Thaiszia - J. Bot., Košice, 5: 31-59, 1995

THAISZIA
Journal of Botany

Ruderal plant communities of north-eastern Slovakia I. *Artemisietea, Galio-Urticetea, Bidentetea.*

MÁRIA ZALIBEROVÁ, IVAN JAROLÍMEK

Institute of Botany, Slovak Academy of Sciences, Dúbravská cesta 14, SK-842 23 Bratislava, Slovakia; tel.: +42-7-368508, fax: +42-7-371948, e-mail: ij@bou.savba.sk

ZALIBEROVÁ M. & JAROLÍMEK I. (1995): Ruderal plant communities of north-eastern Slovakia I. *Artemisietea, Galio-Urticetea, Bidentetea.* - Thaiszia - J. Bot., Košice, 5: 31-59. - ISSN 1210-0420.

Abstract: The first part of the results of phytocoenological study of ruderal vegetation in north-eastern Slovakia is presented. 23 associations and communities of classes *Artemisietea vulgaris,Galio-Urticetea,* and *Bidentetea tripartiti* are briefly characterized from the point of view of floristic composition, ecological conditions, and distribution in the territory studied. Phytocoenological tables of these syntaxa are added.

Keywords: ruderal plant communities, north-eastern Slovakia, *Artemisietea, Galio-Urticetea, Bidentetea*

Introduction

In the course of elaboration both published and unpublished phytocoenological relevés of ruderal plant communities for the Survey of plant communities of Slovakia it was found that the territory of Slovakia has been investigated very unevenly. Many data about ruderal plant comunities were published from some cities, e.g. Malacky (KRIPPELOVÁ 1972), Bratislava (JAROLÍMEK 1985), Trnava (ELIÁŠ 1979). Many papers concern of south-western part of Slovakia (MUCINA 1981a, 1981b, 1982a, 1982b, ELIÁŠ 1981, 1984, 1986). Ruderal vegetation of some orographic units is well known such as Liptovská kotlina - basin in north Slovakia (HILBERT 1981), Košická kotlina - basin in south-eastern Slovakia (KRIPPELOVÁ 1981). On the other hand there were no data from north-eastern Slovakia (cf. ELIÁŠ 1994). It was the reason for investigation of ruderal vegetation of that region during recent years. The first list of ruderal plant communities found was published by JAROLÍMEK & ZALIBEROVÁ (1995).

The paper is aimed at concise presentation of the obtained knowledge about floristic composition, ecology, and distribution of ruderal communities found in north-eastern Slovakia.

Material and Methods

The area studied is limited by Poland in the north, by Ukraine in the east, by Vihorlatské vrchy hills, Slánske vrchy hills and basins Hornádska kotlina, Ľubovnianska kotlina, Popradská kotlina in the south, by Vysoké Tatry Mts in the west. (Fig. 1).

The investigation of ruderal vegetation was done in following orographic units: Beskydské predhorie foothills, Busov Mts., Čergov Mts., Laborecká vrchovina highlands, Ondavská vrchovina highlands, Spišská Magura Mts., Spišsko-šarišské medzihorie basin, Šarišská vrchovina highlands (Fig. 2). Phytocoenological data from Bukovské vrchy hills will be published by ZALIBEROVÁ (in prep.).

The territory studied is formed by clayey flysh from Palaeocene and older Eocene. It belongs to the district of moderately warm and moist climate with cold winter (mean of January temperature is -5° C). The mean annual precipitation vary from 650 to 800 mm (KONČEK & al. 1958, KARNIŠ & KVITKOVIČ 1970). The villages and towns investigated lie in the altitude 150 to 600 m above sec level (Humenné - Vyšné Ružbachy). They are typical by traditional way of building of old and new family houses with front gardens, gardens and yards with poultry. Some houses are built in wood. The new districts with prefabricated blocks of flats are only in some towns, such as Bardejov, Humenné, Stará Ľubovňa, Stropkov and Svidník. Architecture and the way of life in villages and towns are reflected in development and distribution of ruderal vegetation.

Field investigations were carried out during four years (1984, 1986, 1990, 1991). 224 phytocoenological relevés were done in 70 rural and urban districts. (The list of villages and towns in the orographic units according to the map for Data bank of fauna of Slovakia, 1:500000 issued in 1984.) Methods of Zürich-Montpellier school (BRAUN-BLANQUET 1964) were used for analyses of ruderal communities in the field and for synthesis of phytocoenological relevés. Abundance and dominance of species were registered in modified scale (BARKMAN & al. 1964). Values 2a (cover 5-12.5 %) and 2b (cover 12.6-25 %) are given in phytocoenological tables in shortened form A and B. Separate tables are arranged for communities documented by five or more relevés. Other communities, documented by four or less relevés, are arranged to common tables in alliance, order or class level. In the tables the list of species is divided to association (community) diagnostic species, species of relevant higher syntaxa, and other species. The nomenclature of taxa follows NEUHÄUSLOVÁ & KOLBEK (1982).

The list of villages

Beskydské predhorie foothills
Belá nad Cirochou, Dlhé nad Cirochou, Humenné, Malé nad Cirochou, Modra nad Cirochou, Ubľa, Zemplínske Hámre

Busov Mts.
Cigeľka, Nižný Tvarožec, Starý Stebník, Stebník, Stebnická Huta

Čergov Mts.
Livov, Livovská Huta, Lukov, Malcov

Laborecká vrchovina highlands
Bodružal, Čertižné, Havaj, Miroľa, Osadné, Pichne, Pstriná, Svetlice, Stakčín, Zubné

Ondavská vrchovina highlands
Bardejov, Bardejovské kúpele, Becherov, Breznička, Frička, Fričkovce, Gerlachov, Hertnik, Hervartov, Kľušov, Kochanovce, Košarovce, Krivé, Lenartov, Malý Tvarožec, Mikulášová, Mokroluh, Nižná Polianka, Nižný Mirošov, Ondavka, Osikov, Richwald, Rohožník, Rovné, Smilno, Snakov, Staškovce, Stropkov, Sveržov, Svidník, Šiba, Udavské, Varadka, Vyšná Polianka, Vyšná Sitnica, Vyšný Orlík, Vyšný Tvarožec, Vyšný Vŕbik, Zborov, Zlaté

Spišská Magura Mts.
Vyšné Ružbachy

Spišsko-šarišské medzihorie basin
Brezovička, Hromoš, Jakubany, Krásna Lúka, Nižný Slavkov, Nová Ľubovňa, Plavnica, Stará Ľubovňa, Šambron, Šarišské Dravce

Šarišská vrchovina highlands
Fričovce

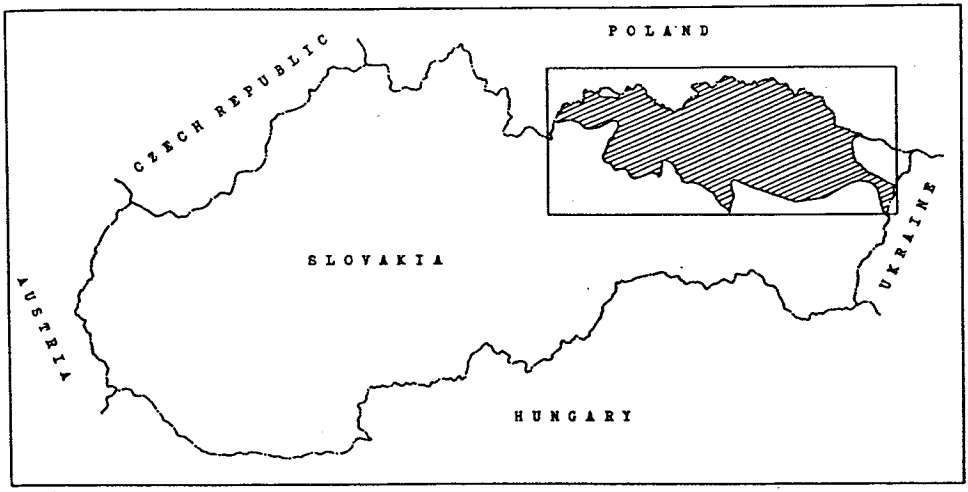

Fig. 1. The studied territory.

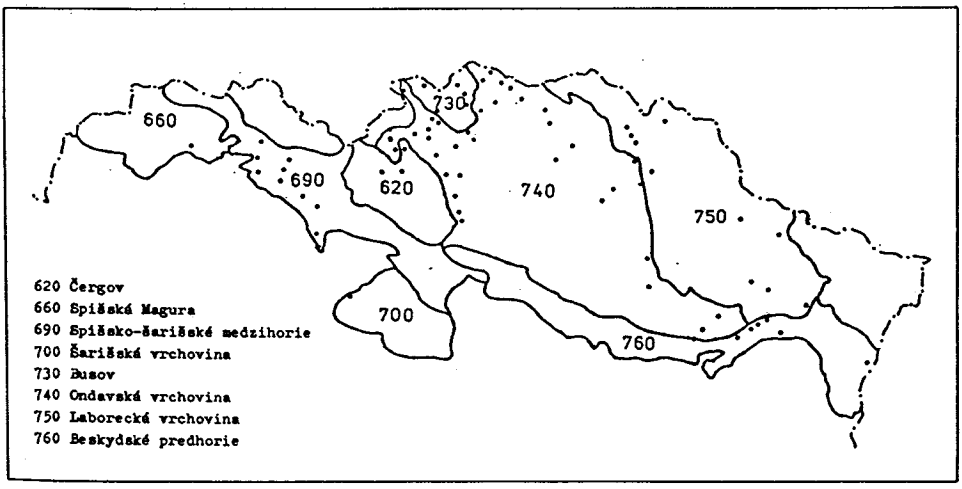

Fig. 2. The orographic units of studied territory and localities of phytocoenological relevés.

