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Ruderal Vegetation of the Horná Orava Region 2. *Galio-Urticetea*, *Epilobietea angustifolii*

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Abstract: The article describes nitrophilous fringe ruderal and semi-natural communities of perennials in mesic to wet habitats, which are classified within the class *Galio-Urticetea* and vegetation of forest clearings belonging to the class *Epilobietea angustifolii* of the Horná Orava region. Seventeen associations and ten communities have been recorded, including several rare or insufficiently documented communities and communities of competitively strong neophytes of the alliance *Senecionion fluviatilis*. Class *Galio-Urticetea* is the most represented among all ruderal classes in the region, due to the humid and cold climate of the region. Characteristics of the communities, based on phytoceonological tables, include their floristic composition, synecology, distribution and comparison with the data, published from other regions of Slovakia.

Keywords: synanthropic vegetation, Northern Slovakia, numerical classification, syntaxonomy, nitrophilous fringe vegetation, communities of clearings, coenological affinity of neophytes.

Introduction

The article represents continuation of the previous one (MEDVECKÁ et al. 2009), which contains characteristics of the classes *Bidentetea tripartitae*, *Polygono arenastri-Poetea annuae*, *Molinio-Arrhenatheretea*, *Stellarietea mediae* and *Artemisietea vulgaris*. The above-mentioned article contains also detailed

description of study area, data sampling and evaluation. Following paper addresses syntaxonomical classes not included in the previous one, namely classes *Galio-Urticetea* and *Epilobietea angustifolii*. The survey on the ruderal vegetation of Horná Orava region started in 80s of the previous century by JAROLÍMEK & ZALIBEROVÁ, but the synthesis of results was not finished. The data were partially included in the Plant communities of Slovakia 2 (JAROLÍMEK et al. 1997) and Plant communities of Slovakia 3 (JAROLÍMEK & ZALIBEROVÁ 2001). In 2005 we started new survey to update and enlarge these data. The survey was restricted to ruderal vegetation. Our results not only provide information about structure of ruderal vegetation of the Horná Orava region and thus deepen our knowledge of vegetation of Northern Slovakia, which is less explored then the Southern parts, but recording of rare or insufficiently documented communities improves our understanding of their distribution, ecology and species composition.

Arrangement of tables

Each block in the table represents one community. Behind more represented blocks are listed values of frequency of each taxon in the community together with its median cover (upper index). Species are arranged according to their syntaxonomical affinity. Below each table are listed locality data and their numbers correspond to the numbers used in the tables. Nomenclature of taxa was used according to MARHOLD (1998). Names of syntaxa follow JAROLÍMEK et al. (2008). Conservation status of endangered species was determined according to Red List of Slovakia (http://www.sopsr.sk/webs/redlist/).

Results

Class *Galio-Urticetea* PASSARGE ex KOPECKÝ 1969
Order *Lamio albi-Chenopodietalia boni-henrici* KOPECKÝ 1969
Urtica dioica community [*Lamio albi-Chenopodietalia boni-henrici*]
Alliance *Galio-Alliarion* (OBERD. 1957) LOHMEYER et OBERD. in OBERD. et al. 1967
Association *Sambucetum ebuli* FELFÖLDY 1942
Association *Geo urbani-Chelidonietum maji* JAROLÍMEK et al. 1997
Alliance *Aegopodion podagrariae* R. TX. 1967
Association *Agropyro repentis-Aegopodietum podagrariae* R. TX. 1967 em. NEUHÄUSLOVÁ-NOVOTNÁ et al. 1969
Association *Arctio tomentosi-Rumicetum obtusifolii* PASSARGE 1959
Association *Aegopodio-Geranietum pratensis* HADAČ 1978
Association *Aegopodio-Menthetum longifoliae* HILBIG 1972
Association *Chaerophylletum aromatici* NEUHÄUSLOVÁ-NOVOTNÁ et al. 1969
Armoracia rusticana community [*Aegopodion podagrariae*]
Alliance *Carduo-Urticion dioicae* HADAČ ex HADAČ et al. 1969
Association *Geranio phaei-Urticetum dioicae* HADAČ et al. 1969

Association *Rumicetum sylvestris* KUŁCZYŃSKI 1928
Alliance *Rumicion alpini* RÜBEL ex KLIKA in KLIKA et HADAČ 1944
Association *Rumicetum alpini* BEGER 1922 em. BR.-BL. 1972
Order *Convolvuletalia sepium* R. TX. 1950
Alliance *Senecionion fluviatilis* R. TX. 1950
Aster lanceolatus community [*Senecionion fluviatilis*]
Echinocystis lobata community [*Senecionion fluviatilis*]
Fallopia japonica community [*Senecionion fluviatilis*]
Fallopia sachalinensis community [*Senecionion fluviatilis*]
Helianthus tuberosus agg. community [*Senecionion fluviatilis*]
Impatiens glandulifera community [*Senecionion fluviatilis*]
Solidago canadensis community [*Senecionion fluviatilis*]
Solidago gigantea community [*Senecionion fluviatilis*]
Association *Convolvulo-Epilobietum hirsuti* HILBIG et al. 1972

Class *Epilobietea angustifolii* R. TX. et PREISING ex VON ROCHOW 1951
Calamagrostis villosa community [*Epilobietea angustifolii*]
Order *Atropetalia* VLIEGER 1937
Alliance *Atropion* BR.-BL. ex AICHINGER 1933
Association *Eupatorietum cannabini* R. TX. 1937
Alliance *Carici piluliferae-Epilobion angustifolii* R. TX. 1950
Association *Senecietum fuchsii* KAISER 1926
Association *Rubetum idaei* GAMS 1927
Association *Senecioni sylvatici-Epilobietum angustifolii* R. TX. 1937
Association *Rubo idaei-Calamagrostietum arundinaceae* FAJMONOVÁ 1986
Alliance *Sambuco-Salicion capreae* R. TX. et NEUMANN ex OBERD. 1957
Association *Sambucetum racemosae* NOIRFALISE in LEBRUN et al. ex OBERD. 1973

Galio-Urticetea

Ruderal and semi-natural communities of nitrophilous broad-leaved perennials on fresh to wet disturbed habitats belong to the class *Galio-Urticetea*. It is the most frequent type of ruderal vegetation in the Horná Orava region, what indicates cold and humid climate of the area. Recorded communities belong to two orders: *Lamio albi-Chenopodietalia boni-henrici* and *Convolvuletalia sepium*. The first one is mostly represented by nitrophilous communities of the alliance *Aegopodion podagrariae*. Order *Convolvuletalia sepium* comprises of communities of tall herbs along periodically inundated riverbanks. Except the association *Convolvulo-Epilobietum hirsuti* all the recorded communities are dominated by competitively strong neophytes.

Urtica dioica community [*Lamio albi-Chenopodietalia boni-henrici*] (Tab. 1, column A)

The dominant species, *Urtica dioica*, forms extremely dense stands, up to 160 cm high and with impenetrable underground root system. Very few grasses and

shade-tolerant forbs are able to survive neighbourhood of such competitive species. The most common is *Aegopodium podagraria*, less frequent are forbs *Galium aparine*, *Glechoma hederacea*, *Heracleum sphondylium* and *Rumex obtusifolius* and grasses *Dactylis glomerata*, *Elytrigia repens* and *Poa trivialis*.

The community prefers moist and nitrogen-rich ruderal sites, in the surrounding of farm buildings, banks of eutrophicated drain channels, etc. Even though the community is presumably rather frequent, it is not yet syntaxonomically classified and even not sufficiently documented (JAROLÍMEK et al. 1997). The community is relatively widespread in the villages of the studied region and documented from the Oravská vrchovina Mts, Oravská kotlina basin and Podbeskydská brázda trench.

Sambucetum ebuli (Tab. 1, column B)

Stands of the association consist of dense upper layer of the dominant *Sambucus ebulus,* and less distinctive lower layer of nitrophilous and shade-tolerant species of the class *Galio-Urticetea*, such as *Aegopodium podagraria*, *Galium aparine*, *Geum urbanum*, *Glechoma hederacea* and *Heracleum sphondylium*, and grasses *Dactylis glomerata*, *Elytrigia repens* and *Poa trivialis*.

It is found on both sunny and shady ruderal sites, mainly on older disturbed spots with sufficient amount of nutrients. The substrate is loamy sand to sandy loam, often with a small proportion of gravel or construction debris.

The association is subdivided into two subassociations, more mesophilous *Sambucetum ebuli typicum* JAROLÍMEK et al. 1997 and more xerothermophilous *Sambucetum ebuli brometosum inermidis* ELIÁŠ 1979 found on rail-lines of the Slovak lowlands. Communities reported from the Muránska planina region (JAROLÍMEK et al. 2007), Drienčanský kras karst (JAROLÍMEK & KLIMENT 2000) and the north-east of Slovakia (ZALIBEROVÁ & JAROLÍMEK 1995) most probably belong to the subassociation *Sambucetum ebuli typicum* and floristically they resemble relevés from the Horná Orava region. There are slight differences in species composition, because stands from the Orava region lack species *Anthriscus sylvestris*, *Artemisia vulgaris*, *Chaerophyllum bulbosum*, *Galeopsis pubescens*, *Fallopia convolvulus* and *Lactuca serriola*. The community is rather rare in the Orava region and it is only documented by three recent relevés. Two were found in the Rabčice village (Podbeskydská brázda trench) and one in Podbiel village (Oravská vrchovina Mts). Presence of *Galium aparine*, *Glechoma hederacea* and *Poa trivilialis* and absence of thermophilous species *Bromus inermis*, *Carduus acanthoides* and *Pastinaca sativa* classify it to the mesophilous subassociation *Sambucetum ebuli typicum*.

