	40
<i>Dorycnium herbaceum</i>	7	6	7	5
<i>Prunella laciniata</i>	5	4	3	.
<i>Prunella vulgaris</i>	2	2	2	2
<i>Prunella</i> × <i>intermedia</i>	2	3	2	.
<i>Poterium sanguisorba</i>	3	3	3	2
<i>Filipendula vulgaris</i>	3	4	3	4
<i>Salvia verticillata</i>	3	3	4	3
<i>Fragaria viridis</i>	2	4	3	3
<i>Carex tomentosa</i>	3	2	4	2
<i>Dianthus carthusianorum</i>	4	2	2	2
<i>Stachys germanica</i>	1	1	1	1
<i>Agrimonia eupatoria</i>	2	1	1	3
<i>Lotus corniculatus</i>	3	2	2	2
<i>Trifolium montanum</i>	2	4	2	2
<i>Galium verum</i>	3	3	2	3
<i>Trifolium flexuosum</i>	3	4	3	4
<i>Linum catharticum</i>	2	3	3	3
<i>Leucanthemum ircutianum</i>	1	1	2	1
<i>Plantago media</i>	2	3	3	3
<i>Pimpinella saxifraga</i>	3	3	2	3
<i>Polygala comosa</i>	2	1	1	2
<i>Galium album</i>	1	4	2	3
<i>Potentilla recta</i>	1	3	2	.
<i>Orchis ustulata</i>	1	3	1	.
<i>Anthyllis vulneraria</i>	3	1	3	.
<i>Brachypodium pinnatum</i>	7	.	4	3
<i>Thymus pulegioides</i>	4	4	.	2
<i>Tithymalus cyparissias</i>	2	.	1	4
<i>Hypericum perforatum</i>	2	1	.	2
<i>Arabis hirsuta</i>	1	1	.	1
<i>Centaurea jacea</i>	2	3	.	3
<i>Centaurea scabiosa</i>	.	4	4	4
<i>Medicago falcata</i>	.	2	2	3
<i>Briza media</i>	.	3	3	3
<i>Viola hirta</i>	.	2	2	3
<i>Leontodon hastilis</i>	1	2	.	.
<i>Tanacetum clusii</i>	.	2	2	.
<i>Genista tinctoria</i>	4	2	.	.
<i>Veronica chamaedrys</i>	3	.	2	.
<i>Coronilla varia</i>	.	.	2	2
<i>Achillea millefolium</i>	2	.	.	3



In one relevé only:

- n. 1/ 374: *Echium vulgare* 1, *Potentilla heptaphylla* 3, *Senecio jacobaea* 1, *Galium album* 1, *Linaria vulgaris* 1, *Pilosella bauhini* 1, *Daucus carota* 1, *Carlina acaulis* 1, *Campylium chrysophyllum* 3, *Fissidens taxifolius* 4, *Weissia* sp. 1, *Bryum* sp. 1,  
n. 2/ 389: *Betonica officinalis* 1, *Campanula rapunculoides* 2, *Potentilla argentea* 1, *Acetosa pratensis* 1,  
n. 3/ 390: *Tragopon orientalis* 1,  
n. 4/ 394: *Teucrium chamaedrys* 7, *Carex montana* 3, *Anthoxanthum odoratum* 3, *Festuca rubra* 3, *Lychnis flos-cuculi* 2, *Carex pallescens* 2, *Poa compressa* 2, *Ranunculus polyanthemos* 2.

**Localities:**

various parts of the hill Gazdorán on the SE shore of the water reservoir Starina.

- n.1 /374: 50 m<sup>2</sup> Hadač, Terray, Klescht 30. 6. 1989  
n.2 /389: 30 m<sup>2</sup> Hadač 3. 7. 1989  
n.3 /390: 50 m<sup>2</sup> Hadač (holotypus)  
n.4 /394: 20 m<sup>2</sup> Terray et Klescht 6. 10. 1989

Tab II. *Origanum - Brachypodium pinnati*

relevé n.:	1	2	3	4	5	C
altitude [m]:	435	430	560	480	500	
aspect:	E	W	S	W	SW	
slope [°]:	40	40	35	15	35	
Cover, shrub layer [%]:	15	.	.	.	.	
herb layer [%]:	90	90	90	100	100	
number of species:	57	71	71	34	22	
<i>Brachypodium pinnatum</i>	7	8	7	7	7	V
<i>Ranunculus polyanthemus</i>	2	2	2	1	2	V
<i>Medicago falcata</i>	4	5	2	1	2	V
<i>Trifolium flexuosum</i>	3	3	2	5	4	V
<i>Lotus corniculatus</i>	2	3	2	2	2	V
<i>Tithymalus cyparissias</i>	2	2	2	1	1	V
<i>Cruciata glabra</i>	2	2	2	2	1	V
<i>Galium verum</i>	1	.	3	2	3	IV
<i>Thymus pulegioides</i>	3	3	.	2	2	IV
<i>Knautia arvensis</i>	3	.	1	2	1	IV
<i>Coronilla varia</i>	3	2	3	4	.	IV
<i>Ononis arvensis</i>	5	1	2	2	.	IV
<i>Hypericum perforatum</i>	2	.	3	2	1	IV
<i>Festuca rubra</i>	1	1	.	2	2	IV
<i>Betonica officinalis</i>	1	2	.	5	.	III
<i>Pimpinella saxifraga</i>	3	2	.	1	.	III
<i>Trifolium montanum</i>	1	.	3	.	4	III
<i>Achillea millefolium</i>	2	.	3	2	.	III
<i>Origanum vulgare</i>	6	3	2	.	.	III
<i>Centaurea jacea</i>	2	2	.	6	.	III
<i>Galium album</i>	4	2	4	.	.	III
<i>Salvia verticillata</i>	6	3	4	.	.	III
<i>Agrimonia eupatoria</i>	5	3	3	.	.	III
<i>Clinopodium vulgare</i>	2	3	3	.	.	III
<i>Campanula elliptica</i>	1	3	1	.	.	III
<i>Fragaria vesca</i>	1	3	2	.	.	III
<i>Linum catharticum</i>	2	3	3	.	.	III
<i>Dactylis glomerata</i>	2	3	4	.	.	III
<i>Senecio jacobaea</i>	2	2	2	.	.	III
<i>Leucanthemum ircutianum</i>	3	5	3	.	.	III
<i>Veronica chamaedrys</i>	2	.	1	1	.	III
<i>Polygala comosa</i>	1	2	2	.	.	III
<i>Daucus carota</i>	1	2	1	.	.	III
<i>Potentilla erecta</i>	1	3	.	4	.	III
<i>Solidago virgaurea</i>	1	2	1	.	.	III
<i>Poterium sanguisorba</i>	.	3	2	.	1	III
<i>Vicia cracca</i>	.	2	2	2	.	III
<i>Carex pallescens</i>	.	2	1	3	.	III
<i>Campanula rapunculoides</i>	2	.	1	.	1	III
<i>Carlina acaulis</i>	.	1	3	2	.	III
<i>Dorycnium herbaceum</i>	.	.	.	6	1	II