Syntaxonomical survey of plant communities

Artemisietea vulgaris LOHMEYER et al. in R.TX. 1950
Onopordetalia BR.-BL. et R.TX. ex KLIKA et HADAČ 1944
Onopordion acanthii BR.-BL. et al. 1936
Onopordetum acanthii BR.-BL.et. al. 1936
Potentillo argenteae-Artemisietum absinthii FALIŃSKI 1965
Carduus acanthoides-comm.
Dauco-Melilotion GÖRS 1966
Echio-Melilotetum R.TX. 1947
Arction lappae R.TX. 1937
Arctietum lappae FELFÖLDY 1942
Tanaceto-Artemisietum vulgaris SISSINGH 1950
Urtico urentis-Chenopodietum boni-henrici R.TX.1937
Hyoscyamo-Conietum maculati SLAVNIĆ 1951
Arctio tomentosi-Rumicetum obtusifolii PASSARGE 1959
Galio-Urticetea PASSARGE ex KOPECKÝ 1969
Lamio albi-Chenopodietalia boni-henrici KOPECKÝ 1969
Helianthus decapetalus-comm.
Carduus personata-comm.
Galio-Alliarion (OBERD. 1957) LOHMEYER et OBERD. in OBERD. et al. 1967
Alliario-Chaerophylletum temuli LOHMEYER 1949
Conio-Chaerophylletum bulbosi POP 1968
Sambucetum ebuli FELFÖLDY 1942
Chelidonium majus-comm.
Aegopodion podagrariae R.TX. 1967
Aegopodio-Geranietum pratense HADAČ 1978
Chaerophylletum aromatici NEUHÄUSLOVÁ et al. 1969
Sisymbrietum strictissimi BRANDES in MUCINA 1993
Aegopodium podagraria-comm.
Anthriscus sylvestris-comm.
Bidentetea tripartiti R.TX. et al. in R. TX. 1950
Bidentetalia tripartiti BR.-BL. et R.TX. ex KLIKA et HADAČ 1944
Bidention tripartiti NORDHAGEN 1940 em. R.TX. in POLI et J.TX. 1960
Polygono lapathifolii-Bidentetum KLIKA 1935
Bidentetum cernui KOBENDZA 1948
Catabroso-Polygonetum hydropiperi POLI et J. TX. 1960

Description of plant communities

Onopordetum acanthii (Tab.1)
One of the most thermophilous plant communities in the territory studied. Thermophilous and xerophilous species *Onopordon acanthium* dominates its stands. *Onopordetum acanthii* has its centre of distribution in Podunajská and Východoslovenská rovina-lowlands. In the region of Slovakia investigated it reaches northern border of its distribution. It was found only on single locality in Ondavská vrchovina highlands.

Potentillo argenteae-Artemisietum absinthii (Tab.1)
Xerophilous, middle rich in species thin community dominated by *Artemisia absinthium.* It grows in sunny and warm ruderal habitats. In the territory studied the community is very rare and its stands lack many thermophilous species. Although *Artemisia absinthium* occurs rarely also in the other localities, the community was registered only in Ondavská vrchovina and Spišsko-šarišské medzihorie highlands. *Potentillo-Artemisietum* is one of the archeophyte rustic plant communities disappearing throughout Slovakia.

Carduus acanthoides-comm. (Tab.1)
Carduus acanthoides dominates the sparse plant community of thermophilous, tall herbs. Late spring is its symphenological optimum. The community is middle rich in species. It was found in Ondavská vrchovina and Spišsko-šarišské medzihorie highlands. Fragments of the community occur on the other localities. The centre of distribution of *Carduus acanthoides*-community lies in the warmest lowlands of south Slovakia. Recently it has tendency of spreading throughout Slovakia.

Echio-Melilotetum (Tab.1)
Rare, thin, species rich, thermophilous community. Its stands are dominated by *Echium vulgare, Melilotus albus* and *M. officinalis.* It was recorded only in Ondavská vrchovina and Spišsko-šarišské medzihorie highlands on heating gravel-stony substratum.

Arctietum lappae (Tab.2)
The plant community of tall hemicryptophytes with symphenological optimum in summer time. Closed stands are middle rich in species. *Arctium tomentosum* is the most frequent dominant. *Arctium minus* prevailed in one stand only. *Poa trivialis* and *Urtica dioica* are presented regularly. The community occurs at sunny, dry to slight moist, slight nitrophilous abandoned places inside villages or along roads outside villages. The most of relevés were recorded in Spišsko-šarišské medzihorie and Ondavská vrchovina-highlands, but the community is distributed in the other orographic units, too.

Tanaceto-Artemisietum vulgaris (Tab.3)
One of the most spread, closed, late summer, tall herb and species-rich communities. Both dominants *Artemisia vulgaris* and *Tanacetum vulgare* alternate in the stands of community, sometimes *Urtica dioica* prevails, too. The community was found mainly at outside borders of villages on the older abandoned dumps with leaking anthropogenic soils. The most of phytocoenological relevés were done in Ondavská vrchovina highlands, less ones were noted in Laborecká vrchovina highlands and Spišsko-šarišské medzihorie-highlands. The community occurs in all the region studied. From syntaxonomical point of view classification of *Tanaceto-Artemisietum* in north-eastern Slovakia seems to be questionable. Habitats of the community are relatively warm and fresh moist. It results in low presence of species of order *Onopordetalia* and higher presence of species of class *Galio-Urticetea.* Classification of both association *Tanaceto-Artemisietum* and alliance *Arction lappae* into syntaxonomical system will be possible after processing of phytocoenological relevés from all Slovakia and after comparison with data from surrounding countries.

Urtico-Chenopodietum boni-henrici (Tab.1)
Rare, middle rich in species, closed plant community of middle tall hemicryptophyte herbs. *Chenopodium bonus-henricus, Potentilla anserina, P. reptans* and *Veronica chamaedrys* occur rather equally in the stands. They lack the thermophilous species *Ballota nigra* which is relatively rare in all studied areas. The community occupies leaking to fresh moist, sunny to semishaded habitats along fences and roadsides. It was registered in Spišsko-šarišské medzihorie highlands and Ondavská vrchovina highlands.

Hyoscyamo-Conietum maculati (Tab.1)
Species poor tall-herb plant community dominated by *Conium maculatum.* It reaches symphenological optimum in high summer. In spite of spreading of *Conium maculatum* in warmer regions of Slovakia during last years, we registered it in the area investigated only on balk near village Sveržov in Ondavská vrchovina highlands. Occurrence of the community in the other orographic units is probable.

Arctio tomentosi-Rumicetum obtusifolii
One of the most spread, medium species rich plant communities with prevalence of hemicryptophyte herbs. *Rumex obtusifolius* dominates the stands. Beside tall herbs *Urtica dioica, Arctium lappa, A. tomentosum, Artemisia vulgaris, Anthriscus sylvestris* and *Heracleum sphondylium* the nitrophilous and mesophilous species such as *Lamium album, L. maculatum, Glechoma hederacea, Ranunculus repens, Poa trivialis* and *Dactylis glomerata* are present. The community occurs inside and outside villages on sunny to slight shaded, fresh moist, and nitrogen rich ruderal habitats. Early summer is symphenological optimum of the community. *Rumex obtusifolius* flowers and becomes ripe in this time. Phytocoenological relevés were made in Busov Mts., Laborecká vrchovina and Ondavská vrchovina highlands, Podbeskydská brázda and Spišsko-šarišské medzihorie basins. They were published in JAROLÍMEK & KLIMENT (1994).

Helianthus decapetalus-comm. (Tab.4)
Species poor to middle rich, closed plant community of tall herbs with late summer symphenological optimum. Aggressive north American neophyte *Helianthus decapetalus* dominates its stands. *Artemisia vulgaris* and *Rubus caesius* are regularly present. More than one half of the species in phytocoenological table appear in the community by accident. Stands of the community occur both in dry, sunny, often gravel ruderal slopes along roads and railways, and in semishadow moist habitats near brooks. They were noted in Ondavská vrchovina highlands and Beskydské predhorie foothills. They occur sporadically elsewhere, too.

Carduus personata-comm. (Tab.5)
Tall hemicryptophytes prevail in closed and middle rich in species plant community. *Carduus personata* dominates the stands. *Urtica dioica, Heracleum sphondylium, Elytrigia repens, Poa trivialis, Chaerophyllum aromaticum* are regularly present there. In summer time the stands reach symphenological optimum. *Carduus personata*-community usually occurs on sunny or slight shaded, slight moist and nitrogen richer habitats along roads. In Spišsko-šarišské medzihorie-highlands it skirts some roads in continuous belts. It was spread in Ondavská vrchovina highlands and Busov Mts.

Tab. 1 Communities of order *Onopordetalia*

A - *Onopordetum acanthii* (rel. 1)
B - *Carduus acanthoides*-community (rels. 2, 3)
C - *Potentillo argenteae-Artemisietum absinthii* (rels. 4, 5)
D - *Echio-Melilotetum* (rels. 6 - 8)
E - *Urtico urentis-Chenopodietum boni-henrici* (rels. 9, 10)
F - *Hyosciamo-Conietum maculati* (rel. 11)

Community	A	B	B	C	C	D	D	D	E	E	F
No. of relevé	1	2	3	4	5	6	7	8	9	10	11
Sampled area (m^2)	21	25	25	16	16	25	16	30	3	5	25
Cover of herb layer (%)	100	100	100	70	80	80	95	80	100	100	100
No. of species	28	36	28	37	28	35	21	37	18	23	11
***Onopordetum acanthii*:**											
Onopordum acanthium	A	.	.	.	.	.	.	.	.	.	.
***Carduus acanthoides*-community:**											
Carduus acanthoides	4	4	4	+	.	1	.	1	.	.	.
***Potentillo argenteae-Artemisietum absinthii*:**											
Potentilla argentea	.	.	.	.	R	.	.	.	.	.	.
Artemisia absinthium	.	.	.	3	4	+	1	.	.	.	.
***Echio-Melilotetum*:**											
Melilotus alba	.	+	1	.	.	3	5	A	.	.	.
Melilotus officinalis	.	.	.	.	.	A	.	.	.	.	.
***Urtico urentis-Chenopodietum boni-henrici*:**											
Chenop. bonus-henricus .	.	.	.	.	.	.	.	.	B	3	
***Lamio-Conietum maculati*:**											
Conium maculatum	.	.	.	.	.	.	.	.	.	.	5
***Onopordion, Dauco-Melilotion, Arction, Artemisietea vulgaris*:**											
Artemisia vulgaris	1	+	.	.	1	.	1	+	.	+	+
Medicago lupulina	.	A	1	A	1	B	1	A	.	.	.
Geranium pusillum	.	1	+	.	+	.	.	.	+	+	.
Echium vulgare	.	+	1	B	.	A	.	3	.	.	.
Melandrium album	1	+	+	.	.	.	.	.	.	.	+
Arctium tomentosum	R	1	+	.	.	.	.	.	.	.	1
Elytrigia repens	A	+	+	.	.	.	.	.	.	.	+
Tussilago farfara	.	.	.	.	.	1	+	A	.	.	.
Verbascum densiflorum	.	.	1	+	.	+	.	.	.	.	.
Daucus carota	.	.	.	+	.	A	.	+	.	.	.
Poa compressa	.	.	.	.	.	1	.	+	.	.	.
Odontites verna	.	.	.	A	.	A	.	.	.	.	.
Cirsium vulgare	.	R	.	.	.	.	.	+	.	.	.
Others:											
Trifolium repens	.	+	+	+	+	A	+	1	+	.	.
Taraxacum officinale agg.	.	+	+	.	+	+	1	1	.	+	.
Plantago major	.	+	+	+	.	.	+	+	+	+	.
Lolium perenne	.	+	+	.	1	+	+	1	1	.	.
Achillea millefolium	.	+	+	1	+	+	.	+	.	.	.
Plantago lanceolata	.	+	+	1	.	A	.	1	A	.	.
Lotus corniculatus	.	+	+	1	.	1	.	1	.	.	.
Matricaria perforata	1	1	1	.	1	.	.	+	.	.	.