Geo urbani-Chelidonietum maji (Tab. 1, column C)

The association consists of the small-spot fringe stands of nitrophilous species, dominated by *Chelidonium majus*, accompanied by *Aegopodium podagraria*, *Dactylis glomerata*, *Rumex obtusifolius* and *Urtica dioica* in the upper layer. Lower leaves of the dominant species, together with *Taraxacum* sect. *Ruderalia*, *Glechoma hederacea* and *Ranunculus repens* form the lower layer. Moss storey is occasionally formed, represented by *Brachythecium rutabulum*.

The community creates thin fringes of vegetation along walls of old buildings and other constructions, usually on the shady side.

JAROLÍMEK et al. (1997) divide the association into two subassociations: xerothermophilous *Geo urbani-Chelidonietum maji brometosum sterilis* JAROLÍMEK et al. 1997 and mesophilous *Geo urbani-Chelidonietum maji rumicetosum obtusifolii* JAROLÍMEK et al. 1997. Recorded relevés are floristically similar to those made in the Muránska planina region (JAROLÍMEK et al. 2007) and in the north-eastern Slovakia (ZALIBEROVÁ & JAROLÍMEK 1995). Relevés made in the Drienčanský kras karst (JAROLÍMEK & KLIMENT 2000) have extra species *Myosotis sparsiflora*, which absents in the Orava region. The community is widespread and documented from the Oravská vrchovina Mts (villages Oravský Podzámok, Horná Lehota, Dolná Lehota, Dlhá nad Oravou a Podbiel), the Oravská kotlina basin (Lokca, Hruštín) and the Podbeskydská brázda trench (Oravské Veselé). All the stands most probably belong to the subassociation *Geo urbani-Chelidonietum maji rumicetosum obtusifolii*, even though they miss species *Anthriscus sylvestris* and *Lamium album*.

Agropyro repentis-Aegopodietum podagrariae (Tab. 1, column D)

The association *Agropyro repentis-Aegopodietum podagrariae* comprises of nitrophilous species of the class *Galio-Urticetea*, especially members of the *Apiaceae* family, such as *Aegopodium podagraria* (dom.), *Chaerophyllum aromaticum* and *Heracleum sphondylium*. Other species, such as *Dactylis glomerata*, *Elytrigia repens* and *Urtica dioica* are often present. Occasionally moss layer evolves. The community may be found on light but more often shady fresh ruderal sites with vast amount of nitrogenous substances, on disturbed and abandoned localities, in yards, on banks of small village brooks, along the walls of buildings, etc. According to JAROLÍMEK et al. (1997) the community is usually found in more humid parts of Slovakia. It is widespread in the whole Orava region and documented from various orographic units: Oravská vrchovina Mts (Horná Lehota village), Oravská kotlina basin (Hruštín, Babín a Lokca) and Podbeskydská brázda trench (Rabčice, Mútne). When comparing species composition, they are very similar to relevés made in the other parts of Slovakia (JAROLÍMEK et al. 1997; JAROLÍMEK et al. 2007).

Arctio tomentosi-Rumicetum obtusifolii (Tab. 1, column E)

Stands that belong to the association *Arctio tomentosi-Rumicetum obtusifolii* usually have two or three distinct layers. The upper layer is formed by stems of *Rumex obtusifolius* (dom.), *Dactylis glomerata*, *Heracleum sphondylium*, *Poa trivialis*, *Urtica dioica* and species of *Arctium* genus. The ground layer consists of *Geum urbanum*, *Plantago major*, *Ranunculus repens* and *Taraxacum* sect. *Ruderalia*. Sparse moss storey may be represented by species *Brachythecium rutabulum* and *Plagiomnium rostratum*. The community is usually found on mesic, shady and nutrient-rich ruderal sites along the walls of buildings, sheds and barns, etc. Floristically it is similar to the association *Rumicetum sylvestris*; however, it is differentiated by the presence of *Armoracia rusticana*, *Anthriscus*

sylvestris, *Elytrigia repens* and *Glechoma hederacea* (JAROLÍMEK & KLIMENT 1994).

The community is fairly abundant in the region, especially in the Podbeskydská brázda trench (villages Rabča, Rabčice, Sihelné) and Oravská kotlina basin (Hruštín). Floristically it resembles communities found in the other parts of northern Slovakia (JAROLÍMEK et al. 2007; JAROLÍMEK & KLIMENT 2000).

Aegopodio-Geranietum pratensis (Tab. 1, column F)

Stands of the association comprise of ruderal nitrophilous species, characteristic for the class *Galio-Urticetea*, such as *Geranium pratense* (dom.), *Chaerophyllum aromaticum*, *Heracleum sphondylium* and *Urtica dioica*, accompanied with species of grassland communities of the class *Molinio-Arrhenatheretea*, such as *Arrhenatherum elatius*, *Dactylis glomerata* and *Lathyrus pratensis*. This type of community is found in humid colline and submontane areas of central and northern Slovakia (JAROLÍMEK et al. 1997). In the Horná Orava region it is not yet very well documented. In Slovakia, species *Aegopodium podagraria* tends to be replaced by *Chaerophyllum aromaticum* in contrary to the Czech Republic (JAROLÍMEK et al. 1997), what has proven to be truth even in the studied region.

Aegopodio-Menthetum longifoliae (Tab. 1, column G)

The association consists of wet ruderal and seminatural stands, where the dominant species *Mentha longifolia* is accompanied by *Cirsium oleraceum*, *C. rivulare*, *Filipendula ulmaria*, *Juncus efussus*, *Lathyrus pratensis*, *Rubus caesius*, *Scirpus sylvaticus* and *Urtica dioica* in the upper layer and *Aegopodium podagraria*, *Chaerophyllum aromaticum*, *Caltha palustris*, *Equisetum arvense* and *E. palustre* in the lower layer. It is usually found on sunny or semi-shady wet sites, terrain depressions and wet grasslands in the villages of more humid parts of the region.

Stands dominated by *Mentha longifolia* may belong to other two associations: *Junco inflexi-Menthetum longifoliae* and *Filipendulo ulmariae-Menthetum longifoliae* of the alliance *Calthion*. As a result of the detailed comparison of association descriptions and the relevés made in the Horná Orava region, we have placed all the recorded relevés to the association *Aegopodio-Menthetum longifoliae*. Many differential taxa of the two above-mentioned associations, such as *Carex hirta*, *Festuca arundinacea*, *Juncus inflexus*, *Potentilla reptans*, *Rumex crispus* and *Athyrium filix-femina*, *Holcus lanatus*, *Poa trivialis*, *Stachys sylvatica*, *Vicia sepium*, respectively, are absent in the stands from the Horná Orava or present with very small abundance. Moreover, species *Aegopodium podagraria*, *Cirsium arvense*, *Juncus effusus* and *Rubus caesius* are rather abundant. The community is fairly common, especially in the Podbeskydská brázda orographic unit, as a result of humid character of the region and less intensive melioration in past. To a smaller extent it was found in the Oravská kotlina basin and Oravská vrchovina Mts *Carex paniculata* (VU) was recorded in one of the localities.

Chaerophylletum aromatici (Tab. 1, column H)

Stands of the association *Chaerophylletum aromatici* represent mosaic of *Chaerophyllum aromaticum* (dom.), and other nitrophilous species (especially broad-leaved members of the family *Apiaceae*), such as *Aegopodium podagraria*, *Anthriscus sylvestris*, *Heracleum sphondylium* and *Dactylis glomerata*, *Elytrigia repens*, *Rumex obrusifolius* and *Urtica dioica*. They can be found on various ruderal sites, in depressions along roads, and in the surrounding of human settlements.

The community is widespread in the humid areas of colline and submontane zone of the country (JAROLÍMEK et al. 1997). The stands in the northern regions of the country (ZALIBEROVÁ & JAROLÍMEK 1995; JAROLÍMEK et al. 2007) have similar species composition as stands found in the Orava region. Warmer regions, such as Drienčanský kras karst (JAROLÍMEK & KLIMENT 2000) and Košická kotlina basin (KRIPPELOVÁ 1981) differ by the presence of more thermophilous species *Symphytum tuberosum*, *Conium maculatum* and *Lavatera thuringiaca*. The community is common and widespread in the Horná Orava region. It was found in the Oravská vrchovina Mts (villages Podbiel, Krivá), Oravská kotlina basin (Lokca, Babín) and Podbeskydská brázda trench (Oravská Polhora, Oravské Veselé).