<i>Trisetum flavescens</i>	.	.	3	.	2	II
<i>Viola hirta</i>	2	.	1	.	.	II
<i>Cichorium intybus</i>	2	2	.	.	.	II
<i>Carlina vulgaris</i>	1	2	.	.	.	II
<i>Stachys germanica</i>	1	.	3	.	.	II
<i>Carex muricata</i>	1	2	.	.	.	II
<i>Anthyllis vulneraria</i>	2	.	2	.	.	II
<i>Arabis hirsuta</i>	.	1	1	.	.	II
<i>Trifolium pratense</i>	.	1	1	.	.	II
<i>Prunella vulgaris</i>	.	2	3	.	.	II
<i>Leontodon hastilis</i>	.	3	2	.	.	II
<i>Euphrasia rostkoviana</i>	.	4	2	.	.	II
<i>Echium vulgare</i>	.	2	2	.	.	II
<i>Phleum cf. pratense</i>	.	1	1	.	.	II
<i>Plantago media</i>	.	2	3	.	.	II
<i>Genista tinctoria</i>	.	2	1	.	.	II
<i>Stellaria graminea</i>	.	1	1	.	.	II
<i>Gentiana cruciata</i>	.	2	2	.	.	II
<i>Briza media</i>	.	.	3	2	.	II
<i>Acetosa pratensis</i>	.	.	2	2	.	II
<i>Campanula patula</i>	.	.	3	1	.	II
<i>Dianthus carthusianorum</i>	.	.	.	1	1	II
<i>Tragopogon orientalis</i>	.	.	2	.	2	II
<i>Centaurea scabiosa</i>	.	.	.	3	4	II
<i>Campylium stellatum</i>	2	4	.	.	.	II
<i>Calliergonella cuspidata</i>	3	5	.	.	.	II

In one relevé only:

- n. 1/118: *Dipsacus sylvestris* 2, *Prunus spinosa* 2, *Rosa* sp. 2, *Agrostis gigantea* 3, *Fragaria viridis* 3, *Picris hieracioides* 1, *Carduus acanthoides* 1, *Carex montana* 1, *Torilis japonica* 1, *Arrhenaterum elatius* 2, *Elytrigia repens* 2, *Leontodon hispidus* 1, *Barbula unguiculata* 2.
- n. 2/119: *Carex tomentosa* 2, *Centaureum erythraea* 2, *Poa compressa* 2, *Pilosella lactucella* 2, *Taraxacum officinale* 2, *Anthoxanthum odoratum* 3, *Rubus caesius* 1, *Orobanche alba* 1, *Cuscuta epithimum* 1, *Mentha arvensis* 1, *Carex montana* 2, *C. panicea* 2, *Trifolium alpestre* 1, *Medicago lupulina* 3, *Veronica officinalis* 1, *Gentianopsis ciliata* 1, *Leskea polycarpa* 3, *Brachythecium albicans* 2, *Climacium dendroides* 3, *Thuidium philiberti* 3, *T. abietinum* 2, *Cladonia pyxidata* 2.
- n. 3/372: *Festuca pratensis* 4, *Dianthus deltooides* 1, *Viola tricolor* 1, *Sedum sexangulare* 1, *Alchemilla glaucescens* 1, *A. monticola* 1, *Clematis vitalba* 1, *Melandrium pratense* 1, *Astragalus glycyphyllus* 2, *Lathyrus pratensis* 2, *Luzula multiflora* 2, *Pilosella bauhini* 2, *Verbascum nigrum* 1, *Potentilla argentea* 1, *Rhinanthus minor* 1, *Lysimachia numularia* 1, *Myosotis arvensis* 1, *Cerastium holosteoides* 2.
- n. 4/373a: *Dorycnium herbaceum* 6, *Filipendula vulgaris* 5, *Centaurea scabiosa* 3, *Dianthus carthusianorum* 1, *Agrostis capillaris* 3,
- n. 5/373b: *Tanacetum clusii* 1, *Potentilla recta* 1.

#### Localities:

- 1/118: slope near the village Velká Pořana 30 m<sup>2</sup>, Hadač et. al. 1985
- 2/118: slope ca 1 km S from V. Pořana, 50 m<sup>2</sup>, Hadač et. al. 13. 8. 1985
- 3/372: Ruské, ca 0.5 km W from the bridge, 50 m<sup>2</sup>, Hadač, Terray, Klescht 13. 8. 1985
- 4/373a: hill Gazdorán above the water reservoir Starina, 50 m<sup>2</sup>, Hadač 30. 6. 1989
- 5/373b: Gazdorán, ca. 100 m distant from n. 373 a., 50 m<sup>2</sup>, Hadač 30. 6. 1985

Tab III. *Anthoxantho - Agrostietum tenuis*

Relevé n.:	1	2	3	4	5	C
altitude [m]:	520	670	700	730	335	
aspect:	SE	E	S	SSW	SE	
slope [°]:	25	25	15	15	20	
cover, herb layer [%]:	100	100	100	100	95	
moss layer [%]:	10	-	3	3	4	
soil reaction, pH	5.0	5.3	4.8	4.6	.	
<i>Anthoxanthum odoratum</i>	3	4	6	6	5	V
<i>Agrostis capillaris</i>	7	5	6	7	5	V
<i>Centaurea jacea</i>	6	4	3	2	3	V
<i>Hypericum maculatum</i>	5	4	5	3	4	V
<i>Stellaria graminea</i>	5	2	3	2	2	V
<i>Ranunculus acris</i>	4	2	2	2	3	V
<i>Veronica chamaedrys</i>	4	1	2	3	3	V
<i>Campanula patula</i>	2	1	2	2	3	V
<i>Plantago lanceolata</i>	3	2	3	3	2	V
<i>Achillea millefolium</i>	2	1	2	3	3	V
<i>Leucanthemum ircutianum</i>	2	2	4	3	3	V
<i>Prunella vulgaris</i>	2	1	3	3	3	V
<i>Potentilla erecta</i>	4	1	3	3	5	V
<i>Phleum cf. pratense</i>	2	3	4	.	2	IV
<i>Briza media</i>	2	1	3	4	.	IV
<i>Cruciata glabra</i>	1	2	2	2	.	IV
<i>Carex pallescens</i>	2	2	2	.	3	IV
<i>Ranunculus polyanthemos</i>	2	2	2	.	1	IV
<i>Lotus corniculatus</i>	2	.	1	1	2	IV
<i>Dactylis glomerata</i> + v. <i>slov.</i>	.	5	5	2	3	IV
<i>Vicia cracca</i>	1	2	3	.	3	IV
<i>Knautia arvensis</i>	2	1	.	2	.	III
<i>Myosotis nemorosa</i>	2	2	3	.	.	III
<i>Acetosa pratensis</i>	2	1	2	.	.	III
<i>Polygala vulgaris</i>	2	.	2	3	.	III
<i>Pimpinella saxifraga</i>	3	.	2	2	.	III
<i>Campanula elliptica</i>	2	1	2	.	.	III
<i>Festuca pratensis</i>	4	.	3	.	2	III
<i>Betonica officinalis</i>	.	3	4	4	.	III
<i>Rhinanthus minor</i>	.	2	2	4	.	III
<i>Brachypodium pinnatum</i>	.	3	3	4	.	III
<i>Carlina acaulis</i>	.	1	3	3	.	III
<i>Cynosurus cristatus</i>	2	.	3	.	.	II
<i>Hypericum perforatum</i>	1	.	.	.	2	II
<i>Galium verum</i>	3	.	2	.	.	II
<i>Trifolium flexuosum</i>	3	.	.	.	2	II
<i>Plantago media</i>	2	.	1	.	.	II
<i>Thymus pulegioides</i>	2	.	.	2	.	II
<i>Tragopogon orientalis</i>	.	1	.	1	.	II