Tab. 1 Continued

Community	A	B	B	C	C	D	D	D	E	E	F
No. of relevé	1	2	3	4	5	6	7	8	9	10	11
Arenaria serpyllifolia	.	.	.	+	1	+	A	.	.	.	.
Crepis biennis	.	+	+	+	.	+	.	.	.	.	.
Potentilla reptans	.	.	.	+	+	.	.	.	1	A	.
Trifolium pratense	.	+	+	+	.	1	.	.	.	.	.
Viola arvensis	R	+	.	.	.	+	.	.	.	.	.
Salix purpurea	.	.	.	.	.	+	R	R	.	.	.
Vicia cracca	.	1	+	.	.	.	+	.	.	.	.
Chamomilla suaveolens	.	+	+	.	.	.	.	.	.	1	.
Rumex obtusifolius	.	+	+	.	.	.	.	.	.	.	1
Veronica persica	3	+	.	.	.	+	.	.	.	.	.
Galium album	.	+	+	.	.	1	.	.	.	.	.
Lamium album	1	.	.	.	+	.	.	.	.	+	.
Galium aparine	1	.	.	+	.	.	.	.	.	.	A
Agrostis gigantea	1	.	.	+	.	.	.	+	.	.	.
Ranunculus repens	.	+	.	+	.	.	.	.	.	+	.
Urtica dioica	A	.	.	.	.	.	.	.	.	+	A
Galium mollugo	.	.	.	+	1	.	.	1	.	.	.
Cerastium holosteoides	.	.	.	.	+	.	+	+	.	.	.
Festuca pratensis	+	.	.	.	.	1	.	+	.	.	.
Glechoma hederacea	.	.	.	.	1	.	.	.	1	1	.
Descurainia sophia	R	+	1	.	.	.	.	.	.	.	.
Leucanthemum vulgare	.	.	.	+	1	.	+	.	.	.	.
Poa annua	.	.	.	.	.	.	.	1	1	+	.
Poa pratensis	.	.	.	.	.	A	.	+	.	+	.
Poa trivialis	+	1	1	.	.	.	.	.	.	.	.
Polygonum arenastrum	.	+	.	.	+	.	.	.	.	.	.
Anthriscus sylvestris	.	.	.	.	.	.	.	.	+	+	.
Pimpinella saxifraga	.	.	.	+	.	.	.	+	.	.	.
Geranium columbinum	+	.	.	.	+	.	.	.	.	.	.
Myricaria germanica	.	.	.	.	.	+	+	.	.	.	.
Myosoton aquaticum	+	.	.	.	+	.	.	.	.	.	.
Atriplex patula	.	+	.	.	1	.	.	.	.	.	.
Stellaria media	+	.	.	.	.	.	.	.	.	.	+
Fallopia convolvulus	.	+	+	.	.	.	.	.	.	.	.
Senecio vulgaris	.	.	.	+	.	.	.	.	.	+	.
Euphorbia cyparissias	.	.	+	+	.	.	.	.	.	.	.
Euphrasia stricta	.	1	+	.	.	.	.	.	.	.	.
Anthyllis vulneraria	.	.	.	+	.	A	.	.	.	.	.
Rumex crispus	R	.	.	.	.	.	.	+	.	.	.
Acinos arvensis	.	.	.	+	.	A	.	.	.	.	.
Dactylis glomerata	+	.	.	.	.	.	.	+	.	.	.
Rhinanthus minor	.	.	.	.	.	1	.	.	.	+	.
Alchemilla sp. div.	.	.	.	.	.	.	.	.	+	+	.
Convolvulus arvensis	.	.	.	.	.	.	.	.	+	+	.
Potentilla anserina	.	.	.	.	.	.	.	.	A	A	.
Agrostis stolonifera	.	.	.	1	.	.	1	.	.	.	.
Herniaria glabra	.	.	.	1	.	+	.	.	.	.	.

Tab. 1 Continued

In one relevé:
Anagallis arvensis 1 (5), *Anthemis cotula* + (5), *Arctium lappa* A (11), *Astragalus glycyphyllos* + (6), *A. onobrychis* R (7), *Ballota nigra* + (1), *Barbarea vulgaris* + (4), *Bellis perennis* + (10), *Bromus * hordeaceus* + (9), *Capsella bursa-pastoris* 1 (10), *Carduus personata* 1 (11), *Carum carvi* + (7), *Cerinthe minor* 1 (8), *Chaenorhinum minus* + (6), *Chaerophyllum aromaticum* R (4), *Chenopodium polyspermum* 1 (5), *Cichorium intybus* + (8), *Cirsium arvense* + (10), *Coronilla varia* 1 (7), *Epilobium hirsutum* + (8), *Equisetum pratense* + (4), *Galium verum* + (8), *Galinsoga ciliata* + (5), *Geranium dissectum* + (2), *Geum urbanum* 1 (10), *Holcus lanatus* + (1), *Hypericum maculatum* 1 (8), *H. perforatum* + (4), *Lactuca serriola* + (1), *Lapsana communis* R (2), *Leontodon autumnalis* + (6), *Lepidium campestre* + (1), *Linum catharticum* + (4), *Lysimachia nummularia* +(9), *Medicago falcata* + (8), *Mentha longifolia* + (10), *Polygonum brittingeri* + (5), *Potentilla supina* + (4), *Prunella vulgaris* + (8), *Reseda lutea* + (1), *Rorippa sylvestris* + (6), *Rubus caesius* + (1), *Salix caprea* R (7), *Scrophularia nodosa* + (8), *S. scopolii* + (4), *Sisymbrium officinale* + (2), *Stellaria holostea* + (9), *Swida australis* R (7), *Tanacetum vulgare* 1 (1), *Turritis glabra* R (8), *Verbascum austriacum* + (4), *V. phlomoides* + (4), *Verbascum sp.* R (8), *Veronica chamaedrys* A (9), *V. hederifolia* + (5), *Viola tricolor* 1 (5).

Alliario-Chaerophylletum temuli (Tab.5)
Rare, floristically medium rich plant community of medium tall hemicryptophytes dominated by *Chaerophyllum temulum.* Symphenological optimum is in late spring and beginning of summer. The community was found at ruins of castle near village Zborov in Ondavská vrchovina highlands on loose substratum at the wall. *Alliario-Chaerophylletum* is infrequent plant community in all the territory of Slovakia.

Conio-Chaerophylletum bulbosi (Tab.5)
Sporadic, medium species rich plant community of tall biennial and hemicryptophyte herbs with optimum of development in the middle of summer. It was noted only in one locality in Busov Mts. near village Nižný Tvarožec at the border of field. The community can be found in the other localities, because it has had a tendency to spread over the all Slovakia in a few last years. Distribution centre of the community lies in the warmest lowlands Podunajská nížina and Východoslovenská nížina.

Sambucetum ebuli (Tab.6)
Medium species rich, closed plant community of tall hemicryptophyte herbs. *Sambucus ebulus* dominates its stands. *Galium aparine, Urtica dioica* and *Elytrigia repens* are regularly present. Therophyte herbs and grasses frequent in community in the other (especially warm) regions of Slovakia are absent in the territory studied. The community occurs on sunny or semishaded, nitrogen rich habitats such as slopes along roads, streams and fields mostly out of villages. We noted the *Sambucetum ebuli* in Čergov Mts., Spišsko-šarišské medzihorie basin, Ondavská vrchovina highlands, and Laborecká vrchovina highlands. In the north-eastern Slovakia the community does not belong to expansive ones.

Chelidonium majus-comm. (Tab.7)
Species poor, closed plant community of hemicryptophyte nitrophilous herbs dominated by *Chelidonium majus* with regularly occurring species *Urtica dioica* and *Lamium album*. In its stands rare species *Geum aleppicum* was registered. Stands were found mostly on semishaded places on fresh moist or dry habitats along walls and fences. The most of phytocoenological relevés were done in Spišsko-šarišské medzihorie basin and Ondavská vrchovina highlands but the community probably occurs also in the other orographic units.

Aegopodio-Geranietum pratense (Tab.8)
Medium rich in species, closed plant community of hemicryptophyte herbs and grasses. *Geranium pratense* dominates its stands. *Anthriscus sylvestris, Heracleum sphondylium, Taraxacum officinale, Urtica dioica* and *Glechoma hederacea* are regularly present. The community differs from the association described by HADAČ (1978) by absence of *Aegopodium podagraria*. Symphenological optimum of its stands is in summertime. *Aegopodio-Geranietum* occurs on open, moist, nitrogen relatively rich habitats especially on slopes near roads and roadsides in and out of villages. We registered it mainly in Ondavská vrchovina highlands and Spišsko-šarišské medzihorie basin, but sparsely it occurs in the other orographic units, too.

Chaerophylletum aromatici (Tab.9)
One of the most spread, floristically medium rich, closed communities of tall herbs with symphenological optimum in early summer. *Chaerophyllum aromaticum* dominates its stands, *Urtica dioica* bears as subdominant. *Poa trivialis, Elytrigia repens,* and *Heracleum sphondylium* are regularly present. The stands develop on fresh moist to moist, sunny or semishaded habitats rich in nitrogen like sloping roadsides, balks, fringes of shrubs and various abandoned places in villages and mainly out of villages. The community occurs in all orographic units. Phytocoenological relevés were made in Ľubovnianska vrchovina highlands, Ondavská vrchovina highlands, Busov Mts., and Spišsko-šarišské medzihorie basin.