Armoracia rusticana community [*Aegopodion podagrariae*] (Tab. 1, column I)

The community consists of nitrophilous broad-leaved species *Armoracia rusticana* (dom.), *Aegopodium podagraria*, *Chaerophyllum aromaticum*, *Rumex obtusifolius* and *Urtica dioica*. It is found in various ruderal sites, abandoned lands and close to places, where the firewood is stored.

Even though *Armoracia rusticana* communities, found in the other parts of Slovakia are usually placed into the alliance *Arction lappae*, communities from the Horná Orava region are floristically different as they lack numerous typical species of the class *Artemisietea vulgaris* and on the other hand species of the class *Galio-Urticetea* and especially the diagnostic species of the alliance *Aegopodion podagrariae* are relatively abundant. Four stands have been recorded in villages Horná Lehota, Sihelné, Vasiľov and Zákamenné.

Geranio phaei-Urticetum dioicae (Tab. 1, column J)

The dominant species *Geranium phaeum* is constantly accompanied by *Aegopodium podagraria* and *Urtica dioica* in the Orava region. *Chaerophyllum hirsutum*, *Galium aparine*, *Glechoma hederacea*, *Lysimachia nemorum*, *Poa trivialis*, *Ranunculus repens* and *Scrophularia nodosa* are often present.

HADAČ (1969) reported in the description of the association that it is usually found in submontane, montane and alpine regions, along streams and in the surrounding of sheep pens and chalets. In the Horná Orava region it is a common part of the vegetation of the villages even in lower altitudes in the humid habitats, usually banks of rivers and streams but it may be found even in the other wet and shady places. Consecutively various montane and alpine species, such as *Anthriscus nitida*, *Chrysosplenium alternifolium*, *Epilobium*

alpestre, *Myosotis sylvatica* and *Stellaria nemorum*, are absent. On the contrary, species of the alliance *Aegopodion podagrariae* are more represented. Communities found in the Muránska planina region (JAROLÍMEK et al. 2007) are floristically very similar.

Rumicetum sylvestris (Tab. 1, column K)

Stands of the association are usually found in leys and resting places of cattle in montane and subalpine zone, but they may occur even in submontane villages on nutrient rich sites (JAROLÍMEK & KLIMENT 1994). The community is most probably not very frequent in the region, as only two localities have been documented and both of them were found on ruderal sites of the Rabčice village. Dominant species *Rumex obtusifolius*, is supplemented by *Achillea millefolium*, *Alchemilla vulgaris* agg., *Astrantia major*, *Bellis perennis*, *Carum carvi*, *Chaerophyllum aromaticum*, *Chenopodium bonus-henricus*, *Dactylis glomerata*, *Deschampsia cespitosa*, *Festuca pratensis*, *Geum urbanum*, *Heracleum sphondylium*, *Lolium perenne*, *Mentha longifolia*, *Plantago major*, *Ranunculus repens*, *Trifolium repens*, *Tussilago farfara* and *Urtica dioica*.

The association has been divided into two subassociations: *Rumicetum sylvestris ligusticetosum mutellinae* JAROLÍMEK et KLIMENT 1994 and *Rumicetum sylvestris plantaginetosum majoris* JAROLÍMEK et KLIMENT 1994. Communities found in the Horná Orava region belong to the latter, as they contain *Bellis perennis*, *Carum carvi* and *Plantago major* and lack *Aconitum firmum*, *Bistorta major*, *Oreogeum montanum*, *Hypericum maculatum*, *Ligusticum mutellina*, *Phleum rhaeticum*, *Potentilla aurea* and *Senecio subalpinus*.

Rumicetum alpini (Tab. 1, column L)

The impressive appearance of the community is determined by broad leaves and tall stems of the dominant species *Rumex alpinus*. Otherwise the community is relatively poor in species (12 species in average). *Acetosa arifolia* may occur as subdominant, *Alchemilla vulgaris* agg., *Bistorta major*, *Chaerophyllum hirsutum*, *Deschampsia cespitosa*, *Heracleum sphondylium*, *Millium effusum*, *Ranunculus repens*, *Rubus idaeus*, *Senecio ovatus*, *S. subalpinus*, *Stellaria nemorum* and *Urtica dioica* are often present, though less abundant.

The association is bound to nitrogen-rich sites in montane and subalpine zones: leys and meadows, surrounding of cattle stands, etc. The community was found in the Babia hora Mt. and Oravská Magura Mts. It is reported from the Veľká Fatra Mts, Krivánska Malá Fatra Mts, Nízke Tatry Mts, Západné Tatry Mts, Vysoké Tatry Mts, Bukovské vrchy Mts (KLIMENT & JAROLÍMEK 1995) and Muránska planina region (JAROLÍMEK et al. 2007).

Convolvulo-Epilobietum hirsuti (Tab. 2, column A)

Stands of the *Convolvulo-Epilobietum hirsuti* are usually dense and medium species-rich. The upper layer is formed by *Epilobium hirsutum* as a dominant, together with *Angelica sylvestris*, *Elytrigia repens*, *Mentha longifolia*, *Poa trivialis*, *Rumex obtusifolius*, *Scirpus sylvaticus* and *Urtica dioica*. Ground layer, represented by *Agrostis stolonifera*, *Equisetum palustre*, *Lathyrus pratensis*,

Ranunculus repens and *Veronica chamaedrys* is scarcely developed. The community prefers wet and nutrient-rich habitats. It is found on banks and beds of small village brooks, on wet meadows and terrain depressions.

The community occurs in colline and submontane zone across the whole country, especially in the East (JAROLÍMEK & ZALIBEROVÁ 2001). It is relatively abundant in the Horná Orava region, even though it lacks few species reported from other areas, such as *Calystegia sepium*, *Lycopus europaeus*, *Veronica beccabunga*, *Persicaria hydropiper* and *Typha latifolia*. *Carex paniculata* (VU) was found in one of the localities.

Impatiens glandulifera community [*Senecionion fluviatilis*] (Tab. 2, column B)

The dominant species *Impatiens glandulifera* is accompanied by other species characteristic for the order *Convolvuletalia sepii*: *Calystegia sepium* and order *Lamio albi-Chenopodietalia boni-henrici*: *Aegopodium podagraria*, *Chaerophyllum aromaticum*, *Galium aparine*, *Rumex obtusifolius* and *Urtica dioica*. Species of the class *Artemisietea vulgaris*, such as *Artemisia vulgaris* and *Elytrigia repens* may be present as well.

The community is usually found on garden waste deposits in the studied region, from where it spreads into the surrounding. *Impatiens glandulifera* prefers to grow on river terraces and tends to spread along rivers as it requires high groundwater level. The dominant species produces numerous flowers and seeds and thus may quickly spread into surroundings.

Impatiens glandulifera community was found in various orographic units of the country. BOHUŠOVÁ (1992) has mentioned presence of the species in the Oravská vrchovina Mts in past and it was found even in the earlier stages of our research. Still, the community is rather rare in the Horná Orava region in comparison to other parts of Slovakia. Only five localities of the community have been documented yet, but the number of localities is growing in time. *Impatiens glandulifera* is not often planted as a garden ornamental in the region; though, there are villages where it is fairly popular. In comparison to the stands found in the other parts of Slovakia (JAROLÍMEK & ZALIBEROVÁ 2001), those found in the studied region lack few species characteristic for the *Senecionion fluviatilis* alliance: *Cucubalus baccifer*, *Humulus lupulus* and *Rubus caesius*, which are bound to riparian habitats of bigger rivers.

Echinocystis lobata community [*Senecionion fluviatilis*] (Tab. 2, column C)

North-American climber *Echinocystis lobata* is often reported as invasive in the South and East of Slovakia (ŤAVODA et al. 1999). Its creeping and climbing stems fill most of the space and only very few species survive in the neighbourhood of this plant, namely *Rumex obtusifolius* and *Urtica dioica* of the class *Galio-Urticetea* and *Atriplex patula*, *Chenopodium strictum* and *Sonchus oleraceus* of the order *Sisymbrietalia* (class *Stellarietea mediae*).

In Slovakia the community is usually found on banks of big, presumably lowland rivers. The dominant species apparently does not find suitable conditions in the studied area as the community is fairly rare in the Horná Orava

region, even though wild cucumber is frequently grown in the oravian gardens. It was found only in two heaps of garden rubbish in Zákamenné village.

Aster lanceolatus community [*Senecionion fluviatilis*] (Tab. 2, column D)

Aster lanceolatus is North-American neophyte. Though reported as invasive in many regions, fortunately it is still rare in the Horná Orava region. Only one stand of the community has been found on the bank of the Orava dam. It may be caused both by the relative isolation of the region (cf. MEDVECKÁ et al. 2009) and the fact that the species is not frequently planted as garden ornamental in the Orava region. Except the dominant species *Aster lanceolatus*, only few other species are present, namely *Agrostis gigantea*, *Angelica sylvestris*, *Lathyrus pratensis*, *Lolium perenne*, *Lycopus europaeus*, *Medicago lupulina*, *Phalaroides arundinacea*, *Phleum pratense*, *Plantago lanceolata*, *Poa trivialis*, *Tanacetum vulgare* and *Trifolium repens*. The community has been reported from various orographic units of the country, especially in the South of Slovakia (JAROLÍMEK et al. 1997; JAROLÍMEK et al. 2007).