<i>Arrhenatherum elatius</i>	.	3	5	.	.	II
<i>Gnaphalium sylvaticum</i>	.	.	1	6	.	II
<i>Luzula multiflora</i>	.	.	1	1	.	II
<i>Rhytidadelphus squarrosus</i>	4	.	.	.	.	I
<i>Climacium dendroides</i>	2	.	.	.	.	I
<i>Plagiomnium elatum</i>	.	.	1	3	.	II
<i>Brachythecium salebrosum</i>	.	.	3	2	3	III
<i>Plagiomnium affine</i>	.	.	.	.	1	I

In one relevé only:

- n. 1/138: *Athyrium filix-femina* 1, *Galeopsis pubescens* 2, *Cerastium holosteoides* 2, *Alchemilla monticola* 4,  
n. 2/225: *Heracleum trachycarpum* 1, *Tanacetum vulgare* 1, *Alopecurus pratensis* 23,  
n. 3/227: *Trisetum flavescens* 3, *Cardaminopsis halleri* 1, *Lathyrus pratensis* 3, *Succisa pratensis* 1, *Ajuga genevensis* 1,  
n. 4/229: *Calamagrostis epigeios* 3, *Genista tinctoria* 4, *Nardus stricta* 2, *Achillea stricta* 2, *Viola canina* 2, *Silene nutans* 2, *Veronica officinalis* 3, *Gentiana asclepiadea* 2, *Listera ovata* 1,  
n. 5/236: *Angelica sylvestris* 2, *Clinopodium vulgare* 2, *Melampyrum nemorosum* 4, *Eupatorium cannabinum* 2, *Fragaria vesca* 1, *Stenactis strigosa* 3, *Crepis capillaris* 2, *Lysimachia vulgaris* 1, *Stachys palustris* 2, *Selinum carvifolia* 2, *Crepis biennis* 1,

#### Localities:

- n. 1/138: NW from the hill Grůň, W from the village Prislop, 15. 8. 85 50 m<sup>2</sup>, Hadač, Andresová  
n. 2/225: Havešová, ridge of the hill, St. reservation, 100 m<sup>2</sup> 13. 7. 86 Hadač, Andresová  
n. 3/227: ridge of the hill Havešová, 50 m<sup>2</sup>, 13. 7. 86 Hadač, Andresová  
n. 4/229: Havešová, on the top of the hill, 50 m<sup>2</sup>, 13. 7. 86 Hadač, Andresová  
n. 5/236: valley of the river Ublianka above the village Kalná Roztoka, 15 m<sup>2</sup>, 14. 7. 86 Hadač, Andresová

Tab. IV. *Carici leporinae - Agrostietum tenuis*

Relevé n.	1	2	3	4	5	C
Altitude [m]:	820	810	805	895	825	
aspect:	-	SW	SW	SW	NE	
slope [°]:	-	10	7	20	10	
soil reaction [pH]:	4.7	4.7	4.8	4.6		
cover, herb layer [%]:	70	85	60	80	45	
moss layer [%]:	2	+	+	3	3	
number of species:	19	32	24	31	23	
<i>Carex ovalis</i>	3	2	3	4	3	V
<i>Agrostis capillaris</i>	5	3	4	1	6	V
<i>Juncus effusus</i>	7	4	3	5	3	V
<i>Prunella vulgaris</i>	4	4	3	4	2	V
<i>Deschampsia caespitosa</i>	4	7	6	6	3	V
<i>Potentilla erecta</i>	1	2	3	1	.	IV
<i>Epilobium montanum</i>	1	1	2	2	.	IV
<i>Senecio fuschii</i>	2	.	3	.	3	III
<i>Gnaphalium sylvaticum</i>	1	1	2	.	.	III
<i>Lysimachia nemorum</i>	2	4	2	4	.	IV
<i>Leucanthemum ircutianum</i>	.	1	.	2	.	III
<i>Carex pallescens</i>	1	3	2	.	.	III
<i>Mycelis muralis</i>	1	.	.	1	3	III
<i>Hypericum maculatum</i>	.	4	2	1	.	III
<i>Veronica officinalis</i>	3	1	2	.	3	IV
<i>Carex sylvatica</i>	.	2	.	2	3	III
<i>Carex remota</i>	.	1	.	2	1	III
<i>Hypochoeris radicata</i>	2	.	2	.	.	II
<i>Rubus idaeus</i>	1	.	1	.	.	II
<i>Myosotis nemorosa</i>	.	3	.	2	.	II
<i>Cirsium palustre</i>	1	.	3	.	.	II
<i>Carex flava</i>	.	2	.	2	.	II
<i>Stellaria nemorum</i>	.	2	.	2	.	II
<i>Dactylis glomerata s.l.</i>	.	1	.	.	2	II
<i>Festuca rubra</i>	.	.	1	.	1	II
<i>Oxalis acetosella</i>	.	.	.	1	1	II
<i>Acer pseudoplatanus</i> juv.	.	+	1	.	.	II
<i>Alchemilla monticola</i>	.	.	2	.	1	II
<i>Pogonatum urnigerum</i>	2	2	1	.	2	IV
<i>Atrichum undulatum</i>	.	.	.	2	4	II

In one relevé only:

- n. 1/286: *Leontodon autumnalis* 2, *Rumex obtusifolius* 1,  
n. 2/287: *Anthoxanthum odoratum* 1, *Equisetum arvense* 2, *Mentha arvensis* 2, *Juncus articulatus* 2, *Ranunculus polyantemos* 2, *Salix capraea* juv. 1, *Alchemilla acutiloba* 2, *Acetosella vulgaris* 1, *Carex echinata* 1, *Gentiana asclepiadea* 1, *Chareophyllum hirsutum* 1,  
n. 3/288: *Cirsium vulgare* 1, *Luzula sylvatica* 2,  
n. 4/310: *Tussilago farfara* 4, *Trifolium pratense* 1, *T. repens* 3, *Centaurea jacea* 1, *Geum urbanum* 1, *Achillea millefolium* 1, *Cerastium holosteoides* 3, *Leontodon hispidus* 1, *Glyceria fluitans* 1, *Atrichum tenellum* 1, *Dicranella heteromalla* 1,  
n. 5/312: *Leontodon hastilis* 1, *Poa annua* 3, *Viola canina* 3, *Polytrichum commune* 1, *Marchatia polymorpha* 2.

**Localities:**

- n. 1/286: on the forest road from the brook Zbojský potok towards the chalet Kyčera, 10 m<sup>2</sup>, 19. 7. 86 Hadač  
n. 2/287: another forest road below the chalet Kyčera, 10 m<sup>2</sup>, 20. 7. 86 I. Paukertová  
n. 3/288: on the same forest road ca 70 m below the relevé 287, 10 m<sup>2</sup>, 20. 7. 86 I. Paukertová  
n. 4/310: forest road on the hill Velký Bukovec below the chalet Rebro 10 m<sup>2</sup> 24. 7. 86 Hadač  
n. 5/312: below the n. 4/310, 24. 7. 86 I. Paukertová