Sisymbrietum strictissimi (Tab.5)
Rare, closed plant community of tall herbs with symphenological optimum in early summer. In this time yellow flowering broadleaved species *Sisymbrium strictissimum* dominates the community. It was found only on sunny ruderal habitat near old fortification wall in the Bardejov-city.

Aegopodium podagraria-comm. (Tab.10)
One of the most spread ruderal community in the territory studied, optimally developed in the middle of summer. Tall hemicryptophyte herbs prevail in species relatively poor stands. *Aegopodium podagraria* and *Urtica dioica* dominate stands of the community. *Lamium album* is regularly present. The community occurs on sunny to semishaded, dry to fresh moist, nitrogen rich ruderal habitats. The most frequently it was found along roads, in ditches, near fences and walls, in the vicinity of outbuildings. Phytocoenological relevés were made in Ondavská vrchovina highlands and Spišsko-šarišské medzihorie basin, but it also occurs in the other orographic units.

Tab. 2 ***Arctietum lappae***

No. of relevé	1	2	3	4	5	6	7	8	Const.
Sampled area (m^2)	20	24	30	32	32	40	18	25	(%)
Cover of herb layer (%)	100	100	100	100	100	100	100	100	
No. of species	25	20	16	19	18	17	9	13	
***Arctietum lappae*:**									
Arctium tomentosum	4	4	4	5	4	5	.	3	88
Ballota nigra	.	.	+	+	+	.	.	.	38
Arctium minus	.	.	.	R	.	.	5	.	25
***Arction, Onopordetalia, Artemisietea*:**									
Artemisia vulgaris	A	B	+	+	B	+	.	+	88
Heracleum sphondylium	.	1	1	1	+	+	.	.	63
Melandrium album	1	+	R	+	+	.	.	.	63
Rumex obtusifolius	1	.	.	+	1	+	1	.	63
Elytrigia repens	.	.	1	.	.	+	+	A	50
Armoracia rusticana	.	1	1	.	.	R	.	.	38
Cirsium vulgare	1	.	R	.	.	.	.	.	25
Others:									
Poa trivialis	1	A	A	+	1	1	A	3	100
Urtica dioica	A	B	B	1	+	1	+	3	100
Dactylis glomerata	.	+	+	.	1	.	1	+	63
Lamium album	1	B	1	.	.	.	.	+	50
Galium aparine	.	+	.	+	+	1	.	.	50
Anthriscus sylvestris	1	.	.	+	+	.	.	+	50
Ranunculus repens	1	.	.	1	.	.	+	.	38
Glechoma hederacea	.	B	.	.	.	B	.	+	38
Cirsium arvense	.	+	.	+	.	+	.	.	38
Vicia cracca	.	.	.	+	+	.	.	.	25
Lapsana communis	.	+	.	.	.	R	.	.	25
Sambucus nigra	.	.	.	+	R	.	.	.	25
Phleum pratense	.	.	+	+	.	.	.	.	25
Galeopsis tetrahit	.	.	.	+	.	.	.	+	25
Taraxacum officinale agg.	+	.	.	.	+	.	.	.	25
Symphytum officinale	.	.	A	.	.	+	.	.	25
Mentha longifolia	1	+	.	.	.	.	.	.	25
Matricaria perforata	.	+	.	.	+	.	.	.	25

In one relevé:

Achillea millefolium + (1), *Acinos arvensis* + (1), *Arrhenatherum elatius* + (7), *Astragalus glycyphyllos* + (1), *Calystegia sepium* + (6), *Campanula trachelium* + (1), *Cerastium holosteoides* + (5), *Chelidonium majus* + (2), *Chenopodium bonus-henricus* 1 (1), *Convolvulus arvensis* + (3), *Echium vulgare* + (1), *Festuca gigantea* + (7), *Galeopsis pubescens* R (4), *Geranium pusillum* + (1), *Lamium maculatum* + (6), *Lolium perenne* + (5), *Myosoton aquaticum* 1 (6), *Phalaris arundinacea* 1 (8), *Pimpinella major* + (1), *Plantago major* + (8), *P. lanceolata* + (1), *Potentilla anserina* 1 (2), *Roegneria canina* + (8), *Rorippa sylvestris* + (1), *Rumex crispus* R (3), *Scrophularia nodosa* R (2), *S. scopolii* + (1), *Sinapis arvensis* R (2), *Sisymbrium officinale* 1 (2), *Torilis japonica* R (6), *Trifolium pratense* + (5), *Tussilago farfara* + (1), *Veronica chamaedrys* 1 (1), *Vicia sepium* + (4).

Tab. 3 ***Tanaceto-Artemisietum vulgaris***

No. of relevé	1	2	3	4	5	6	7	8	Const.
Sampled area (m^2)	18	36	40	30	25	25	12	15	(%)
Cover of herb layer (%)	100	100	95	100	100	100	100	100	
No. of species	41	29	50	40	28	29	29	24	
***Tanaceto-Artemisietum*:**									
Tanacetum vulgare	.	.	4	.	.	4	3	3	50
Artemisia vulgaris	3	3	A	3	3	B	+	1	100
***Arction, Artemisietea vulgaris*:**									
Ballota nigra	A	A	.	+	B	1	.	.	63
Elytrigia repens	+	A	+	4	.	A	.	.	63
Melandrium album	+	.	+	+	.	.	.	.	38
Medicago lupulina	.	+	+	.	.	.	.	1	38
Pastinaca sativa	.	.	+	.	.	A	.	.	25
Arctium lappa	1	.	.	.	.	1	.	.	25
Arctium tomentosum	.	1	.	.	.	.	+	.	25
Others:									
Glechoma hederacea	.	+	+	+	1	1	A	+	88
Taraxacum officinale agg.	+	1	+	+	A	1	.	1	88
Plantago major	+	.	+	.	+	+	+	1	75
Achillea millefolium	1	.	+	+	+	1	.	1	75
Dactylis glomerata	+	.	+	+	1	B	1	.	75
Urtica dioica	3	A	.	3	4	.	A	3	75
Lamium album	1	A	+	.	+	.	1	A	75
Potentilla anserina	+	.	+	+	.	.	1	1	63
Cirsium arvense	A	.	+	.	.	1	+	+	63
Ranunculus repens	1	+	.	.	1	+	.	+	63
Myosoton aquaticum	+	+	+	A	.	.	.	.	50
Poa trivialis	A	A	1	.	.	.	+	.	50
Lactuca serriola	.	.	1	+	+	+	.	.	50
Agrostis gigantea	.	.	1	1	A	3	.	.	50
Phleum pratense	+	.	+	+	.	B	+	.	63
Matricaria perforata	+	+	1	.	.	.	.	.	38
Lolium perenne	1	+	+	.	.	.	1	.	50
Galium mollugo	.	.	+	1	.	A	.	1	50
Heracleum sphondylium	.	+	.	+	.	+	.	1	50
Anthriscus sylvestris	.	+	.	1	A	.	1	.	50
Trifolium pratense	.	.	+	.	+	.	.	+	38
Chenopodium album	+	+	+	.	.	.	.	.	38
Agrostis stolonifera	.	.	+	1	1	.	.	.	38
Plantago lanceolata	.	.	+	.	.	.	1	+	38
Festuca pratensis	+	.	.	+	+	.	.	.	38
Rumex crispus	+	.	.	+	1	.	.	.	38
Galium aparine	.	1	+	A	.	.	.	.	38
Rubus idaeus	1	.	.	+	+	.	.	.	38
Chaerophyllum aromaticum	A	.	.	1	.	+	.	.	38
Rorippa sylvestris	1	.	.	+	.	.	.	.	25

Tab. 3 Continued

No. of relevé	1	2	3	4	5	6	7	8	Const.
Arrhenatherum elatius	.	.	1	.	.	.	+	.	25
Apera spica-venti	+	+	.	.	.	.	.	.	25
Cuscuta europaea	.	.	.	1	+	.	.	.	25
Rumex obtusifolius	.	.	.	1	B	.	.	.	25
Stellaria media	+	.	.	+	.	.	.	.	25
Vicia tetrasperma	+	+	.	.	.	.	.	.	25
Veronica chamaedrys	.	.	.	.	+	.	+	.	25
Capsella bursa-pastoris	+	.	+	.	.	.	.	.	25
Trifolium repens	+	.	+	.	.	.	.	.	25
Mentha longifolia	.	.	.	1	.	1	.	.	25
Festuca gigantea	.	.	.	1	1	.	.	.	25
Galeopsis speciosa	+	+	.	.	.	.	.	.	25
Lotus corniculatus	.	.	+	.	+	.	.	.	25
Cichorium intybus	.	.	+	.	.	+	.	.	25
*Bromus *hordeaceus*	.	+	+	.	.	.	.	.	25
Scrophularia nodosa	+	+	.	.	.	.	.	.	25
Chelidonium majus	.	.	R	.	1	.	.	.	25
Aster sp.	.	.	+	+	.	.	.	.	25
Cerastium holosteoides	.	.	+	.	.	.	.	R	25
Ranunculus acris	+	.	.	.	.	.	.	+	25
Armoracia rusticana	.	.	A	1	.	.	.	.	25
Lathyrus pratensis	.	.	.	A	.	.	+	.	25
Carex hirta	.	.	.	.	+	+	.	.	25
Geum urbanum	.	.	.	.	R	.	1	.	25
Geranium pratense	.	.	.	+	.	+	.	.	25
Tussilago farfara	.	.	.	+	.	.	.	A	25

In one relevé:

Aegopodium podagraria A (9), *Alopecurus pratensis* + (1), *Angelica sylvestris* + (7), *Atriplex patula* + (2), *Barbarea vulgaris* + (3), *Calystegia sepium* + (4), *Carduus acanthoides* R (3), *C. personata* + (7), *Carum carvi* R (8), *Centaurea jacea* + (4), *Chamomilla suaveolens* + (1), *Chenopodium bonus-henricus* 1 (7), *Cirsium vulgare* R (3), *Conium maculatum* R (2), *Convolvulus arvensis* + (1), *Daucus carota* + (4), *Descurainia sophia* + (2), *Dipsacus sylvestris* A (3), *Epilobium hirsutum* + (6), *Epilobium montanum* + (7), *Erysimum cheiranthoides* + (1), *Euphorbia cyparissias* + (4), *Fallopia convolvulus* + (3), *Festuca gigantea* 1 (5), *Galeopsis pubescens* 1 (5), *Galium album* + (7), *Galium verum* + (6), *Hypericum perforatum* + (3), *Lapsana communis* R (2), *Lepidium campestre* + (3), *L. densiflorum* + (3), *L. ruderale* + (3), *L. virginicum* + (3), *Leucanthemum vulgare* 1 (7), *Malva neglecta* + (1), *Mentha arvensis* A (6), + (7), *Origanum vulgare* + (7), *Poa angustifolia* 3 (6), + (8), *P. pratensis* + (3), *Polygonum arenastrum* + (1), *P. lapathifolium* + (1), *Potentilla argentea* R (2), *P. reptans* + (6), *Prunella vulgaris* + (8), *Reseda lutea* + (3), *Sisymbrium officinale* + (1), *Sonchus arvensis* R (2), *Stachys germanica* + (7), *Symphytum officinale* + (4), *Thlaspi arvense* + (2), *Torilis japonica* 1 (4), *Trifolium hybridum* 1 (5), *Trisetum flavescens* A (8), *Valeriana officinalis* + (7), *Veronica persica* 1 (6), *Vicia sepium* + (8).