Fallopia japonica community [*Senecionion fluviatilis*] (Tab. 2, column E) and *Fallopia sachalinensis* community [*Senecionion fluviatilis*] (Tab. 2, column F)

Dominant species of the first community, *Fallopia japonica*, is competitively very strong herbaceous species of East-Asian origin. It may reach up to 280 cm, creating thick, almost lightproof layer, therefore the community is extremely species poor. Underdeveloped individuals of shade-tolerant species *Aegopodium podagraria*, *Galium aparine* and *Urtica dioica* usually occur under the main layer, but no distinct ground layer is formed. Occasionally, *Agrostis stolonifera*, *Artemisia vulgaris*, *Calystegia sepium* or *Rubus caesius* occur.

The community is usually found on heaps of garden waste deposits, from where it spreads to the surrounding. *Fallopia japonica* often escapes from gardens, where it is frequently planted. The soil is well aerated and moist. The community is fairly abundant in the Slovakia and well documented from various orographic units (JAROLÍMEK & ZALIBEROVÁ 2001). *F. japonica* apparently found suitable conditions in the Orava region, as it is its most widespread neophyte right now, already spreading by natural modes of distribution. It has been recorded even in the former survey in 1997 in two localities of the Oravská kotlina basin and Oravská vrchovina Mts. Recent survey revealed that it is spreading noticeably. Its further expansion is fairly probable.

Stands found in the region floristically resemble communities found in the other regions of Slovakia (JAROLÍMEK & ZALIBEROVÁ 2001), even though some thermophilous species, such as *Cucubalus baccifer*, *Echinocystis lobata* and *Humulus lupulus* absent.

Taxonomical classification of the genus *Fallopia* is frequently discussed. It is presumed that three alien species of the genus are found in the Slovak republic: *Fallopia japonica*, *F. sachalinensis* and their hybrid *F.* × *bohemica*. We are persuaded that most of the populations, found in the Horná Orava region, belong to the species *Fallopia japonica*. *Fallopia sachalinensis* was found in one locality (Tab. 2, column F), on the garden trash dump close to the Orava River in the

Krivá village. The community was poor in species. Taxa of the class *Stellarietea mediae* were prevailing in the undergrowth, what is most probably caused by the type of habitat.

Solidago canadensis community [*Senecionion fluviatilis*] (Tab. 2, column G)

Solidago canadensis is a North-American perennial. In the community it is usually accompanied by other species from the class *Galio-Urticetea*, such as *Aegopodium podagraria*, *Chaerophyllum aromaticum*, *Glechoma hederacea*, *Ranunculus repens*, *Rubus caesius*, *Urtica dioica* and *Artemisietea vulgaris*, such as *Artemisia vulgaris*, *Elytrigia repens* and *Tanacetum vulgare*.

The community was documented on few localities in the Oravská vrchovina orographic unit. It is usually found along roads and in the surrounding of railway stations, but it was recorded on the river bank as well. *Solidago canadensis* is sometimes found in stands of some other syntaxa especially of the class *Galio-Urticetea*. In comparison to the other parts of Slovakia (JAROLÍMEK et al. 1997), species *Calystegia sepium*, *Carduus crispus*, *Cucubalus baccifer* and *Humulus lupulus* of the order *Calystegietalia sepium* are absent in the *Solidago canadensis* community.

Solidago gigantea community [*Senecionion fluviatilis*] (Tab. 2, column H)

North-American neophyte *Solidago gigantea* was found with small abundance in few localities in the Horná Orava region. Still, only one continuous stand was found, in the illegal rubbish dump on the bank of the Orava River in the Sedliacka Dubová village. The recorded community was surprisingly species-rich (42 taxa). Dominant species was accompanied by *Aegopodium podagraria*, *Chaerophyllum aromaticum*, *Chenopodium strictum*, *Galium aparine*, *Rubus caesius* and *Urtica dioica*.

The community was reported from various parts of Slovakia, especially in the surrounding of Dunaj, Laborec and Torysa rivers. Syntaxonomically the communities belong to more units (JAROLÍMEK et al. 1997). Even though the species is not frequent in the Horná Orava region, it has potential to spread through the region and even turn invasive. What is more, it is frequently planted as a garden ornamental, what increases propagule pressure of the species.

Helianthus tuberosus agg. community [*Senecionion fluviatilis*] (Tab. 2, column I)

Communities with dominant North-American neophyte *Helianthus tuberosus* agg. are dense and species-poor (12 taxa in average) in the Horná Orava region. Ecologically they may be divided into two different groups, which even syntaxonomically belong to two different classes according to their species composition. The first group is usually found in the riparian habitats and belongs to the class *Galio-Urticetea* as a result of presence of species characteristic for the class: *Calystegia sepium*, *Galium aparine*, *Roegneria canina*, *Rubus caesius*, *Solidago gigantea* and *Urtica dioica*. According to the results of subsequent analysis, another group (Tab. 2, column I, relevés 8 and 10,) was found, where species of the class *Artemisietea vulgaris*, such as *Artemisia vulgaris*, *Elytrigia repens*, *Melilotus albus* and *Tanacetum vulgare* were well represented. The

stands are usually found on primary sites of neophytes spread – deposits of garden waste. Most probably they belong to the class *Artemisietea vulgaris*, even though they were left together with the rest of the communities in the *Senecionion fluviatilis* table.

Even in the other parts of Slovakia community belongs either to the class *Galio-Urticetea* or *Artemisietea vulgaris* according to type of habitat and species composition (JAROLÍMEK et al. 1997, JAROLÍMEK & ZALIBEROVÁ 2001). In 1997 it was found in two localities in the Oravská kotlina basin and recently in two localities in the Oravská vrchovina Mts. Few isolated and poorly viable individuals were observed on the banks of the Orava dam. Taking into consideration the fact that the species is not spreading much for several decades, we consider it to be naturalised in the region (MEDVECKÁ et al. 2009).

Epilobietea angustifolii

Class *Epilobietea angustifolii* consists of communities of forest clearings.

Flysch is usually not very rich in nutrients and tends to be slightly acidic; therefore communities of the alliance *Atropion*, which prefer eutrophic soils, are very rare. Heliophylic species typical for clearings, such as *Calamagrostis arundinacea*, *Chamerion angustifolium*, *Rubus idaeus*, *Senecio ovatus*, *S. sylvaticus*, etc., are often accompanied by species of surrounding forest communities, such as *Athyrium filix-femina*, *Dryopteris filix-mas*, *Galium odoratum*, *Gentiana asclepiadea*, *Maianthemum bifolium*, *Prenanthes purpurea*, etc. At present big areas are deforested and bared in the Horná Orava region as a result of cutting of wood, wind calamity and bark beetles.

Calamagrostis villosa community [*Epilobietea angustifolii*] (Tab. 3, column A)

Atypical community of clearings, which evolved from the species of original community undergrowth after cutting down the wood, is dominated by *Calamagrostis villosa*. Only one locality of the community has been found yet. The community is dense and medium-rich in species. The dominant species is accompanied by *Rubus idaeus* in the upper layer. Lower layer comprises of *Dryopteris dilatata*, *Homogyne alpina*, *Oxalis acetosella* and *Potentilla erecta*. *Sambucus racemosa* forms poor shrub storey. The community was found at base of the Pilsko Mt. on calciferous flyschoid substrate. *Carex viridula* (EN) was present in the stand.

Eupatorietum cannabini (Tab. 3, column B)

Relatively species-rich community (37 taxa) of older forest clearings prefers nutrient-rich often alkaline substrates according to JAROLÍMEK et al. (1997). The community is rather rare in the Horná Orava region, because most of the studied area is on flysch bedrock, which is typically more or less acidic and nutrient-poor. Only one locality has been found, in the Oravská Magura Mts close to the Príslop saddle. Upper layer was dominated by species *Eupatorium cannabinum*, supplemented by forest species *Athyrium filix-femina*, *Brachypodium sylvaticum*, *Dryopteris filix-mas* and *Festuca gigantea*, the lower layer was formed by *Asarum europaeum*, *Astragalus glycyphyllos*, *Carex sylvatica*, *Galium odoratum*

and *Lysimachia nemorum*. Young wood perennials such as *Abies alba*, *Corylus avellana*, *Fagus sylvatica* and *Picea abies* were present, as well. Actual distribution of the community is not very well known and it is not yet sufficiently documented (JAROLÍMEK et al. 1997).