Tab. V. *Caricetum goodenowii*

relevé n.:	1	2	3	4
altitude [m]:	440	660	660	595
aspect:	.	NE	NE	.
slope [°]:	.	5	5	.
cover, herb layer [%]:	95	70	90	90
moss layer [%]:	75	50	30	20
number of species:	38	31	25	23
<i>Carex nigra</i>	7	7	7	8
<i>Potentilla erecta</i>	3	5	3	2
<i>Myosotis nemorosa</i>	5	3	4	4
<i>Valeriana simplicifolia</i>	5	3	4	4
<i>Lycopus europaeus</i>	2	1	2	4
<i>Epilobium palustre</i>	2	1	1	4
<i>Mentha arvensis</i>	4	4	2	4
<i>Carex echinata</i>	6	3	.	3
<i>Carex flava</i>	4	4	2	.
<i>Lythrum salicaria</i>	2	.	.	4
<i>Lychnis flos-cuculi</i>	3	.	2	2
<i>Scutellaria galericulata</i>	2	.	2	4
<i>Ranunculus acris</i>	3	1	2	.
<i>Scirpus sylvaticus</i>	3	2	2	.
<i>Crepis paludosa</i>	2	4	5	.
<i>Cirsium palustre</i>	.	2	2	3
<i>Carex panicea</i>	4	4	.	.
<i>Juncus effusus</i>	5	.	.	3
<i>Galium palustre</i>	2	.	.	3
<i>Filipendula ulmaria</i>	2	.	1	.
<i>Veronica scutellata</i>	4	.	.	2
<i>Senecio papposus</i>	.	2	3	.
<i>Ajuga reptans</i>	3	1	.	.
<i>Equisetum arvense</i>	.	3	4	.
<i>Agrostis stolonifera</i>	.	.	1	5
<i>Poa trivialis</i>	.	.	2	2
<i>Cirsium rivulare</i>	.	1	1	.
<i>Succisa pratensis</i>	.	3	3	.
<i>Plagiomnium elatum</i>	3	6	6	.
<i>Calliargonella cuspidata</i>	7	7	.	.
<i>Sphagnum fallax</i>	6	.	.	5
<i>Bryum pseudotriquetrum</i>	4	2	.	.
<i>Drepanocladus aduncus</i>	2	.	.	1



In one relevé only:

- n. 1/160: *Ranunculus auricomus* 3, *R. flammula* 3, *Equisetum palustre* 3, *Juncus articulatus* 3, *Trifolium dubium* 1, *Anthoxanthum odoratum* 4, *Cerastium holosteoides* 1, *Agrostis canina* 4, *Rhytidiadelphus squarrosus* 3, *Atrichum undulatum* 1, *Rhizomnium punctatum* 2, *Philonotis tomentella* 4,
- n. 2/386: *Luzula multiflora* 2, *Acetosa pratensis* 1, *Eriophorum latifolium* 3, *Philonotis fontana* 1, *Climacium dendroides* 4, *Campylium stellatum* 1, *Drepanocladus revolvens* 1,
- n. 3/387: *Lathyrus pratensis* 1, *Chaerophyllum hirsutum* 2,
- n. 4/413: *Deschampsia caespitosa* 3, *Hypericum tetrapterum* 3, *Carex pallescens* 3,

**Localities:**

- n. 1/160: valley of the brook Zbojský potok, N from the village Nová Sedlica, 20 m<sup>2</sup>, soil reaction pH/H<sub>2</sub>O 4.8, pH/KCL 4.0, 18. 8. 1985 Hadač et al.
- n. 2/386: Ruské, bog bellow the hill Soliště, 20 m<sup>2</sup>, 2. 7. 89, Hadač, Klescht, Terray
- n. 3/387: about 50 m distant from the n. 2, 20 m<sup>2</sup>, Hadač, Klescht, Terray
- n. 4/413: Veľká Poľana - Zemlianky, 100 m<sup>2</sup>, 4. 8. 89, Terray

Tab. VI. *Carici flavae - Eriophoretum latifolii*

Relevé n.	1	2	3	4	5	C
altitude [m]:	670	450	580	460	670	
aspect:	.	SE	E	.	.	
slope [°]:	.	5	15	.	.	
cover, herb layer [%]	90	80	60	95	90	
moss layer [%]	90	30	60	55	35	
number of species:	37	31	32	43	32	
<i>Eriophorum latifolium</i>	6	6	7	5	6	V
<i>Carex flava</i>	6	3	1	3	6	V
<i>Carex panicea</i>	7	5	5	2	5	V
<i>Valeriana simplicifolia</i>	4	4	2	6	3	V
<i>Potentilla erecta</i>	7	4	4	4	5	V
<i>Dactylorhiza majalis</i>	4	1	2	1	2	V
<i>Briza media</i>	4	3	3	3	2	V
<i>Myosotis nemorosa</i>	2	2	1	2	2	V
<i>Linum catharticum</i>	1	3	3	1	.	IV
<i>Succisa pratensis</i>	5	2	2	.	5	IV
<i>Cirsium palustre</i>	3	2	.	3	3	IV
<i>Lythrum salicaria</i>	2	3	2	.	2	IV
<i>Prunella vulgaris</i>	1	2	2	1	.	IV
<i>Caltha laeta</i>	1	3	2	3	.	IV
<i>Carex nigra</i>	.	1	6	4	.	III
<i>Eupatorium cannabinum</i>	.	4	.	1	1	III
<i>Polygala vulgaris</i>	3	1	.	1	.	III
<i>Ranunculus acris</i>	3	.	2	2	.	III
<i>Carex echinata</i>	.	.	1	2	2	III
<i>Epipactis palustris</i>	5	.	.	6	5	III
<i>Filipendula ulmaria</i>	3	.	.	3	2	III
<i>Crepis paludosa</i>	4	.	.	2	2	III
<i>Equisetum palustre</i>	.	5	5	.	.	II
<i>Mentha longifolia</i>	.	.	.	.	.	II
<i>Scirpus sylvaticus</i>	.	4	2	.	.	II
<i>Ajuga reptans</i>	.	2	.	2	.	II
<i>Acetosa pratensis</i>	.	1	.	1	.	II
<i>Mentha arvensis</i>	.	2	2	.	.	II
<i>Leucanthemum ircutianum</i>	.	.	1	1	.	II
<i>Lysimachia nummularia</i>	.	.	1	2	.	II
<i>Juncus articulatus</i>	.	.	.	1	2	II
<i>Lathyrus pratensis</i>	1	.	.	.	1	II
<i>Bryum pseudotriquetrum</i>	3	5	5	2	1	V
<i>Campylium stellatum</i>	6	4	3	2	3	V
<i>Aulacomnium palustre</i>	7	1	.	4	2	IV
<i>Plagiomnium elarum</i>	7	3	.	4	.	III
<i>Fissidens adianthoides</i>	2	1	.	2	.	III
<i>Calliergonella cuspidata</i>	.	2	.	2	5	III
<i>Climacium dendroides</i>	7	.	.	4	4	III
<i>Philonotis tomentella</i>	4	.	.	1	.	II

In one relevé only:

- n. 1/47: *Cruciata glabra* 1, *Hypericum maculatum* 1, *Luzula multiflora* 1, *Gentiana asclepiadea* +, *Frangula alnus* (juv.) 3, *Menyanthes trifoliata* 7, *Camptothecium nitens* 3, *Bryum caespiticium* 3, *Calligon cordifolium* 4,  
n. 2/58: *Lycopus europaeus* 1, *Scutellaria galericulata* 1,  
n. 3/71: *Taraxacum palustre* 2, *Blysmus compressus* 2, *Trifolium pratense* 1, *Pilosella caespitosa* 1, *Cirsium rivulare* 2, *Alchemilla glaucescens* 1, *A. acutiloba* 1, *Juncus conglomeratus* 1, *Drepanocladus revolvens* 7,  
n. 4/117: *Tussilago farfara* 4, *Lysimachia nemorum* 4, *Lychnis flos-cuculi* 1, *Chaerophyllum hirsutum* 3, *Juncus effusus* 2, *J. inflexus* 2, *Cratoneuron filicinum* 1, *Marchantia polymorpha* 1, *Atrichum undulatum* 1,  
n. 5/127: *Epilobium palustre* 1, *Selinum carvifolia* 1, *Stellaria graminea* 1, *Equisetum sylvaticum* 1, *Centaurea melanocalathia* 1, *Rhizomnium punctatum* 3, *Leptodictyum riparium* 3, *Plagiomnium affine* 1,