Tab. 6 ***Sambucetum ebuli***

No. of relevé	1	2	3	4	5	6	Const.
Sampled area (m^2)	30	25	20	25	60	100	(%)
Cover of herb layer (%)	100	100	100	100	100	100	
No. of species	16	19	19	13	14	37	
***Sambucetum ebuli*:**							
Sambucus ebulus	5	5	5	5	5	4	100
***Galio-Alliarion, Galio-Urticetea*:**							
Galium aparine	1	+	+	1	1	A	100
Urtica dioica	A	+	+	1	1	A	100
Anthriscus sylvestris	A	+	+	1	.	.	67
Heracleum sphondylium	1	+	.	+	1	.	67
Glechoma hederacea	.	+	.	+	+	A	67
Chaerophyllum aromaticum	.	.	+	1	.	+	50
Calystegia sepium	.	+	.	.	+	.	33
Aegopodium podagraria	.	.	.	.	1	.	17
Others:							
Elytrigia repens	+	1	+	.	+	A	83
Poa trivialis	.	1	+	A	.	+	67
Artemisia vulgaris	+	1	+	.	+	.	67
Convolvulus arvensis	1	+	.	+	.	.	50
Veronica chamaedrys	.	.	+	.	.	+	33
Equisetum arvense	.	+	1	.	.	.	33
Geranium pratense	+	.	.	.	.	+	33
Galium mollugo	1	+	.	.	.	.	33
Myosoton aquaticum	.	+	.	.	.	+	33
Cirsium arvense	.	.	+	.	.	+	33
Dactylis glomerata	+	.	.	.	.	+	33
Agrostis gigantea	.	1	.	.	.	1	33
Achillea millefolium	.	.	+	.	.	+	33
Rumex crispus	+	.	.	.	.	+	33
Rubus caesius	1	1	.	.	.	.	33
Festuca pratensis	.	.	+	.	.	+	33

In one relevé:

Agrostis stolonifera 1 (6), *Angelica sylvestris* R (4), *Arctium minus* + (2), *A. tomentosum* + (3), *Armoracia rusticana* + (5), *Aster lanceolatus* A (4), *Ballota nigra* + (6), *Campanula trachelium* + (3), *Capsella bursa-pastoris* + (1), *Carex hirta* + (6), *Chenopodium album* + (5), *Cirsium vulgare* + (3), *Clematis vitalba* 1 (2), *Cruciata glabra* + (6), *Cucubalus baccifer* 1 (5), *Deschampsia cespitosa* + (6), *Fallopia convolvulus* 3 (5), *Galeopsis pubescens* 1 (6), *G. tetrahit* + (3), *Galium uliginosum* + (6), *G. verum* + (3), *Geum urbanum* + (6), *Holcus lanatus* + (6), *Humulus lupulus* + (2), *Hypericum maculatum* + (6), *Lamium album* + (6), *Melandrium album* + (1), *Mentha longifolia* 1 (6), *Poa angustifolia* + (6), *P. pratensis* + (3), *Prunella vulgaris* + (4), *Ranunculus repens* 1 (6), *Rubus idaeus* + (6), *Rumex acetosa* + (6), *R. conglomeratus* + (6), *Sambucus nigra* + (6), *Solidago canadensis* 1 (5), *Stellaria graminea* + (6), *S. media* + (6), *Symphytum officinale* + (6), *Taraxacum officinale* agg. + (1), *Vicia cracca* + (4).

Tab. 7 *Chelidonium majus*-community

No. of relevé	1	2	3	4	5	6	7	Const.
Sampled area (m^2)	4	10	14	10	20	18	3	(%)
Cover of herb layer (%)	95	100	100	100	100	100	100	
No. of species	16	17	12	13	14	16	13	
***Chelidonium majus*-community:**								
Chelidonium majus	5	3	4	5	5	4	5	100
***Galio-Alliarion, Galio-Urticetea*:**								
Urtica dioica	+	A	+	1	1	A	+	100
Lamium album	1	A	.	A	1	A	+	86
Geum urbanum	.	.	1	.	1	.	+	43
Anthriscus sylvestris	.	+	1	.	+	.	.	43
Lamium maculatum	.	A	.	.	.	+	.	29
Geum aleppicum	.	.	.	+	.	B	.	29
Others:								
Rumex obtusifolius	.	.	.	1	+	1	+	57
Ballota nigra	+	+	R	A	.	.	.	57
Poa trivialis	.	1	.	.	+	1	1	57
Taraxacum officinale agg.	+	+	R	+	.	.	.	57
Ranunculus repens	.	1	+	.	.	1	.	43
Potentilla anserina	.	+	.	1	.	.	+	43
Veronica chamaedrys	.	.	.	.	.	1	+	29
Geranium pratense	.	+	.	.	+	.	.	29
Impatiens noli-tangere	.	.	B	.	1	.	.	29
Artemisia vulgaris	.	.	.	+	+	.	.	29
Sisymbrium officinale	1	.	.	+	.	.	.	29
Dactylis glomerata	.	+	.	.	.	+	.	29
Plantago major	+	.	.	.	.	R	.	29
Mentha longifolia	.	.	.	.	R	.	R	29

In one relevé:

Acer pseudoplatanus R (3), *Aegopodium podagraria* 1 (4), *Agrostis stolonifera* + (3), *Arctium lappa* + (1), *Campanula trachelium* R (2), *Capsella bursa-pastoris* + (4), *Chaerophyllum aromaticum* + (5), *Chenopodium bonus-henricus* + (6), *Cirsium arvense* + (7), *C. vulgare* R (6), *Conyza canadensis* + (1), *Elytrigia repens* + (2), *Fraxinus excelsior* R (6), *Galeopsis* sp. 1 (1), *Galium aparine* + (3), *Geranium pusillum* + (4), *Glechoma hederacea* 3 (2), *Heracleum sphondylium* + (3), *Lapsana communis* R (5), *Mycelis muralis* 1 (6), *Poa palustris* + (1), *Polygonum arenastrum* + (1), *Potentilla reptans* + (7), *Rumex crispus* 1 (2), *Sambucus nigra* R (6), *Scrophularia nodosa* + (2), *S. scopolii* + (5), *Senecio fuchsii* R (7), *S. vulgaris* + (7), *Sonchus oleraceus* R (1), *Stellaria media* 1 (1), *Triticum* R (1), *Urtica urens* 1 (1).

Tab. 8 ***Aegopodio-Geranietum pratense***

No. of relevé	1	2	3	4	5	6	Const.
Sampled area (m^2)	20	6	25	8	25	25	(%)
Cover of herb layer (%)	100	100	100	100	100	90	
No. of species	21	18	17	28	20	38	
***Aegopodio-Geranietum*:**							
Geranium pratense	5	5	5	4	5	4	100
***Aegopodion, Galio-Urticetea*:**							
Anthriscus sylvestris	R	+	.	+	+	1	83
Heracleum sphondylium	1	+	+	.	+	B	83
Urtica dioica	A	1	1	.	1	A	83
Glechoma hederacea	A	+	1	.	A	1	83
Lamium album	.	.	.	+	.	+	33
Chenopodium bonus-henricus	.	.	+	+	.	.	33
Chaerophyllum aromaticum	.	1	+	.	.	.	33
Others:							
Taraxacum officinale agg.	+	+	+	1	+	.	83
Ranunculus repens	+	.	+	.	1	1	67
Achillea millefolium	+	.	.	1	+	+	67
Veronica chamaedrys	+	.	.	+	1	+	67
Elytrigia repens	1	1	A	.	.	1	67
Dactylis glomerata	+	+	.	.	+	1	67
Convolvulus arvensis	+	.	1	.	+	+	67
Galium album	B	.	.	1	1	.	50
Lolium perenne	.	+	1	.	1	.	50
Plantago lanceolata	.	.	+	1	.	+	50
Plantago major	.	+	+	+	.	.	50
Festuca pratensis	+	.	.	1	1	.	50
Cirsium arvense	.	.	.	.	+	1	33
Agrostis stolonifera	.	.	.	1	.	A	33
Poa pratensis	.	1	.	.	1	.	33
Lotus corniculatus	.	.	+	A	.	.	33
Rumex obtusifolius	+	.	.	.	.	+	33
Ballota nigra	.	.	+	.	.	+	33
Leontodon autumnalis	.	.	.	+	.	+	33
Arrhenatherum elatius	+	.	.	.	.	+	33
Potentilla anserina	.	1	.	A	.	.	33
Alchemilla sp. div.	.	.	.	+	.	1	33

In one relevé:
Agrimonia eupatoria + (6), *Alopecurus pratensis* + (2), *Apera spica-venti* + (1), *Arctium lappa* + (2), *A. minus* + (5), *Artemisia vulgaris* + (2), *Atriplex patula* R (1), *Bellis perennis* 1 (4), *Carduus acanthoides* + (4), *Carex hirta* + (6), *Carum carvi* + (4), *Centaurea jacea* + (6), *Cerastium holosteoides* + (4), *Cirsium vulgare* + (6), *Galinsoga ciliata* + (6), *Galium mollugo* A (6), *G.* * *album* + (3), *G. aparine* + (3), *Geranium pusillum* B (4), *Knautia arvensis* + (6), *Leontodon hispidus* R (6), *Leucanthemum vulgare* + (6), *Lysimachia nummularia* + (6), *Melandrium album* + (1), *Mentha longifolia* + (5), *Myosoton aquaticum* + (2), *Odontites verna* 1 (4), *Pastinaca sativa* + (3), *Phalaris arundinacea* + (6), *Pimpinella major* + (1), *P. saxifraga* 1 (6), *Plantago media* + (4), *Poa angustifolia* 1 (6), *P. annua* A (4), *P. trivialis* + (2), *Potentilla reptans* + (1), *Prunella vulgaris* 1 (4), *Ranunculus acris* + (4), *Rubus caesius* + (5), *Rumex acetosa* + (6), *Sonchus oleraceus* + (6), *Trifolium pratense* 1 (6), *T. repens* A (4), *Tussilago farfara* 1 (6), *Veronica arvensis* + (4), *Vicia cracca* + (6).