Senecietum fuchsii (Tab. 3, column C)

Stands of the association are usually formed by mosaic of small patches of heliophylic herbs, caused by heterogeneous substrates and ecological conditions in the clearing. The community usually has two or three layers. The upper one is dominated by *Senecio ovatus*, usually accompanied by other species, typical for clearings, such as *Calamagrostis arundinacea*, *Chamerion angustifolium*, *Rubus idaeus* and *R. hirtus*. Middle layer is less distinct and it consists of forbs *Galeopsis bifida*, *G. speciosa*, *Impatiens noli-tangere* and pteridophytes *Athyrium filix-femina* and *Dryopteris filix-mas*. Often is developed ground layer, formed by *Fragaria vesca*, *Lysimachia nemorum*, *Oxalis acetosella*, *Veronica officinalis* and *Viola reichenbachiana*. Shrub storey may be represented by young individuals of *Picea abies* and *Sorbus aucuparia*. The community is very frequent in younger stages of succession in forest clearings in the region. The soil varies from meso- to oligotrophic. The community is fairly common in the country (JAROLÍMEK et al. 1997). It has been found in many localities in the Oravské Beskydy Mts, Oravská Magura Mts, Podbeskydská vrchovina Mts and Skorušinské vrchy Mts. Floristically they resemble relevés recorded in the other mountain regions of Slovakia (JAROLÍMEK et al. 1997). *Centaurium erythraea* (NT) and *Epipactis atrorubens* (NT) were recorded among the stands.

Rubetum idaei (Tab. 3, column D)

Stands of *Rubetum idaei* are visually less conspicuous than those of the previous association. The dominant species *Rubus idaeus* forms 100 to 150 cm high upper layer. Other species characteristic for the class *Epilobietea angustifolii*, such as *Calamagrostis arundinacea*, *Chamerion angustifolium* and *Senecio ovatus* are less abundant. Middle layer, created by *Rubus hirtus* (subdom.), *Athyrium filix-femina*, *Deschampsia cespitosa*, *Galeopsis bifida* and *G. tetrahit* is often developed. *Avenella flexuosa*, *Luzula luzuloides* and *Vaccinium myrtillus* together create ground layer. Shrub storey is represented by *Picea abies* and *Sorbus aucuparia*. The community is found on older clearings. It is fairly abundant in the Horná Orava region, especially in the Oravské Beskydy Mts, Oravská Magura Mts and Skorušinské vrchy Mts. Floristically the stands resemble communities found in the other parts of Slovakia (JAROLÍMEK et al. 1997). *Blechnum spicant* (VU) and *Carex viridula* (EN) has been recorded within the community.

Senecioni sylvatici-Epilobietum angustifolii (Tab. 3, column E)

The association is formed by stands of high forbs *Chamerion angustifolium* (dom.), *Galeopsis bifida*, *G. speciosa*, *Lapsana communis*, *Rubus hirtus*, *R. idaeus*, *Senecio ovatus* and *S. sylvaticus* and pteridophytes *Athyrium filix-femina*, *Dryopteris carthusiana*, *D. dilatata* and *D. filix-mas*. They usually occur on

oligotrophic clearings. More species-poor version of the community may be found on burnt places. The association is documented by fifteen relevés from the Oravské Beskydy Mts, Oravská Magura Mts, Podbeskydská brázda trench and Podbeskydská vrchovina Mts, floristically similar to stands from the other parts of Slovakia (JAROLÍMEK et al. 1997). *Carex viridula* (EN) has been found.

Rubo idaei-Calamagrostietum arundinaceae (Tab. 3, column F)

The community spatially consists of two layers, the lower formed by leaves and the upper by stalks and panicles of the dominant species, *Calamagrostis arundinacea*. Other species, typical for clearings, such as *Athyrium filix-femina*, *Chamerion angustifolium*, *Rubus hirtus*, *R. idaeus* and *Senecio ovatus* are not very abundant. As a result of strong competitiveness of the dominant species, ground layer is poorly developed. Only in the places where *Calamagrostis arundinacea* is absent, few species such as *Avenella flexuosa*, *Agrostis capillaris*, *Oxalis acetosella* and *Vaccinium myrtillus* survive. Some therophytes which are common in the other associations of the alliance (*Galeopsis speciosa*, *Impatiens noli-tangere*) are missing in the community. *Festuca gigantea*, *Fragaria vesca* and *Lapsana communis* that are often found in similar habitats in the region are not present.

The community occurs on younger and even older forest clearings of anthropogenous origin, created by windthrow or differently bared forest places. The soils are meso- to oligotrophic cambisols (JAROLÍMEK et al. 1997), humic and well aerated by the roots of the *Calamagrostis arundinacea*.

The community is considered to be a big problem in the forestry. Root-system of polycormons of *Calamagrostis arundinacea* fills almost whole root space, outcompetes other species, prevents juveniles of new trees from ecesis and thus blocks forest renewal. The community may be mistaken for *Epilobio angustifolii-Calamagrostietum arundinaceae*. The latter grows on calciferous substrates and contains much more eutrophic species (JAROLÍMEK et al. 1997). *Rubo idaei-Calamagrostietum arundinaceae* is fairly common in the Horná Orava region, especially in the Oravské Beskydy Mts, Podbeskydská vrchovina Mts and Skorušinské vrchy Mts and it is floristically similar to the stands found in the other parts of Slovakia (JAROLÍMEK et al. 1997).

Sambucetum racemosae (Tab. 3, column G)

Stands of the association are dominated by shrubs and young trees, such as *Sambucus racemosa*, *Fagus sylvatica*, *Fraxinus excelsior*, *Salix caprea* and *Sorbus aucuparia* of height 3 – 4 m. They represent older stages of succession on clearings that are not mowed. Because of mowing, which prevents development of shrub storey, the community is rather rare. Only one locality has been recorded in the Horná Orava region in the Oravská Magura Mts. Species composition of the herb storey indicates that the stand evolved from *Rubetum idaei*. It was dominated by *Rubus idaeus*, accompanied by *Asarum europaeum*, *Athyrium filix-femina*, *Chamerion angustifolium*, *Dryopteris filix-mas*, *Galium odoratum*, *Oxalis acetosella*, *Senecio ovatus* and *Urtica dioica*. Even though the distribution of community in the country is not well known yet, it is presumed to

be rare as a result of current forest management (JAROLÍMEK et al. 1997). There are various opinions on the syntaxonomic classification of the association. Some authors (including authors of the article) classify the association within the class *Epilobietea angustifolii*, while others include it into the shrub communities of the class *Rhamno-Prunetea*.

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References

BOHUŠOVÁ K. (1992): Rozšírenie druhu *Impatiens glandulifera* Royle na Slovensku. – Bull. Slov. Bot. Spoločn. Bratislava 14: 7-15.

GREBENŠČIKOV O., MICHALKO J., HLAVÁČEK A., ZAHRADNÍKOVÁ K. & BRILLOVÁ D. (1956): Geobotanický náčrt Kubínskej hole. – Biol. Práce, Bratislava 1-91.

HADAČ E. (1969): Die Pflanzengesselschaften des Tales Dolina Siedmich prameňov in der Belaer Tatra. – Vegetácia ČSSR B2, Veda, Bratislava. [343 pp.]

JAROLÍMEK I. & KLIMENT J. (1994): The *Rumex obtusifolius* communities in Slovakia. – Biologia, Bratislava 49/1: 19-29.

JAROLÍMEK I. & KLIMENT J. (2000): Ruderálne spoločenstvá Drienčanského krasu. – In: KLIMENT J. (ed.): Príroda Drienčanského krasu, p. 215-223. Štátna ochrana prírody SR, Banská Bytrica.

JAROLÍMEK I. & ZALIBEROVÁ M. (2001): *Convolvuletalia sepium*. – In: VALACHOVIČ M. (ed.): Rastlinné spoločenstvá Slovenska. 3. Vegetácia mokradí, p. 21-50. Veda, Bratislava.

JAROLÍMEK I., ZALIBEROVÁ M. & KOCHJAROVÁ J. (2007): Synantropná vegetácia Muránskej planiny a priľahlého okolia. – Reussia, Revúca 4/1-2: 147-200.

JAROLÍMEK I., ZALIBEROVÁ M., MUCINA L. & MOCHNACKÝ S. (1997): Rastlinné spoločenstvá Slovenska, 2. Synantropná vegetácia. – Veda, Bratislava. [420 pp.]

JAROLÍMEK I., ŠIBÍK, J., HEGEDÜŠOVÁ K., JANIŠOVÁ M., KLIMENT J., KUČERA P., MÁJEKOVÁ J., MICHÁLKOVÁ D., SADLOŇOVÁ J., ŠIBÍKOVÁ I., ŠKODOVÁ I., UHLÍŘOVÁ J., UJHÁZY K., UJHÁZYOVÁ M., VALACHOVIČ M. & ZALIBEROVÁ M. 2008: A list of vegetation units of Slovakia. – In: JAROLÍMEK I. & ŠIBÍK J. (eds): Diagnostic, constant and dominant species of the higher vegetation units of Slovakia, p. 295-329. Veda, Bratislava.

KRIPPELOVÁ T. (1981): Synanthrope Vegetation des Beckens Košická kotlina. – Vegetácia ČSSR B 4, Veda, Bratislava. [216 pp.]

MARHOLD K. (ed.) (1998): Papraďorasty a semenné rastliny. – In: MARHOLD K. & HINDÁK F. (eds): Zoznam nižších a vyšších rastlín Slovenska, p. 333-687. Veda, Bratislava.

MEDVECKÁ J., ZALIBEROVÁ M. & JAROLÍMEK I. (2009): Ruderal Vegetation of Horná Orava Region 1. *Bidentetea tripartitae*, *Polygono arenastri-Poetea annuae*, *Molinio-Arrhenatheretea*, *Stellarietea mediae* and *Artemisietea vulgaris*. – Thaiszia – J. Bot., Košice 19/2: 91-129.