**Localities:**

- 1/47: Moor below the hill Stinská, St. Reservation, 50 m<sup>2</sup>, 10. 6. 1984 Hadač, Soldán  
2/58: at the road E from the village Topoľa. 40 m<sup>2</sup>, 15. 6. 1984 Hadač, Terray, Klescht  
3/71: slope below the pass Ruské sedlo, above the vill. Ruské, 15 m<sup>2</sup>, 17. 6. 1984 Hadač, Terray  
4/117: hill Berezová near the vill. Veľká Poľana, 20 m<sup>2</sup>, 12. 8. 1985, Andresová, Paukertová  
5/127: SPR moor below Stinská, 25 m<sup>2</sup>, 14. 8. 1985 Hadač, Terray

Tab. VII. *Cirsietum rivularis*

Relevé n.	1	2	3	4
Altitude [m]:	340	330	410	330
aspect, slope	-	-	-	-
cover, herb layer [%]:	95	100	100	100
moss layer [%]:	10	50	60	20
number of species:	36	43	36	31
<i>Cirsium rivulare</i>	5	3	7	7
<i>Anthoxanthum odoratum</i>	4	4	5	4
<i>Ranunculus acris</i>	4	2	3	3
<i>Lychmis flos-cuculi</i>	3	2	1	3
<i>Myosotis nemorosa</i>	4	2	2	5
<i>Galium palustre</i>	1	2	3	3
<i>Filipendula ulmaria</i>	2	5	4	2
<i>Ranunculus repens</i>	2	2	4	4
<i>Festuca rubra</i>	2	2	5	1
<i>Cerastium holosteoides</i>	1	2	2	2
<i>Dactylorhiza majalis</i>	1	3	1	2
<i>Briza media</i>	4	2	.	2
<i>Succisa pratensis</i>	4	2	2	.
<i>Potentilla erecta</i>	3	2	2	.
<i>Lysimachia nummularia</i>	2	2	.	2
<i>Ranunculus auricomus</i>	2	2	2	.
<i>Carex panicea</i>	2	4	2	.
<i>Deschampsia caespitosa</i>	2	2	.	1
<i>Juncus conglomeratus</i>	1	3	.	1
<i>Holcus lanatus</i>	3	1	.	3
<i>Prunella vulgaris</i>	3	2	.	3
<i>Lathyrus pratensis</i>	4	2	3	.
<i>Festuca pratensis</i>	6	3	.	.
<i>Carex ovalis</i>	1	2	.	.
<i>Carex pallescens</i>	3	.	.	1
<i>Carex hirta</i>	1	.	.	3
<i>Centaurea jacea</i>	5	.	.	3
<i>Plantago lanceolata</i>	2	2	.	.
<i>Trifolium pratense</i>	1	4	.	-
<i>Ajuga reptans</i>	1	.	1	.
<i>Lythrum salicaria</i>	1	2	.	.
<i>Betonica officinalis</i>	1	.	.	3
<i>Lysimachia vulgaris</i>	.	.	1	7
<i>Luzula multiflora, L. campestris</i>	.	2	.	3
<i>Scirpus sylvaticus</i>	.	5	1	.
<i>Carex flava</i>	.	5	1	.
<i>Ranunculus flammula</i>	.	3	2	.
<i>Caltha laeta</i>	.	4	5	.
<i>Equisetum palustre</i>	.	3	4	.
<i>Poa trivialis</i>	.	.	3	3

In one relevé only:

- 1/59: *Nardus stricta* 2, *Carex tomentosa* 1, *Lotus corniculatus* 3, *Ailacomnium palustre* 1,  
2/39: *Juncus effusus* 3, *J. articulatus* 4, *Carex nigra* 4, *C. paniculata* 3, *Stellaria graminea*  
2, *Trifolium hybridum* 3, *Epilobium palustre* 2, *Campanula patula* 1, *Trifolium*  
*dubium* 2, *Veronica scutellata* 2,  
3/x13: *Valeriana simplicifolia* 4, *Angelica sylvestris* 2, *Poa pratensis* 4, *Alchemilla glabra* 2,  
*Lycopus europaeus* 1, *Crepis paludosa* 1, *Cirsium palustre* 1, *Hypericum maculatum*  
+, *Heracleum trachycarpum* 1, *Mentha arvensis* 1, *Agrostis stolonifera* 1, *Glechoma*  
*hederacea* 1,  
4/x25: *Iris sibirica* 2, *Serratula tinctoria* 3, *Acetosa pratensis* 3, *Trifolium montanum* 1, *Vicia*  
*cracca* 1, *Thalictrum lucidum* 1, *Achillea millefolium* 1,

**Localities:**

- 1/59: meadow near the crossroad Topoľa - Ulič - Kolbasov, 20 m<sup>2</sup>, 15. 6. 84 Hadač, Terray  
2/394: Kolbasov, meadow near the church, 50 m<sup>2</sup>, 4. 7. 89 Hadač  
3/x13: village Čertižné, near the village, 14. 6. 84 Hadač, Terray  
4/x25: State reservation Hostovické lúky (meadows), 14. 6. 84 Hadač, Terray

Tab. VIII. *Lythro - Filipenduletum ulmariae* ass. nova

Relevé n.	1	2	3	4	5	C
altitude [m]:	675	460	630	270	320	
aspect, slope:	-	-	-	-	-	
soil reaction [pH]:	4.7	-	-	6.7	6.6	
cover herb layer [%]:	100	85	90	100	100	
moss layer [%]	25	65	1	25	15	
number of species:	28	61	47	30	37	
<i>Filipendula ulmaria</i>	8	4	2	7	8	V
<i>Lythrum salicaria</i>	6	2	4	5	3	V
<i>Scirpus sylvaticus</i>	6	3	3	3	6	V
<i>Eupatorium cannabinum</i>	3	1	1	6	2	V
<i>Lycopus europaeus</i>	3	1	4	2	2	V
<i>Myosotis nemorosa</i>	3	3	4	2	4	V
<i>Juncus effusus</i>	1	2	3	4	2	V
<i>Mentha longifolia</i>	3	3	1	4	4	V
<i>Cirsium oleraceum</i>	.	3	3	6	5	IV
<i>Caltha palustris</i>	3	5	2	.	5	IV
<i>Stachys sylvatica</i>	.	1	2	1	.	III
<i>Lysimachia vulgaris</i>	.	.	2	4	2	III
<i>Lathyrus pratensis</i>	.	1	.	2	4	III
<i>Equisetum palustre</i>	.	.	2	3	4	III
<i>Ranunculus acris</i>	.	2	.	1	2	III
<i>Lychmis flos-cuculi</i>	.	1	1	.	2	III
<i>Scutellaria galericulata</i>	.	.	2	3	2	III
<i>Carex hirta</i>	.	1	.	2	2	III
<i>Mentha arvensis</i>	.	5	1	2	.	III
<i>Chaerophyllum hirsutum</i>	.	4	.	.	5	III
<i>Impatiens noli - tangere</i>	2	.	4	.	.	II
<i>Scrophularia nodosa</i>	.	.	.	3	1	II
<i>Urtica dioica</i>	.	.	2	.	2	II
<i>Hypericum maculatum</i>	.	+	.	.	3	II
<i>Ranunculus repens</i>	4	.	5	.	.	II
<i>Galium rivale</i>	.	.	.	4	4	II
<i>Cirsium rivulare</i>	.	.	.	3	3	II
<i>Elytrigia repens</i>	.	.	.	2	2	II
<i>Juncus inflexus</i>	.	1	.	.	3	II
<i>Carex flava</i>	.	2	.	.	1	II
<i>Equisetum fluviatile</i>	.	7	7	.	.	II
<i>Agrostis stolonifera</i>	.	1	1	.	.	II
<i>Juncus articulatus</i>	.	3	1	.	.	II
<i>Valeriana simplicifolia</i>	.	7	2	.	.	II
<i>Veronica beccabunga</i>	.	3	5	.	.	II
<i>Senecio nemorensis</i>	1	.	1	.	.	II
<i>Galium palustre</i>	3	.	.	2	.	II
<i>Cardamine amara</i>	3	.	6	.	.	II
<i>Stellaria nemorum</i>	3	.	3	.	.	II