Tab. 9 ***Chaerophylletum aromatici***

No. of relevé	1	2	3	4	5	6	7	8	9	10	Const.
Sampled area (m^2)	32	32	25	25	25	20	20	24	25	16	(%)
Cover of herb layer (%)	100	100	100	100	100	100	100	100	100	100	
No. of species	25	23	18	29	16	20	20	20	21	13	
***Chaerophylletum aromatici*:**											
Chaerophyllum aromaticum	4	4	4	4	5	4	4	5	5	4	100
***Aegopodion, Galio-Urticetea*:**											
Urtica dioica	A	B	A	A	A	A	B	1	1	A	100
Heracleum sphondylium	1	+	A	1	1	.	A	R	+	.	80
Anthriscus sylvestris	+	+	A	.	+	.	+	+	.	+	70
Galium aparine	1	A	1	+	+	.	A	.	.	.	60
Geum urbanum	R	.	.	+	.	+	.	+	1	.	50
Aegopodium podagraria	+	+	.	R	1	1	.	.	.	.	50
Lamium album	.	.	+	.	.	+	+	.	.	+	40
Glechoma hederacea	.	.	+	B	.	A	.	.	.	1	40
Lamium maculatum	.	.	.	+	.	.	.	1	1	.	30
Others:											
Poa trivialis	1	A	1	+	+	+	1	1	1	.	90
Elytrigia repens	A	A	1	+	+	+	+	.	+	A	90
Rumex obtusifolius	+	1	1	+	.	.	+	+	1	.	70
Mentha longifolia	+	+	+	+	.	.	.	1	+	.	60
Dactylis glomerata	1	+	+	.	+	.	.	.	+	1	60
Taraxacum officinale agg.	+	.	+	+	.	.	.	+	+	+	60
Ranunculus repens	+	.	.	+	A	.	A	1	+	.	60
Vicia sepium	+	.	+	+	.	.	+	.	.	.	40
Armoracia rusticana	+	1	R	.	.	.	.	+	.	.	40
Geranium pratense	.	.	.	+	.	.	.	+	+	A	40
Artemisia vulgaris	.	.	.	+	.	.	+	+	R	.	40
Vicia cracca	.	+	.	.	+	.	+	.	.	.	30
Veronica chamaedrys	+	+	.	.	+	.	.	.	.	.	30
Festuca gigantea	1	1	.	.	.	A	.	.	.	.	30
Festuca pratensis	+	.	.	.	+	.	+	.	.	.	30
Impatiens noli-tangere	+	.	.	.	.	.	.	1	+	.	30
Symphytum officinale	+	B	+	.	.	.	.	.	.	.	30
Arctium tomentosum	+	.	.	1	.	.	+	.	.	.	30
Geranium phaeum	+	.	+	.	.	.	.	.	+	.	30
Cirsium arvense	+	+	.	.	+	.	.	.	.	.	30
Valeriana officinalis	.	.	.	+	.	.	+	.	.	.	20
Crepis biennis	+	+	.	.	.	.	.	.	.	.	20
Rumex acetosa	.	+	.	.	.	.	+	.	.	.	20
Galium album	.	.	.	+	.	.	1	.	.	.	20
Potentilla anserina	.	.	.	.	.	.	.	1	+	.	20

In one relevé:

Acer pseudoplatanus + (6), *Achillea millefolium* + (4), *Arrhenatherum elatius* + (5), *Aster lanceolatus* + (6), *Ballota nigra* A (6), *Calystegia sepium* + (3), *Capsella bursa-pastoris* + (6), *Carduus personata* 1 (2), *Cardamine impatiens* R (9), *Carum carvi* + (6), *Cerastium holosteoides* + (4), *Chelidonium majus* + (6), *Chenopodium album* R (6), *Cirsium vulgare* + (7), *Convolvulus arvensis* + (7), *Epilobium montanum* + (9), *Fraxinus excelsior* + (6), *Galeopsis* sp. 1 (6), *G. pubescens* + (9), *Geranium pusillum* + (10), *Holcus mollis* + (9), *Lamium purpureum* R (6), *Lathyrus pratensis* + (2), *Lycopus europaeus* R (8), *Medicago sativa* + (2), *Melandrium album* + (5), *Mycelis muralis* R (4), *Pastinaca sativa* + (10), *Pimpinella major* + (4), *Plantago major* R (4), *P. lanceolata* + (10), *Poa nemoralis* 1 (4), *Ranunculus acris* + (2), *Roegneria canina* + (8), *Rorippa sylvestris* 1 (10), *Rumex crispus* R (8), *Scrophularia scopolii* R (4), *Sonchus oleraceus* R (6), *Trifolium pratense* + (4), *T. hybridum* + (8), *Tussilago farfara* + (4).

Tab. 10 ***Aegopodium podagraria*-community**

No. of relevé	1	2	3	4	5	6	7	8	9	10	11	12	13	Const.
Sampled area (m^2)	20	32	12	10	25	9	20	32	12	21	15	18	32	(%)
Cover of herb layer (%)	95	100	100	100	100	100	95	100	100	100	100	100	100	
No. of species	10	16	20	17	8	22	10	16	20	19	21	20	14	
***Aegopodium podagraria* community:**														
Aegopodium podagraria	5	4	5	4	4	5	5	4	5	3	4	5	5	100
Lamio albi-Chenopodietalia boni-henrici, Galio-Urticetea:														
Urtica dioica	A	+	A	B	B	A	A	+	A	3	+	+	1	100
Lamium album	+	1	1	1	1	.	+	1	1	1	+	A	.	85
Elytrigia repens	+	.	.	.	1	A	+	.	.	+	1	+	A	62
Heracleum sphondylium	.	+	1	+	.	+	.	+	1	A	.	.	1	62
Chaerophyllum aromaticum	.	1	1	.	.	.	.	1	1	3	B	.	+	54
Glechoma hederacea	.	.	1	+	.	.	.	.	1	A	.	+	A	46
Chelidonium majus	1	A	+	.	.	.	1	A	+	.	.	.	.	46
Rumex obtusifolius	.	.	+	.	+	.	.	.	+	.	.	1	1	38
Lamium maculatum	+	.	+	.	.	.	+	.	+	1	.	.	.	38
Anthriscus sylvestris	.	.	1	.	.	.	.	.	1	.	R	+	.	31
Geranium pratense	.	.	.	.	.	1	.	.	.	1	R	.	A	31
Alliaria petiolata	A	.	+	.	.	.	A	.	+	.	.	.	.	31
Galium aparine	.	.	+	.	.	.	.	.	+	A	+	.	.	31
Geum urbanum	.	+	.	.	.	.	.	+	.	.	.	+	.	23
Others:														
Poa trivialis	+	+	1	.	.	A	+	+	1	+	.	1	1	77
Dactylis glomerata	.	+	.	+	+	+	.	+	.	+	+	+	.	62
Ranunculus repens	+	.	.	1	.	A	+	.	.	1	.	A	.	46
Taraxacum officinale agg..	.	+	+	.	+	.	.	+	.	+	+	.	.	46
Veronica chamaedrys	.	R	+	.	.	.	.	R	+	.	.	.	.	31
Vicia cracca	.	.	.	.	+	.	.	.	.	.	.	+	+	23
Achillea millefolium	.	.	+	.	.	.	.	.	+	.	.	.	+	23
Cirsium arvense	.	.	.	.	+	+	.	.	.	.	.	+	.	23
Arrhenatherum elatius	.	+	.	.	.	.	.	+	.	.	+	.	.	23
Agrostis gigantea	.	+	.	.	.	+	.	+	.	.	.	.	.	23
Galium mollugo	.	.	.	+	.	+	.	.	.	1	.	.	.	23
Equisetum arvense	.	.	A	.	.	.	.	.	A	.	.	.	R	23
Campanula trachelium	.	+	.	.	.	.	.	+	.	.	+	.	.	23
Tussilago farfara	.	.	.	+	.	+	.	.	.	.	.	.	.	15
Symphytum officinale	.	.	+	.	.	.	.	.	+	.	.	.	.	15
Rubus caesius	.	.	.	.	.	.	.	.	.	A	R	.	.	15
Calystegia sepium	.	.	.	+	.	.	.	.	.	+	.	.	.	15
Lysimachia nummularia	.	+	.	.	.	.	.	+	.	.	.	.	.	15
Festuca pratensis	.	.	.	A	.	.	.	.	.	.	+	.	.	15
Potentilla anserina	.	.	.	.	.	.	.	.	.	.	.	+	+	15
Roegneria canina	.	.	.	3	.	+	.	.	.	.	.	.	.	15
Poa palustris	.	+	.	.	.	.	.	+	.	.	.	.	.	15
Poa pratensis	.	.	+	.	.	.	.	.	+	.	.	.	.	15
Crepis biennis	.	.	+	.	.	.	.	.	+	.	.	.	.	15
Convolvulus arvensis	.	.	.	+	.	+	.	.	.	.	.	.	.	15
Arctium tomentosum	.	.	.	.	.	.	.	.	.	.	.	R	1	15
Moehringia trinervia	.	R	.	.	.	.	.	R	.	.	.	.	.	15
Ballota nigra	+	.	.	.	.	.	+	.	.	.	.	.	.	15

In one relevé:
Acer platanoides R (11), *Agrostis stolonifera* 1 (6), *Apera spica-venti* + (6), *Arctium lappa* R (6), *Artemisia vulgaris* + (12), *Brachypodium sylvaticum* + (11), *Carduus personata* R (12), *Chenopodium*

album R (10), *Fallopia convolvulus* + (10), *Filipendula ulmaria* 1 (10), *Fragaria vesca* + (11), *Fraxinus excelsior* 1 (11), *Galeobdolon luteum* A (4), *Galium album* + (11), *Lathyrus pratensis* R (11), *Lolium perenne* + (6), *Mentha longifolia* + (12), *Mycelis muralis* R (6), *Phleum pratense* + (4), *Picris hieracioides* R (11), *Pimpinella major* R (6), *Potentilla reptans* 1 (6), *Ranunculus acris* + (4), *Robinia pseudacacia* E_3 1 (8), *Rorippa sylvestris* + (12).