ŤAVODA O., ŠÍPOŠOVÁ H., ZALIBEROVÁ M., JAROLÍMEK I. & TÖRÖKOVÁ Y. (1999): História šírenia a súčasné rozšírenie *Echinocystis lobata* (F. Michx.) Torr. et A. Gray na Slovensku. – In: ELIÁŠ P. (ed.): Invázie a inváz ne organizmy 2, p. 84-95, Nitra.

ZALIBEROVÁ M. & JAROLÍMEK I. (1995): Ruderal Plant Communities of North-eastern Slovakia: *Chenopodietea*, *Plantaginetea*. – Thaiszia – J. Bot., Košice 5: 31-59.

Tab. 1. Plant communities of the order *Lamio albi-Chenopodietalia boni-henrici* in the Horná Orava Region

A – *Urtica dioica* community
B – *Sambucetum ebuli*
C – *Geo urbani-Chelidonietum maji*
D – *Agropyro repentis-Aegopodietum podagrariae*
E – *Arctio tomentosi-Rumicetum obtusifolii*
F – *Aegopodio-Geranietum pratensis*
G – *Aegopodio-Menthetum longifoliae*
H – *Chaerophylletum aromatici*
I – *Armoracia rusticana* community
J – *Geranio phaei-Urticetum dioicae*
K – *Rumicetum sylvestris*
L – *Rumicetum alpini*

Community	A		B	C		D		E		**F**	G		H		I	J	K	L	
No. of relevé	337677444556		262	232234433345		254736456		5	555		2766466		2 1777		2456	233	1	11111111	
	562815256816	%	355	637847817949	%	250680341	%	682073	%	56	4327934	%	47099047	%	1129	902	38	101234576	%
Urtica dioica	**555555444444**	100^{4}	a1+	bb.111abb34.	83^{b}	11.ab3bb3	89^{b}	1+a443	100^{a}	11	..+.+aa	57^{+}	1aa.b+a1	88^{a}	111+	a++	**ab**	.+13+.111	78^{1}
Chelidonium majus	.....	.	r..	**33b445444454**	10^{4}	.....	44^{1}	.....	.	..	.....	.	.....	.	....	+..	..	.....	.
Sambucus ebulus	.....	.	**555**	.....	.	.....	.	.....	.	..	.....	.	.....	.	....	...	..	.....	.
Aegopodium podagraria	1.+a1.3a11ab	83^{1}	.++	.....1...a13	33^{1}	**444444444**	100^{4}	...b..	17^{b}	..	....aa1	43^{a}	...+.bab	50^{a}	b.4.	b55	..	.....	.
Rumex obtusifolius	..1....1.b+a	42^{1}	...	.1ba.1.1....	42^{1}	.r.+.1.1b	56^{1}	**454333**	100^{3}	..	+.....	14^{+}	+.+b1...	50^{+}	3.++	1..	**44**	.+++.....	33^{+}
Geranium pratense	.....	.	...	.....	.	.....	.	.....	.	**55**	.....	.	.....	.	....	...	..	.....	.
Mentha longifolia	.....	.	...	.....	.	...1.....	11^{1}	.....	.	..	**5544345**	100^{4}	+..+....	25^{+}	....	...	.+	.....	.
Scirpus sylvaticus	.....	.	...	.....	.	.....	.	.....	.	..	**baaaa**..	71^{a}	.....	.	....	...	..	.....	.
Juncus effusus	.....	.	...	.....	.	.....	.	.....	.	..	**13.11**..	57^{1}	.....	.	....	...	..	.+.....	11^{+}
Phleum pratense	..+..+.....	17^{+}	...	.....	.	...+.....	11^{+}	.....	.	+.	**+11+++.**	86^{+}	..+..+..	25^{+}	...+	...	..	.....	.
Caltha palustris	.....1..1	17^{1}	...	.....	.	.....	.	.....b	17^{b}	..	**+.a13**..	57^{1}	.....	.	....	...	..	.....	.
Filipendula ulmaria	.....+....	8^{+}	...	.....	.	.....	.	.....	.	..	**...b11a**	57^{1}	.....+	12^{+}	....	.1.	..	.....	.
Equisetum palustre	.....	.	...	.....	.	.....	.	.....	.	..	**.131**...	43^{1}	.....	.	....	...	..	.....	.
Chaerophyllum aromaticum	b.+1...3....	33^{1}	1.b	.....	.	1.bb.1...	.	..1...	17^{1}	1a	.....	.	**55554444**	100^{4}	3a..	...	.+	.....	.
Armoracia rusticana	.....a.....	8^{a}	++.	.....	.	.....1..b	22^{1}	**...b.1**	33^{1}	..	.....	.	.r....+.	25^{r}	**3345**	+..	..	.....	.
Geranium phaeum	.+.....	8^{+}	...	.....	.	..1.ara..	44^{1}	.....	.	..	.....+.	14^{+}	.....	.	....	**3b3**	..	.....	.
Lysimachia nemorum	.....	.	...	.....	.	.....	.	.....	.	..	.....	.	.....	.	....	**a31**	..	.....	.
Rumex alpinus	.....	.	...	.....	.	.....	.	.....	.	..	.....	.	.....	.	....	...	..	**355455555**	100^{5}
Stellaria nemorum	.....	.	...	.....	.	.....	.	.....	.	..	.....	.	.....	.	....	...	..	**+b33bbabb**	100^{b}
Acetosa arifolia	.....	.	...	.....	.	.....	.	.....	.	..	.....	.	.....	.	....	...	..	**.+1.ab+11**	78^{1}
Epilobium alpestre	.....	.	...	.....	.	.....	.	.....	.	..	.....	.	.....	.	....	...	..	**....r.++1**	44^{+}
Deschampsia cespitosa	.....	.	...	.....	.	.....	.	....1.	17^{1}	..	.....	.	.....	.	....	...	+.	**.+++++..+**	67^{+}
Senecio ovatus	.....	.	...	.....	.	.....	.	.r...+	17^{r}	..	.....	.	.....	.	....	...	..	**.+..+++.+**	56^{+}
***Gallio-Alliarion, Aegopodion podagrariae, Carduo-Urticion, Rumicion alpini*:**																			
Anthriscus sylvestris	1.....1a....	25^{1}	...	.1.....a....	17^{1}	..a.+...1	33^{1}	..3...	17^{3}	1.	.....	.	1+.1.11.	62^{1}	.+..	..1	..	.....	.
Alliaria petiolata	.1....+.....	17^{+}	...	+.b+.....	25^{+}	....+1...	22^{+}	.....	.	..	.....	.	.....	.	....	.1.	..	.....	.
Epilobium montanum	.....	.	...	.....	.	.1.....	11^{1}	.....	.	..	.....	.	.....+..	12^{+}	....	...	..	....+....	11^{+}
Chenopodium bonus-henricus	.....	.	...	.....	.	.....+...	11^{+}	.....	.	..	.....	.	.....	.	....	...	1.	.....	.
***Galio-Urticetea, Lamio albi-Chenopodietalia boni-henrici*:**																			
Heracleum sphondylium	...11.+.+...	33^{+}	+.1	.....1..	8^{1}	3a1+1+..1	78^{1}	..1+.a	50^{1}	11	.....	.	.1a1.+1a	75^{1}	1...	...	.a	.....+r+	33^{+}
Galium aparine	b1..++....+.	42^{+}	+1+	.....3.....	8^{3}	.++...3.1	44^{+}	b+.+..	50^{+}	.1	..+.+11	57^{+}	.a....+.	25^{+}	.+..	+..	..	.....	.
Poa trivialis	.....a..	8^{a}	+.+	.....11..+b	33^{1}	.+..1a..a	44^{1}	.1+.31	67^{1}	.+	..+....	14^{+}	a1.....1	38^{1}	....	..+	..	.++.....	22^{+}