<i>Chrysosplenium alternifolium</i>	2	.	2	.	.	II
<i>Circaea lutetiana</i>	1	.	2	.	.	II
<i>Ajuga reptans</i>	3	2	.	.	.	II
<i>Stellaria graminea</i>	.	1	.	.	2	II
<i>Potentilla erecta</i>	.	4	.	.	3	II
<i>Prunella vulgaris</i>	.	4	2	.	.	II
<i>Tussilago farfara</i>	.	2	2	.	.	II
<i>Typha latifolia</i>	.	.	2	.	2	II
<i>Deschampsia caespitosa</i>	.	.	2	.	3	II
<i>Plagiomnium eltum</i>	5	.	.	2	.	II
<i>Plagiomnium affine</i>	.	2	.	.	1	II
<i>Rhizomnium punctatum</i>	.	5	.	.	4	II
<i>Brachythecium rivulare</i>	.	2	.	5	.	II
<i>Mentha longifolia</i>	3	3	.	.	.	II

In one relevé only:

- 1/79: *Athyrium filix - femina* 4, *Dryopteris filix - mas* 1, *Epilobium palustre* 2, *Symphytum cordatum* 1, *Petasites abus* 2, *Leptodictyon riparium* 3, *Pellia epiphylla* 1, *Calliargon cordifolium* 3,
- 2/89: *Salix aurita* juv. + *Alnus incana* juv. 3, *Veronica chamaedrys* +, *Leucanthemum ircuitanum* 1, *Alchemilla acutiloba* 1, *Epipactis palustris* 7, *Briza media* 2, *Polygala vulgaris* 1, *Linum catharticum* 1, *Crepis paludosa* 2, *Frangula alnus* juv. +, *Eriophorum latifolium* 1, *Carex panicea* 3, *C. nigra* 3, *Selinum carvifolia* 1, *Gardaminopsis halleri* 1, *Aulacomnium palustre* 6, *Conocephalum conicum* 1, *Campylium stellatum* 2, *Climacium dendroides* 1, *Cratoneuron filicinum* 1, *Cirsium palustre* 2, *Cruciata glabra* 1,
- 3/113: *Persicaria hydropiper* 3, *Phragmites australis* 1, *Epilobium ciliatum* 4, *Glyceria fluitans* 2, *Carex remota* 2, *Senecio nemorensis* 1, *Geranium robertianum* 1, *Veronica serpyllifolia* 1, *Epilobium hirsutum* 1, *Hypericum hirsutum* 1, *Cardamine flexuosa* 1, *Mentha aquatica* 1, *Galeopsis speciosa* 1, *Carex elongata* 2,
- 4/210: *Carex vulpina* 3, *Angelica sylvestris* 2, *Cerastium sylvaticum* 3, *Alisma plantago - aquatica* 2, *Valeriana officinalis* 2, *Calliargonella cuspidata* 2,
- 5/221: *Acetosa pratensis* 3, *Rumex conglomeratus* 1, *Poa trivialis* 2, *Festuca pratensis* 1, *Symphytum officinale* 3,

#### Localities:

- n. 1/79: at the river Stučica below the bridge in the State Reservation Stučica, 50 m<sup>2</sup>, herbs cca 150 cm high. Hadač, Žila 9. 8. 85
- n. 2/89: pasture ca 1 km NW from the village N. Stučica, near the Zbojský potok brook, 200 m<sup>2</sup>, Andresová 8. 8. 85
- n. 3/113: at the pond below the chalet Grófske chyžky NE from N. Sedlica, 50 m<sup>2</sup>, 12. 8. 85 Hadač
- n. 4/210: at the opening of the valley of the brook V. Tapovec. 30 m<sup>2</sup>, Hadač, Andresová, Klescht 12. 8. 85
- n. 5/221: valley of Ublianka 1 km S from the chalet below Havešová, 50 m<sup>2</sup>, *Filipendula* 170 cm high, Andresová, Hadač 12. 7. 86

Tab. IX. *Carici pendulae* - *Eupatorietum*, ass. nova

relevé n.:	1	2	3	4
altitude [m]:	480	580	430	415
aspect, slope	-	-	-	-
soil reaction [pH]:	.	.	7.0	7.3
cover, herb layer [%]:	100	95	100	100
moss layer [%]:	-	3	7	2
number of species:	16	38	36	30
<i>Eupatorium cannabinum</i>	7	7	9	7
<i>Carex pendula</i>	1	3	4	5
<i>Mentha longifolia</i>	2	7	2	5
<i>Juncus effusus</i>	1	3	3	4
<i>Stachys sylvatica</i>	1	2	3	3
<i>Urtica dioica</i>	2	1	3	2
<i>Lycopus europaeus</i>	.	3	2	2
<i>Hypericum maculatum</i>	2	1	2	.
<i>Scirpus sylvaticus</i>	.	5	2	3
<i>Athyrium filix-femina</i>	1	2	3	.
<i>Ranunculus repens</i>	2	2	.	3
<i>Scrophularia nodosa</i>	.	1	1	1
<i>Festuca gigantea</i>	.	1	4	2
<i>Equisetum arvense</i>	.	1	3	2
<i>Glechoma hirsuta</i>	4	.	2	.
<i>Circaea lutetiana</i>	1	3	.	.
<i>Lythrum salicaria</i>	.	2	.	2
<i>Myosotis nemorosa</i>	.	3	.	4
<i>Chaerophyllum hirsutum</i>	.	1	3	.
<i>Impatiens noli-tangere</i>	.	1	3	.
<i>Rubus idaeus</i>	.	1	5	.
<i>Carex sylvatica</i>	.	2	4	.
<i>Carex remota</i>	.	2	.	1
<i>Cirsium palustre</i>	.	2	2	.
<i>Tussilago farfara</i>	.	1	4	.
<i>Brachypodium sylvaticum</i>	.	.	1	1
<i>Brachythecium rutabulum</i>	.	1	4	2
<i>Plagiommium elatum</i>	.	.	1	2



In one relevé only:

- n. 1/3: *Filipendula ulmaria* 7, *Cirsium oleraceum* 3, *Rubus hirtus* 4, *Petasites hybridus* 2, *Epilobium montanum* 1,  
n. 2/86: *Epilobium palustre* 2, *Persicaria hydropiper* 2, *Cardamine amara* 1, *Veronica beccabunga* 2, *Rumex sanguineus* 3, *Lysimachia nemorum* 2, *Senecio nemorensis* 1, *Stellaria nemorum* 2, *Galeopsis speciosa* 1, *Ajuga reptans* 1, *Tithymalus serrulatus* 1, *Epilobium parviflorum* 1, *Eurhynchium schleicheri* 1,  
n. 3/190: *Deschampsia caespitosa* 1, *Roegneria canina* 2, *Cirsium arvense* 1, *Juncus conglomeratus* 1, *Aegopodium podagraria* 2, *Galium odoratum* 2, *Galeopsis bifida* 2, *Asarum europaeum* 2, *Paris quadrifolia* 3, *Hypericum hirsutum* 1, *Salvia glutinosa* 2, *Carex hirta* 2, *Plagiothecium denticulatum* 3,  
n. 4/231: *Equisetum palustre* 3, *Calamagrostis canescens* 1, *Solanum dulcamara* 3, *Rumex obtusifolius* 2, *Poa trivialis* 1, *Stellaria graminea* 2, *Geranium robertianum* 2, *Circaea intermedia* 3, *Poa nemoralis* 1, *Agrostis stolonifera* 2, *Glechoma hederacea* 2, *Eurhynchium hians* 1,

**Localities:**

- n. 1/3: on the place called „Skoňová“ at the rivulet Zbojský N of the village Nová Sedlica, 10 m<sup>2</sup>, 30. 8. 83 Hadač  
n. 2/86: above the road Nová Sedlica - Patrikúsky, 20 m<sup>2</sup>, 9. 8. 85 Hadač, Andresová, Žíla  
n. 3/190: valley of Ublianka below the res. Havešová, above its confluence with the brook Chmelnica, 20 m<sup>2</sup>, 9.8. 85 Hadač, Andresová  
n. 4/231: valley of Ublianka at the road 0,5 km from the reservation Havešová, 13. 7. 86, Hadač, Andresová

Tab. X. *Oxalo - Chenopodietum polyspermi*

Relevé n.	1	2	3	4	5	C
altitude [m]:	520	445	430	430	455	
aspect:	SE	NE	S	SW	-	
slope [°]:	7	10	8	10	-	
cover, herb layer %:	90	80	70	80	90	
moss layer %:	3	-	20	-	10	
number of species:	32	32	47	45	25	
<i>Stellaria media</i>	8	7	4	4	3	V
<i>Capsella bursa-pastoris</i>	7	3	3	5	3	V
<i>Ranunculus repens</i>	3	2	3	3	3	V
<i>Persicaria maculata</i>	3	2	3	3	7	V
<i>Galinsoga ciliata</i>	2	5	5	5	4	V
<i>Myosotis arvensis</i>	2	4	2	2	1	V
<i>Rorippa sylvestris</i>	3	2	1	2	.	IV
<i>Poa annua</i>	5	2	.	2	2	IV
<i>Mentha arvensis</i>	3	.	3	1	5	IV
<i>Spergula arvensis</i>	3	.	6	5	4	IV
<i>Achillea millefolium</i>	2	.	2	2	1	IV
<i>Chenopodium album</i> agg.	2	2	3	1	.	IV
<i>Matricaria perforata</i>	1	1	2	.	3	IV
<i>Stachys palustris</i>	.	2	1	1	4	IV
<i>Chenopodium polyspermum</i>	.	3	3	2	.	III
<i>Galeopsis bifida</i>	2	.	.	3	4	III
<i>Veronica arvensis</i>	2	2	.	2	.	III
<i>Sonchus oleraceus</i>	1	.	1	1	.	III
<i>Lamium purpureum</i>	2	4	.	1	.	III
<i>Plantago major</i>	1	1	.	2	.	III
<i>Elytrigia repens</i>	2	2	.	.	2	III
<i>Veronica persica</i>	2	6	2	.	.	III
<i>Xanthoxalis fontana</i>	.	.	2	1	2	III
<i>Geranium dissectum</i>	.	.	1	3	2	III
<i>Rumex obtusifolius</i>	2	.	1	2	.	III
<i>Tussilago farfara</i>	.	2	2	.	3	III
<i>Filipendula ulmaria</i>	2	.	4	.	.	II
<i>Taraxacum officinale</i>	2	3	.	.	.	II
<i>Rumex crispus</i>	1	2	.	.	.	II
<i>Raphanus raphanistrum</i>	.	3	2	.	.	II
<i>Convolvulus arvensis</i>	.	1	2	.	.	II
<i>Agrostis stolonifera</i>	.	1	2	.	.	II
<i>Scleranthus annuus</i>	.	.	5	3	.	II
<i>Anthemis arvensis</i>	.	.	4	4	.	II
<i>Plantago lanceolata</i>	.	.	3	2	.	II
<i>Polygonum aviculare</i>	.	.	2	3	.	II
<i>Equisetum arvense</i>	.	.	2	3	.	II
<i>Acetosella vulgaris</i>	.	.	2	1	.	II
<i>Fallopia convolvulus</i>	.	.	3	2	.	II

<i>Leucanthemum ircutianum</i>	.	.	1	1	.	II
<i>Filaginella uliginosa</i>	.	.	.	3	3	II
<i>Setaria pumila</i>	.	.	.	1	1	II
<i>Sinapsis arvensis</i>	.	1	.	.	1	II
<i>Bidens tripartita</i>	.	.	1	.	2	II
<i>Phascum cuspidatum</i>	.	.	4	2	.	II
<i>Climacium dendroides</i>	2	.	5	.	.	II
<i>Bryum sp.</i>	1	.	.	1	.	II

In one relevé only:

- 1/99: *Chamomilla suaveolens* 3, *Sagina procumbens* 2, *Ranunculus acris* 1, *Alchemilla monticola* 1, *Ranunculus flammula* 1, *Atrichum undulatum* 2,  
2/140: *Cirsium arvense* 4, *Symphytum officiale* 4, *Potentilla anserina* 1, *Chamomilla recutita* 1, *Glechoma hederacea* 2, *Sonchus asper* 2.  
3/158: *Stellaria graminea* 5, *Galinsoga parviflora* 1, *Hypochoeris radicata* 1, *Sonchus arvensis* 1, *Knautia arvensis* 1, *Persicaria lapatifolia* 3, *Phleum sp.* 1, *Lapsana communis* 2, *Hypericum maculatum* +, *Pohlia sp.* 1, *Pseudephemerum nitidum* 4, *Atrichum tenellum* 1,  
4/170: *Tithymalus helioscopius* 1, *Acetosa pratensis* 1, *Cichorium intybus* 1, *Equisetum telmateia* 3, *Prunella vulgaris* 1, *Funaria hygrometrica* 1, *Leptobryum pyriforme* 1,  
5/181: *Holcus mollis* 1, *Veronica serpyllifolia* 2, *Juncus bufonius* 3, *Lysimachia vulgaris* 1, *Echinochloa crus-galli* 2,

#### Localities:

- n. 1/99: Runina, at the S end of the village, 20 m<sup>2</sup>, potato field, Hadač, Andresová at al. 11. 8. 85  
n. 2/140: Prislöp, N end of the village, 30 m<sup>2</sup>, potato field, Hadač, Andresová 15. 8. 85  
n. 3/158: N. Sedlica, at the road to Rjabá skala, potato field, 30 m<sup>2</sup>, Hadač et Andresová 18. 8. 85  
n. 4/170: N. Sedlica, at the chalet „Polonina, potato field, Hadač 15. 8. 85  
n. 5/181: Vysoký vrch near the village Ubřa, Oat field, 20 m<sup>2</sup>, Hadač, Andresová, 20. 8. 85