Tab. 11 *Anthriscus sylvestris*-community

No. of relevé	1	2	3	4	5	6	Const.
Sampled area (m^2)	40	40	25	30	25	25	(%)
Cover of herb layer (%)	100	100	100	100	100	100	
No. of species	18	19	22	15	26	21	
***Anthriscus sylvestris*-community:**							
Anthriscus sylvestris	5	5	4	5	4	5	100
***Aegopodion, Galio-Urticetea*:**							
Urtica dioica	1	A	A	1	B	A	100
Chaerophyllum aromaticum	+	+	.	+	A	1	83
Glechoma hederacea	.	1	B	.	B	1	67
Galium aparine	B	+	.	.	1	A	67
Heracleum sphondylium	+	+	+	.	.	.	50
Lamium album	.	.	1	.	1	+	50
Aegopodium podagraria	.	.	+	.	.	.	17
Geum urbanum	.	.	.	.	1	.	17
Others:							
Elytrigia repens	+	+	+	+	B	1	100
Dactylis glomerata	+	+	+	+	1	+	100
Ranunculus repens	+	+	+	.	1	1	83
Arrhenatherum elatius	+	.	.	+	+	+	67
Artemisia vulgaris	+	+	.	.	1	+	67
Galium album	1	.	A	A	1	.	67
Poa trivialis	1	B	1	+	.	.	67
Vicia cracca	+	.	A	+	.	.	50
Melandrium album	+	R	.	+	.	.	50
Taraxacum officinale agg.	.	.	+	.	+	+	50
Cirsium arvense	.	.	+	+	.	+	50
Geranium pratense	.	.	+	.	1	A	50
Ranunculus acris	.	+	+	+	.	.	50
Festuca pratensis	.	.	1	.	1	+	50
Myosoton aquaticum	.	.	.	.	+	1	33
Trifolium pratense	.	.	.	.	+	+	33
Myosotis sylvatica	+	+	.	.	.	.	33
Rumex crispus	.	.	.	+	+	.	33
Rumex obtusifolius	+	+	.	.	.	.	33
Mentha longifolia	.	+	+	.	.	.	33
Arctium lappa	.	.	.	.	+	+	33
Poa pratensis	.	.	.	.	1	+	33
Plantago major	.	.	.	.	+	+	33
Achillea millefolium	.	+	+	.	.	.	33

In one relevé:
Alopecurus pratensis + (1), *Angelica sylvestris* R (3), *Armoracia rusticana* + (5), *Euphorbia cyparissias* + (6), *Galeopsis pubescens* + (1), *G. tetrahit* + (5), *Hypericum perforatum* + (5), *Lathyrus pratensis* + (4), *Medicago falcata* 1 (3), *Phleum pratense* 1 (3), *Potentilla anserina* 1 (5), *P. reptans* + (2), *Scrophularia nodosa* + (4), *Veronica chamaedrys* 1 (2).

Anthriscus sylvestris-comm. (Tab.11)
Medium rich in species, closed plant community with prevalence of tall hemicryptophyte herbs. Stands reach optimum of development in May, when *Anthriscus sylvestris* is in flower. After running to seed it quickly becomes extinct. *Urtica dioica, Chaerophyllum aromaticum* and grasses *Dactylis glomerata* and *Elytrigia repens* grow in stands with low cover. The community occurs in similar habitats like *Chaerophylletum aromatici,* but symphenological optimum it reaches two or three weeks earlier. *Anthriscus sylvestris*-community was documented mainly in Ondavská vrchovina highlands and Spišsko-šarišské medzihorie basin, but it also occurs in the other orographic units and its next spreading can be expected.

Polygono lapathifolii-Bidentetum (Tab.12)
Beside trampled plant communities such as *Lolietum perennis, Poa annua*-community, and *Potentilla anserina*-community the *Polygono-Bidentetum* is one of the most spread plant communities, which occurs nearly in every village of the territory studied. The stands of community are medium rich in species, various in height. Optimum of development they reach in late summer. Therophyte herbs *Polygonum hydropiper, Bidens tripartita, Polygonum mite,* seldom *Polygonum lapathifolium,* rare *Bidens frondosa* replay dominant role in the stands. Stands with equal participation of two species, such as *Polygonum hydropiper* and *Bidens tripartita, Bidens tripartita* and *Polygonum mite, Polygonum hydropiper* and *Polygonum mite* are infrequent. Hemicryptophytes *Ranunculus repens, Agrostis stolonifera, Potentilla anserina,* and *Plantago major* are more or less regularly present. The community occurs in ditches and watersides of brooks flowing through villages, and on bare bottom of village fishponds. All the ruderal habitats mentioned are sunny or semishaded, moist or wet and rich in nitrogen. Phytocoenological relevés were made in Beskydské predhorie foothills, Laborecká vrchovina highlands, Ondavská vrchovina highlands, Spišsko-šarišské medzihorie basin and Šarišská vrchovina highlands.

Bidentetum cernui (Tab.13)
Very rare and threatened plant community not only in the region studied, but over the all of Slovakia. The community is medium rich in species. Yellow flower therophyte *Bidens cernua* dominates its stands during summertime when they are optimally developed. *Polygonum hydropiper* is a subdominant of stands. The community was noted only in one locality in village Malcov (Ondavská vrchovina highlands) in drain with slowly flowing water enriched by nutrient from waste. Species *Bidens cernua* rarely occurs in the other places like a component of the stands of *Polygono-Bidentetum.*

Catabroso-Polygonetum hydropiperi (Tab.13)
Rare, species poor to medium rich plant community of creeping hemicryptophyte grasses and spreading forms of therophyte herbs. At the beginning of summer the dominant species *Catabrosa aquatica* makes a characteristic grey-green aspect. The community favours bare sandy watersides of brooks and fish ponds. Habitats are moist to wet often with mild flowing water on surface of soil. The stands are richer in species on the watersides of fishpond well provided by nutrient. Phytocoenological relevés were made in Šarišská vrchovina highlands and Spišsko-šarišské medzihorie basin but seldom it occurs in the other orographic units.

Tab. 12 *Polygono-Bidentetum*

No. of relevé	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Sampled area (m^2)	4	5	8	6	17	10	10	8	5	12	15	6	12	10	10	15	10
Cover of herb layer (%)	100	100	100	100	100	100	100	95	95	100	100	100	100	100	100	100	100
No. of species	21	17	11	24	34	16	15	12	15	22	24	22	17	31	19	27	19

No. of relevé	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
Sampled area	8	16	8	25	8	10	10	12	8	10	6	5	7	10	25	5
Cover of herb layer	100	100	100	100	100	100	100	90	100	100	100	90	100	95	100	100
No. of species	15	33	17	35	14	20	13	11	16	17	14	25	15	11	13	17

No. of relevé	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	C
																																		(%)
Polygono-Bidentetum																																		
Polygonum hydropiper	4	3	5	5	4	4	3	3	A	1	A	A	A	A	B	B	B	A	A	1	+	+	+	+	+	3	3	+	1	+	.	1	+	97
Bidens tripartita	.	1	1	1	1	A	3	3	4	4	4	4	4	4	3	3	3	5	3	4	5	4	3	+	1	1	A	B	1	1	3	.	+	94
Polygonum mite	.	.	.	+	.	1	1	.	.	.	.	.	.	+	1	A	A	+	.	.	.	3	3	4	4	4	3	4	4	4	4	.	+	39
Polygonum lapathifolium	+	A	.	+	+	.	.	.	.	.	+	.	+	.	.	.	.	.	.	B	B	+	1	1	.	.	1	.	.	.	3	5	+	45
Bidens frondosa	.	.	.	.	+	.	.	.	.	.	.	.	.	A	.	A	A	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	5	18
Bidention,Bidentetalia,Bidentetea																																		
Myosoton aquaticum	.	.	.	1	B	+	+	.	.	.	.	.	+	+	+	+	+	+	.	.	+	+	+	.	.	.	.	.	.	.	.	+	.	42
Bidens cernua	.	.	.	+	.	.	.	.	.	.	.	+	.	B	.	B	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	18
Echinochloa crus-galli	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	1	1	1	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+	18
Rorippa palustris	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+	.	9
Catabrosa aquatica	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	3
Chenopodium polyspermum	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3
Alopecurus aequalis	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3
Rumex maritimus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	R	.	3
Others																																		
Ranunculus repens	1	+	.	A	+	1	1	B	+	1	+	1	1	1	.	1	+	+	A	+	+	1	1	1	1	A	+	1	1	1	.	.	B	88
Agrostis stolonifera	.	.	.	1	3	1	.	.	1	A	1	1	1	B	A	A	.	.	1	1	A	1	1	1	.	B	+	.	1	A	1	1	A	73
Urtica dioica	+	.	1	1	.	+	1	+	.	.	+	+	+	.	.	.	+	1	+	A	+	.	1	+	.	+	+	1	1	1	.	+	+	70
Rumex obtusifolius	.	+	+	1	+	.	.	+	+	.	.	+	+	+	.	+	.	+	+	.	+	.	+	+	1	+	+	.	+	+	.	.	.	61
Potentilla anserina	A	+	+	.	.	+	.	.	.	+	.	+	.	.	.	1	.	+	+	+	.	+	1	1	+	A	+	+	B	A	.	.	.	58
Lycopus europaeus	.	.	R	.	.	A	1	A	+	+	.	.	.	+	+	+	1	1	.	.	+	.	+	.	.	.	.	.	.	.	+	.	B	45
Plantago major	.	1	.	1	1	.	.	.	.	+	.	+	+	+	R	+	.	.	1	.	.	.	.	.	.	.	.	.	1	1	+	.	1	42
Epilobium roseum	.	.	.	1	1	+	1	+	.	.	.	+	.	+	.	+	.	+	1	1	.	A	+	.	.	+	.	.	+	.	.	.	.	42