Tab. 1. – cont. 1

Community	A		B	C		D		E		**F**	G		H		I	J	K	L	
No. of relevé	337677444556		262	232234433345		254736456		5 555			2766466		2 1777		2456	233	1	11111111	
	562815256816	%	355	637847817949	%	250680341	%	682073	%	56	4327934	%	47099047	%	1129	902	38	101234576	%
Glechoma hederacea	.+...+b.a.+.	42^{+}	+.1	1.1.....1.a	33^{1}	..+++a...	44^{+}	1	17^{1}	..	.....	.	+.....11	38^{1}	..1.	+.1	..	.....	.
Geum urbanum	.....a.	8^{a}	1.+	.....	.	.1...+.r.	33^{+}	.+++.1	67^{+}	..	.....	.	...1.+..	25^{+}	....	...	aa	.....	.
Scrophularia nodosa	.1.....	8^{1}	...	..r.a...+.+.	33^{+}	r.....	11^{r}	.....	.	..	.....	.	.....	.	....	++.	..	.....	.
Rubus caesius	.....	.	.b.	+.....1	17^{+}	.....	.	.....	.	.1	33	29^{3}	.....	.	....	1r.	..	.....	.
Lamium maculatum	.1.....	8^{1}	...	.....	.	.....	.	.....	.	..	.....++	29^{+}	.....	.	....	...	..	.....+1.	22^{+}
Myosoton aquaticum	.....+....	8^{+}	...	.....1.....	8^{1}	.....+...	11^{+}	.....	.	..	..+....	14^{+}	.....	.	....	...	..	.....	.
Campanula trachelium	.....	.	r.r	.....	.	.....	.	.....	.	..	.....	.	+..1....	25^{+}	....	...	..	.....	.
Roegneria canina	.....	.	..	.....	.	.....1...	11^{1}	.11....	33^{1}	.	....1..	14^{1}	.....	.	....	..	...	.....	.
Campanula rapunculoides	.....	.	...	.....	.	.....	.	.....	.	..	.....	.	....+.+.	25^{+}	+...	...	..	.....	.
Lapsana communis	.....r.	8^{r}	...	.....	.	.....	.	.....	.	..	.....	.	...+....	12^{+}	....	...	..	.....	.
Angelica sylvestris	.....	.	...	.....	.	.....	.	.....	.	..	+1.....	29^{+}	.....	.	....	...	..	.....	.
Carduus personata	.....	.	...	.....	.	.....	.	.....	.	..	1	14^{1}	.....+.	12^{+}	....	...	..	.....	.
Solidago gigantea	.....	.	...	.....	.	1	11^{1}	.....	.	..	.....	.	.....	.	....	...	..	.....	.
Calystegia sepium	.....	.	...	.....	.	.....	.	+.....	17^{+}	..	.....	.	.....	.	....	...	..	.....	.
***Artemisietea vulgaris*:**																			
Elytrigia repens	...1a1.....1	33^{1}	+.+	.....b1...	17^{1}	.a.1.a..1	44^{1}	..1.a.	33^{1}	++	1....++	43^{+}	+aa.3+b1	88^{a}	.+.1	...	..	...+.....	11^{+}
Arctium tomentosum	.....	.	+.+	.....	.	.1+....+3	44^{+}	..1...	17^{1}	..	.....	.	+.a.1...	38^{1}	b1+.	...	.1	.....	.
Tussilago farfara	.....	.	...	.....+.....	8^{+}	.....+.b+	33^{+}	...+b.	33^{+}	..	.....	.	....+...	12^{+}	.+..	...	.+	.....	.
Tanacetum vulgare	.....	.	..+	.....	.	.+.+.....	22^{+}	.....	.	+.	.....	.	..+.....	12^{+}	+..+	+..	..	.....	.
Artemisia vulgaris	......+.....	8^{+}	...	.....	.	.+.....	11^{+}	.....	.	+.	.....	.	.++.....	25^{+}	+..+	+..	..	.....	.
Medicago lupulina	.....	.	...	+.....	8^{+}	.1...+...	22^{+}	+.....	17^{+}	..	.....	.	..+.....	12^{+}	...+	...	..	.....	.
Arctium sp.	...r.....	8^{r}	...	...1.....	8^{1}	.....	.	1.....	17^{1}	..	.....	.	.....1..	12^{1}	....	...	..	.....	.
Arctium minus	..a.....	8^{a}	...	.....	.	.....	.	.1....	17^{1}	..	.....	.	...3....	12^{3}	....	...	..	.....	.
Melilotus albus	.....	.	...	.....	.	.1.....	11^{1}	.....	.	+.	.....	.	.....	.	+...	...	..	.....	.
*Silene *alba*	.....	.	...	.....	.	.....	.	.....	.	+.	.....+.	14^{+}	.....	.	+...	...	..	.....	.
***Stellarietea mediae*:**																			
Stellaria media	.....	.	...	+.+.....	17^{+}	.....1.	11^{1}	a+...+	50^{+}	..	.....	.	.....	.	.+..	.+.	..	.....	.
Atriplex patula	..+.....	8^{+}	..+	.....	.	.....+	11^{+}	1..+..	33^{+}	..	.....	.	.....	.	...a	...	..	.....	.
Veronica persica	.+.....	8^{+}	...	r.....	8^{r}	.....	.	r.....	17^{r}	..	.....	.	.....	.	.1.+	...	..	.....	.
Tripleurospermum perforatum	.....	.	...	.....	.	.....+	11^{+}	+.....	17^{+}	..	.....	.	.....	.	+r.+	...	..	.....	.
Convolvulus arvensis	r+.....	17^{r}	...	.....	.	.....	.	.....	.	.1	.....	.	.....	.	.+..	...	..	.....	.
Lamium purpureum	1.....	8^{1}	...	.....r.1...	17^{r}	.....	.	.....	.	..	.....	.	.....	.	....	.a.	..	.....	.
Chenopodium strictum	.....+....	8^{+}	...	.....	.	1	11^{1}	.....	.	..	.....	.	.....	.	.+.r	...	..	.....	.
***Molinio-Arrhenatheretea*:**																			
Dactylis glomerata	+11+1+..111+	83^{1}	+.+	.+.....1.1+.	33^{+}	.baa+1.+.	67^{1}	.++1+a	83^{+}	++	....+.+	29^{+}	.++++33a	88^{+}	111.	1..	++	..+.....	11^{+}
Ranunculus repens	.+++....1..1	42^{+}	...	..+.a1+..+.1	50^{+}	aa.++1.1+	78^{1}	a++1a1	100^{1}	..	....+..	14^{+}	..+.+++.	50^{+}	b++.	a.a	a4	+bba.....	44^{a}
Trifolium repens	.....+....	8^{+}	...	.....+.+...	17^{+}	1+..+1..+	56^{+}	1.....	17^{1}	..	.....	.	.....	.	1..+	...	+.	+.....	11^{+}
Potentilla anserina	.....	.	...	.....	.	...+.+..+	33^{+}	..+++.	50^{+}	..	.....	.	+.++....	38^{+}	a+..	...	.+	.....	.
Plantago major	.....	.	...	..+.1.....	17^{+}	.....1.+1	33^{1}	1..+..	33^{+}	..	.....	.	...+....	12^{+}	+..+	...	11	.....	.