Tab. XI. *Rumicetum obtusifolii*

Relevé n.	1	2	3	4
altitude [m]:	510	500	520	530
aspect, slope	-	-	-	-
cover, herb layer [%]:	95	90	90	90
moss layer [%]:	-	-	2	2
number of species:	26	33	43	38
<i>Rumex obtusifolius</i> ssp. <i>obtusif.</i>	6	7	6	7
<i>Cirsium arvense</i>	2	2	3	2
<i>Urtica dioica</i>	2	5	5	2
<i>Ranunculus repens</i>	2	4	4	4
<i>Dactylis glomerata</i> ssp. <i>slovenica</i>	4	4	3	5
<i>Trifolium repens</i>	5	3	3	5
<i>Taraxacum officinale</i>	3	2	2	3
<i>Plantago major</i>	3	3	2	2
<i>Veronica filiformis</i>	6	6	4	3
<i>Agrostis capillaris</i>	3	5	.	2
<i>Rorippa sylvestris</i>	2	.	2	2
<i>Arctium tomentosum</i>	1	.	2	4
<i>Matricaria perforata</i>	.	2	1	2
<i>Tussilago farfara</i>	.	2	5	2
<i>Lamium album</i>	.	2	1	2
<i>Deschampsia caespitosa</i>	.	2	4	3
<i>Trifolium pratense</i>	4	.	2	.
<i>Galeopsis bifida</i>	1	2	.	.
<i>Convolvulus arvensis</i>	3	.	2	.
<i>Achillea millefolium</i>	4	.	3	.
<i>Bromus hordaceus</i>	2	.	.	2
<i>Veronica chamaedrys</i>	2	2	.	.
<i>Stellaria media</i>	1	.	.	3
<i>Equisetum arvense</i>	1	.	1	.
<i>Crepis biennis</i>	1	1	.	.
<i>Mentha arvensis</i>	1	.	.	2
<i>Glechoma hederacea</i>	1	.	2	.
<i>Centaurea jacea</i>	.	1	1	.
<i>Heracleum trachycarpum</i>	.	2	1	.
<i>Viola tricolor</i>	.	1	.	1
<i>Anthriscus sylvestris</i>	.	2	2	.
<i>Galium aparine</i>	.	3	.	2
<i>Plantago lanceolata</i>	.	2	2	.
<i>Torilis japonica</i>	.	.	1	1
<i>Leucanthemum ircutianum</i>	.	.	1	2
<i>Galeopsis pubescens</i>	.	3	.	2

In one relevé only:

- 1/420: *Trisetum flavescens* 1, *Calystegia sepium* 2, *Myosotis arvensis* 1,  
2/421: *Leonurus cardiaca* 2, *Stellaria graminea* 2, *Myosoton aquaticum* 2, *Campanula patula* 1, *Malva sylvestris* 1, *Dipsacus sylvestris* 1,  
3/428: *Elytrigia repens* 3, *Poa pratensis* 1, *Symphytum officinale* 1, *Festuca rubra* 3, *Epilobium roseum* 1, *Cerastium holosteoides* 2, *Lysimachia nummularia* 1, *Ranunculus acris* 1, *Agrostis stolonifera* 3, *Vicia sepium* 1, *Galium album* 2, *Lathyrus sylvestris* 2, *Prunella vulgaris* 2, *Armoracia rusticana* 1, *Hypericum perforatum* 1, *Geranium palustre* 1, *Lapsana intermedia* Bieb.  
4/430: *Daucus carota* 3, *Medicago lupulina* 2, *Epilobium hirsutum* 2, *Arctium lappa* 4, *Festuca pratensis* 3, *Trifolium flexuosum* 3, *Lotus corniculatus* 2, *Vicia tetrasperma* 1, *Carum carvi* 1, *Geranium robertianum* 1, *Veronica persica* 1, *Persicaria hydropiper* 2, *Linaria vulgaris* 1, *Scutellaria galericulata* 1,

**Localities:**

- 1/420: near the road between the terrain station and the village in Ruské, 20 m<sup>2</sup>, 6. 8. 89 Hadač, Hadačová  
2/421: Ruské, on the eastern edge of the former village, 20 m<sup>2</sup>, 6. 8. 89 Hadač, Hadačová  
3/428: N part of the former village Ruské at the road to the pass, 20 m<sup>2</sup>, 9. 8. 89 Hadač, Hadačová  
4/430: Ruské, below the churchyard, 20 m<sup>2</sup> 9. 8. 89 Hadač, Hadačová

Tab. XII. *Glechomo hirsutae - Rumicetum alpini*

Relevé n. :	1	2	3	4	5	C
altitude [m]:	1071	945	940	1050	1000	
aspect, slope:	-	-	-	-	-	
cover, herb layer [%]:	100	100	100	100	100	
number of species:	17	16	15	13	13	
<i>Rumex alpinus</i>	9	9	10	8	8	V
<i>Glechoma hirsuta</i>	3	3	3	3	3	V
<i>Aegopodium podagraria</i>	4	4	4	1	2	V
<i>Hypericum maculatum</i>	3	1	2	3	2	V
<i>Poa chaixii</i>	.	5	2	3	2	IV
<i>Rubus idaeus</i>	3	.	2	4	5	IV
<i>Deschampsia caespitosa</i>	1	.	1	1	1	IV
<i>Urtica dioica</i>	4	6	2	.	.	III
<i>Galium odoratum</i>	1	.	2	.	3	III
<i>Senecio nemorensis</i>	.	1	1	.	2	III
<i>Acetosa alpestris</i>	2	.	.	6	6	III
<i>Lysimachia nemorum</i>	.	.	4	4	4	III
<i>Asarum europaeum</i>	2	5	.	.	.	II
<i>Melandrium dioicum</i>	1	4	.	.	.	II
<i>Hylotelephium argutum</i>	3	.	1	.	.	II
<i>Anemoneides nemorosa</i>	.	1	2	.	.	II
<i>Geranium phaeum</i>	.	1	3	.	.	II
<i>Stellaria nemorum</i>	.	.	5	.	2	II

In relevé only:

- n. 1/16: *Salvia glutinosa* 4, *Chamaerion angustifolium* 2, *Scrophularia nodosa* 1, *Paris quadrifolia* 1, *Cardaminopsis halleri* 1,  
n. 2/28: *Gentiana asclepiadea* 2, *Primula elatior ssp. carpatica* 4, *Scrophularia scopolii* 3, *Thalictrum aquilegifolium* 1, *Dentaria bulbifera* 4,  
n. 4/148: *Oxalis acetosella* 1, *Galeopsis speciosa* 2, *Polygonatum verticillatum* 3, *Chaerophyllum hirsutum* 1,  
n. 5/148: *Tanacetum clusii* 1.

**Localities:**

- n. 1/16: on the top of the hill Čierťaž, 5 m<sup>2</sup>, 5. 6. 84 Hadač, Hadinec, Soldán  
n. 2/28: hill Prikrý, on the highest ridge 6. 6. 84 Hadač, Hadinec, Soldán  
n. 3/39: between the pas below the hill Čierťaž and the hill Čolo, in a place, called „Runinky“, 50 m<sup>2</sup>, 7. 6. 84 Hadač  
n. 4/148: on the ridge between the hill Kruhljak and the pass Ruské sedlo, between the frontier stones 29/3 and 29/4, 15 m<sup>2</sup>, 17. 8. 85 Hadač, Andresová  
n. 5/149: on the same ridge below the stone 29/7, 17. 8. 85, soil reaction pH 4.0