Tab. 12 Continued

No. of relevé	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	C (%)
Mentha longifolia	.	.	+	.	1	+	.	.	.	+	+	.	.	.	1	+	B	.	.	A	.	.	.	+	.	.	+	.	+	.	.	.	+	39
Matricaria perforata	+	.	R	.	1	.	.	.	+	.	.	+	.	.	.	.	.	.	1	.	1	.	.	.	1	.	+	.	+	+	+	+	.	39
Atriplex patula	.	.	.	+	+	.	.	.	.	.	+	+	+	.	R	.	+	.	+	.	+	.	.	.	+	.	.	.	+	.	.	.	.	33
Veronica beccabunga	.	.	.	.	1	.	.	.	+	+	.	1	.	.	.	+	.	.	.	.	+	.	.	.	.	+	+	.	A	.	.	.	1	30
Artemisia vulgaris	+	.	.	.	1	.	.	.	.	.	.	.	.	+	1	+	.	+	.	.	1	.	.	.	.	.	.	.	.	.	+	.	+	27
Taraxacum officinale agg.	+	.	.	+	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	+	.	+	+	.	.	.	.	+	+	.	.	.	27
Glyceria fluitans	.	.	.	.	.	.	A	B	.	.	.	.	1	.	.	.	.	1	1	.	+	.	1	.	.	.	.	.	.	+	B	.	24
Veronica anagallis-aquatica	.	.	1	.	.	.	.	.	.	+	.	1	.	1	.	+	.	.	.	.	B	.	.	.	.	.	+	.	.	.	.	.	1	21
Lythrum salicaria	.	.	.	.	.	R	+	.	.	.	.	.	.	+	.	+	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	21
Glechoma hederacea	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	+	1	B	1	+	.	.	.	21
Agrostis gigantea	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	+	.	.	.	.	.	.	1	.	.	.	.	18
Poa annua	.	.	.	.	1	.	.	1	.	.	1	.	.	.	.	.	.	.	.	.	+	.	.	+	.	.	.	.	.	+	A	.	.	.	18
Epilobium montanum	.	1	.	.	+	.	.	.	.	.	.	+	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	18
Dactylis glomerata	+	.	+	.	.	.	.	.	.	1	1	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	18
Trifolium repens	+	.	.	.	.	.	.	.	.	.	.	.	+	+	+	.	.	.	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	18
Carex hirta	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	18
Galinsoga ciliata	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	15
Calystegia sepium	+	.	.	B	+	.	.	.	.	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	15
Epilobium hirsutum	.	.	.	.	.	.	.	.	.	.	.	.	+	+	1	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	15
Anthriscus sylvestris	.	.	.	.	1	.	.	.	.	.	+	.	.	.	+	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	+	.	15
Rorippa sylvestris	+	.	R	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	15
Elytrigia repens	.	.	.	+	.	.	.	.	.	.	.	.	.	+	.	.	.	.	A	.	.	+	.	.	.	1	.	.	.	.	.	.	.	.	15
Galeopsis pubescens	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	A	1	1	+	.	.	.	.	.	.	.	.	.	.	.	.	15
Aegopodium podagraria	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	12
Myosotis laxiflora	+	.	.	B	+	.	.	.	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	12
Mentha arvensis	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	12
Juncus bufonius	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	12
Medicago lupulina	.	.	.	.	1	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	12
Juncus effusus	.	.	.	.	.	+	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	12
Poa trivialis	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	12
Rumex crispus	.	.	.	.	.	+	.	.	.	+	+	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	12
Plantago lanceolata	.	+	.	.	+	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	12
Phalaris arundinacea	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	1	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	+	.	12
Prunella vulgaris	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	9
Daucus carota	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	9
Chamomilla recutita	.	.	.	.	+	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	9
	+	1	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	9

Tab. 12 Continued

No. of relevé	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	C (%)
Sonchus oleraceus	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	9
Tussilago farfara	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	9
Scirpus sylvaticus	.	.	.	1	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	9
Cirsium arvense	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	9
Chenopodium album	.	+	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	R	.	.	.	.	.	.	.	.	9
Lysimachia vulgaris	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	6
Erysimum cheiranthoides	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	6
Galium palustre	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	6
Typha latifolia	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	6
Trifolium hybridum	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	B	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6
Trifolium pratense	.	.	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6
Galinsoga parviflora	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	6
Galeopsis speciosa	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6
Stellaria media	.	+	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6
Lapsana communis	.	.	.	R	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6
Sonchus asper	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	6
Lamium album	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	6
Juncus articulatus	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6
Aethusa cynapium	.	.	.	.	.	.	.	.	.	.	.	.	.	R	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6
Impatiens glandulifera	.	.	.	.	+	.	.	.	.	.	.	.	.	.	R	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6
Cirsium oleraceum	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	6
Alisma plantago-aquatica	.	.	.	.	.	A	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6
Ranunculus acris	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6
Ranunculus lanuginosus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	6
Potentilla reptans	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	A	.	.	.	.	.	6
Armoracia rusticana	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	A	.	.	.	.	6
Polygonum aviculare	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	+	.	.	.	.	6
Heracleum sphondylium	R	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6
Fallopia dumetorum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6
Odontites verna	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6
Euphorbia serrulata	.	.	.	.	+	.	.	.	.	.	.	.	.	.	R	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6
Medicago sativa	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6
Lythrum hyssopifolia	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6
Achillea millefolium	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	6

Tab. 12 Continued

In one relevé:

Alopecurus geniculatus A (32), *Alopecurus pratensis* + (8), *Anagallis arvensis* + (2), *Arctium lappa* + (10), *Atriplex nitens* R (21), *Avena sativa* + (19), *Barbarea vulgaris* + (15), *Caltha palustris* + (26), *Cerastium holosteoides* + (31), *Chaerophyllum aromaticum* + (20), *Chamomilla suaveolens* + (2), *Chelidonium majus* + (20), *Chenopodium strictum* Roth + (21), *Cichorium intybus* R (5), *Conyza canadensis* + (14), *Echinocystis lobata* R (14), *Equisetum arvense* + (7), *E. palustre* B (19), *E. pratense* 1 (22), *Eupatorium cannabinum* + (17), *Fallopia convolvulus* + (4), *Festuca gigantea* + (17), *Filipendula ulmaria* R (7), *Galeopsis tetrahit* + (4), *Galium mollugo* + (29), *Glyceria maxima* A (21), *Helianthus decapetalus* 1 (17), *Hordeum distichon* A (19), *Hypericum maculatum* R (15), *Impatiens parviflora* + (13), *Juncus inflexus* + (16), *Lathyrus pratensis* + (33), *Leontodon autumnalis* + (29), *Lolium multiflorum* + (5), *L. perenne* + (1), *Lysimachia nummularia* + (10), *Melandrium album* + (1), *Pastinaca sativa* + (33), *Poa palustris* 1 (14), *Populus nigra* + (16), *Rumex conglomeratus* R (21), *Salix fragilis* juv. R (14), *S. triandra* juv. + (8), *S. viminalis* juv. + (21), *Scrophularia nodosa* + (20), *Stachys palustris* + (19), *Stellaria graminea* 1 (11), *Symphytum officinale* 1 (6), *Veronica arvensis* + (5), *V. chamaedrys* + (18).

Tab. 13 Communities of alliance *Bidention tripartiti*

A - *Catabroso-Polygonetum hydropiperi* (rels. 1, 2)
B - *Bidentetum cernui* (rel. 3)

Community	A	A	B
No. of relevé	1	2	3
Sampled area (m^2)	15	25	8
Cover of herb layer (%)	100	90	100
No. of species	9	22	22
***Catabroso-Polygonetum hydropiperi*:**			
Catabrosa aquatica	5	4	.
***Bidentetum cernui*:**			
Bidens cernua	.	.	4
***Bidention, Bidentetalia, Bidentetea*:**			
Polygonum hydropiper	R	R	A
Polygonum lapathifolium	.	1	.
Bidens tripartita	.	.	1
Chenopodium glaucum	.	R	.
Others:			
Glyceria fluitans	1	1	+
Agrostis stolonifera	1	.	1
Epilobium hirsutum	1	+	.
Salix purpurea	R	+	.
Myosoton aquaticum	+	+	.

In one relevé:

Alopecurus aequalis A (2), *Cardamine pratensis* + (3), *Carex hirta* + (3), *Cerastium holosteoides* + (3), *Echinochloa crus-galli* + (2), *Epilobium montanum* + (3), *E. palustre* 1 (3), *Galium palustre* 1 (3), *Lycopus europaeus* + (3), *Lysimachia nummularia* + (3), *Mentha arvensis* + (2), *M. longifolia* + (3), *Myosotis laxiflora* + (3), *M. palustris* 1 (1), *Odontites verna* + (3), *Phalaris arundinacea* + (2), *Poa trivialis* + (1), *Populus tremula* + (2), *Potentilla argentea* + (3), *Ranunculus sceleratus* + (2), *R. repens* + (3), *Rumex conglomeratus* + (3), *Salix caprea* 1 (2), *Stellaria graminea* + (3), *Trifolium repens* + (3).

Localities of relevés:

Abbreviations: E - east; S - south; N - north; W - west; b. - brook; h. - house; r. - river; v. - village

Tab. 1 - **1.** Svidník, left bank of r. Topľa, NE from bus stop. 5.7.84; **2.** Jakubany, N, abandoned place near b. Jakubianka, low terrace, 8.7.91; **3.** Nová Ľubovňa, terrace of the b., 8.7.91; **4.** Jakubany, NW, ruderal place near the bridge and shopping centre, 8.7.91; **5.** Vyšná Polianka, the centre of v. near the b., 25.9.91; **6.** as 3.; **7.** Nižný Tvarožec, the bank of b.