Tab. 1. – cont. 2

Community	A		B	C		D		E		**F**	G		H		I	J	K	L	
No. of relevé	337677444556		262	232234433345		254736456		5 555			2766466		2 1777		2456	233	1	11111111	
	562815256816	%	355	637847817949	%	250680341	%	682073	%	56	4327934	%	47099047	%	1129	902	38	101234576	%
Lathyrus pratensis	.....	.	.+.	.....	.	...+.....	11^{+}	.....	.	1+	++a1+1.	86^{+}	..+.+...	25^{+}	....	...	..	.....	.
Festuca pratensis	.....	.	...	.....	.	.+...+...	22^{+}	+.+...	33^{+}	..	.....	.	+.+..1..	38^{+}	....	...	++	1.....	11^{1}
Ranunculus acris	.....	.	...	.rr.....	17^{r}	....1..r.	22^{r}	+..+..	33^{+}	+.	.+.....	14^{+}	+.....	12^{+}	....	...	.+	.....	.
Agrostis stolonifera	.....	.	...	...+.....+	17^{+}	...1.1...	22^{1}	.....	.	..	..11.+.	43^{1}	.....a..	12^{a}	....	+..	.+	.....	.
Poa pratensis	.....	.	.1.	1+a.....	25^{1}	.....	.	.....	.	1.	.....	.	.....+..	12^{+}	....	...	..	...+.....	11^{+}
Symphytum officinale	...+..1.....	17^{+}	...	.....	.	.....	.	.....	.	.+	....+.r	29^{r}	.....	.	.+..	r1.	..	.....	.
Carum carvi	.....	.	...	.....	.	.....	.	..+...	17^{+}	..	.....	.	..+.....	12^{+}	..+.	...	+1	.....	.
Arrhenatherum elatius	.....	.	...	.....	.	.....+...	11^{+}	..+...	17^{+}	++	.....	.	....+...	12^{+}	....	...	..	.....	.
Trifolium pratense	.....	.	...	..1.....	8^{1}	.+.....	11^{+}	.....	.	..	.....	.	..+..+..	25^{+}	a...	...	..	.....	.
Crepis biennis	.....	.	..r	.....	.	.....a.	11^{a}	.....	.	..	.....	.	..1.+..+	38^{+}	....	...	..	.....	.
Alopecurus pratensis	.....	.	...	.....	.	..+.....	11^{+}	.....	.	..	.....	.	.+...+..	25^{+}	1...	...	..	.....	.
Plantago lanceolata	.....	.	...	+.....	8^{+}	+.....	11^{+}	.....	.	+.	.....	.	.....	.	...+	...	..	.....	.
Hypericum maculatum	.....	.	...	.....	.	.....	.	.....	.	..	.....	.	.....	.	....	...	..	.++..+...	33^{+}
Lolium perenne	.....	.	..+	.....	.	.....	.	.....	.	..	.....	.	.....	.	....	...	++	.....	.
Bellis perennis	.....	.	...	..+.....	8^{+}	.....+...	11^{+}	.....	.	..	.....	.	.....	.	....	...	+.	.....	.
Trifolium hybridum	.....	.	...	.....	.	.+.....+	22^{+}	.....	.	..	.....	.	.....	.	...1	...	..	.....	.
Cirsium oleraceum	.....	.	...	.....	.	.....	.	.....	.	..	a.....	14^{a}	.....r	12^{r}	....	.1.	..	.....	.
Other taxa:																			
Taraxacum sect. *Ruderalia*	+.1.....+..+	33^{+}	..r	a+a1+11.a..1	75^{1}	.++.+..++	56^{+}	++.+..	50^{+}	+.	.....	.	..+..+..	25^{+}	1+a+	+.+	a+	+.....	11^{+}
Alchemilla vulgaris agg.	.....1..+	17^{+}	..+	.....	.	.+..++...	33^{+}	...+.1	33^{+}	..	....+..	14^{+}	.....++	25^{+}	+.++	...	+a	11b.....	33^{1}
Veronica chamaedrys	.....	.	..1	.a.....+..	17^{+}	.+++.1...	44^{+}	...+.+	33^{+}	1.	.....	.	+..+.+.+	50^{+}	....	...	+.	++.+.....	33^{+}
Cirsium arvense	+...+.....	17^{+}	...	.....+	8^{+}	.r1+...++	56^{+}	..a.+.	33^{+}	+.	.....aa	29^{a}	1....+..	25^{+}	.+.a	..+	..	.....	.
Vicia sepium	.....+.....	8^{+}	...	.....	.	.+.1....+	33^{+}	..+...	17^{+}	1+	....+.r	29^{r}	..+.++1.	50^{+}	a...	+..	..	.....	.
Achillea millefolium agg.	.....	.	..+	..+...+.....	17^{+}	.r...r..+	33^{r}	.....	.	1.	.....+.	14^{+}	+.+..+..	38^{+}	+...	...	+.	+.....	11^{+}
Vicia cracca	.....	.	.+.	.....	.	.+.....	11^{+}	.....	.	1.	.+.....	14^{+}	+11.+.+1	75^{+}	+...	...	..	.....	.
Equisetum arvense	.++.....	17^{+}	.1.	.....	.	.....	.	.....	.	1.	a+..3+.	57^{+}	.....	.	...+	.+.	..	.....	.
Chaerophyllum hirsutum	.....b3	17^{b}	...	.....	.	....bb...	22^{b}	.....	.	..	..3bb..	43^{b}	.....	.	....	...	..	....+...a	22^{+}
Fraxinus excelsior	.....	.	r..	+..r+.....	25^{+}	.1.....r.	22^{r}	...+..	17^{+}	..	.....	.	.....	.	....	r..	.+	.....	.
Epilobium ciliatum	.....r.r	17^{r}	...	r.r1..+.....	33^{r}	.....+.	11^{+}	.....	.	..	..+....	14^{+}	.....	.	....	...	..	.....	.
Petasites hybridus	.....ab....	17^{a}	...	.....	.	..1.....	11^{1}	1.....	17^{1}	..	.....a	14^{a}	.....	.	...1	.1.	..	.....	.
Poa annua	.....	.	...	.....+.....	8^{+}	.+.....	11^{+}	++....	33^{+}	..	.....	.	...+....	12^{+}	...+	...	..	.....	.
Galium album	.....	.	...	.....	.	...+.+...	22^{+}	.....	.	1.	.1.+...	29^{+}	....1...	12^{1}	....	...	..	.....	.
Rubus idaeus	.....	.	...	.....	.	.+.....	11^{+}	.....	.	..	.....	.	.....	.	....	...	..	....1+++.	44^{+}
Galeopsis tetrahit	...r.....r	17^{r}	...	.....	.	1	11^{1}	..+...	17^{+}	..	r.....	14^{r}	.....	.	....	...	..	.....	.
Galium mollugo	.....	.	..+	.....	.	.....	.	.....	.	..	.....	.	+.a...+1	50^{+}	....	...	..	.....	.
Chamerion angustifolium	.....	.	...	.....	.	.....	.	.....	.	..	.....	.	.1.....	12^{1}	...+	...	..	...+.+...	22^{+}
Glyceria fluitans	.....+..	8^{+}	...	.....	.	...+.....	11^{+}	1.....	17^{1}	..	.....	.	..+.....	12^{+}	....	...	..	.....	.
Rumex crispus	.....	.	...	.....	.	.....	.	.....	.	+r	.....	.	..+.+...	25^{+}	....	...	..	.....	.
Agrostis gigantea	.....	.	...	.....	.	.....	.	.....	.	..	1+..+..	43^{+}	..+.....	12^{+}	....	...	..	.....	.

Tab. 1. – cont. 3

Community	A		B	C		D		E		**F**	G		H		I	J	K	L	
No. of relevé	337677444556		262	232234433345		254736456		5 555			2766466		2 1777		2456	233	1	11111111	
	562815256816	%	355	637847817949	%	250680341	%	682073	%	56	4327934	%	47099047	%	1129	902	38	101234576	%
Cirsium rivulare	.....	.	...	.....	.	.....	.	.....	.	..	.bbb+..	57^{b}	.....	.	....	...	..	.....	.
Galeopsis pubescens	.....	.	...	.....	.	.....	.	.....	.	..	.....	.	.....	.	....	...	..	.++1.....	33^{+}
Agrostis capillaris	.....	.	...	.....	.	.....	.	.....	.	..	.....	.	.....	.	....	...	..	.+++.....	33^{+}
Bistorta major	.....	.	...	.....	.	.....	.	.....	.	..	.+.....	14^{+}	.....	.	....	...	..	.++.....	22^{+}
Scrophularia scopolii	.....	.	...	.....	.	.....	.	.....	.	..	.....	.	..+.....	12^{+}	....	...	..	..r.....1	22^{r}
Sorbus aucuparia	.....	.	...	.....	.	.r.....	11^{r}	...r..	17^{r}	..	.....	.	.....	.	....	...	..	.....r...	11^{r}
Acer pseudoplatanus	.....	.	...	...rr.....	17^{r}	.....	.	...r..	17^{r}	..	.....	.	.....	.	....	...	..	.....	.
Galeopsis bifida	.....	.	...	.....	.	.....	.	.....	.	..	.+.....	14^{+}	.....+	12^{+}	...+	...	..	.....	.
Jacea phrygia	.....	.	...	.....	.	...+.....	.	.....	.	..	....+..	14^{+}	.....+.	12^{+}	....	...	..	.....	.
Ranunculus lanuginosus	.....	.	...	.....	.	.....+...	11^{+}	.....	.	..	r+.....	29^{r}	.....	.	....	...	..	.....	.
Ficaria bulbifera	41.....	17^{1}	...	.....	.	.....	.	.....	.	..	.....	.	.....	.	....	1..	..	.....	.
Primula elatior	.....	.	...	...+.....	8^{+}	.....	.	.....	.	..	.....	.	...+....	12^{+}	....	+..	..	.....	.
Hypericum perforatum	.....	.	...	.....r.....	8^{r}	.....	.	.....	.	+.	.....	.	....+...	12^{+}	....	...	..	.....	.
Fragaria vesca	.....	.	..+	...+..+.....	17^{+}	.....	.	.....	.	..	.....	.	.....	.	....	...	..	.....	.

Taxa in one or two relevés:

E_1: *Acer platanoides* (28) r; *Acetosa pratensis* (1) +; *Acetosella vulgaris* (53) +, (55) r; *Ajuga reptans* (29) 1, (63) +; *Allium oleraceum* (63) r; *Anemone ranunculoides* (29) +, (30) +; *Astrantia major* (18) a; *Athyrium distentifolium* (13) r; *A. filix-femina* (48) +; *Brachypodium pinnatum* (65) a; *Bromus* sp. (63) 1; *Campanula patula* (55) +; *Capsella bursa-pastoris* (41) +, (52) +; *Cardaminopsis arenosa* (48) +; *Carex paniculata* (73) +; *Carex* sp. (38) 1, (39) +; *Cerastium holosteoides* (70) 1; *Chenopodium album* (52) +, (56) 1; *Cirsium palustre* (68) r; *Cirsium* sp. (27) r; *Corylus avellana* (30) r; *Cynosurus cristatus* (1) 1; *Daucus carota* (9) + ; *Epilobium hirsutum* (73) +, (49) b; *E. roseum*(24) +, (50) +; *E. tetragonum* (66) r; *Festuca arundinacea* (24) +; *Festuca* sp. (62) 1; *Galeopsis* sp. (8) +, (56) 1; *G. speciosa* (63) 1, (64) 1; *Galium odoratum* (42) 1; *G. uliginosum* (24) +; *Geranium robertianum* (28) 1; *G. sylvaticum* (9) 1; *Geum rivale* (73) +; *Jacea pratensis* (5) +; *Juncus articulatus* (66) +; *J. inflexus* (67) 3; *Leontodon autumnalis* (5) +, (48) 1; *Ligusticum mutellina* (10) +; *Linaria vulgaris* (63) +; *Lonicera tatarica* (63) 1, *Lotus corniculatus* (5) +, (74) +; *Lysimachia nummularia* (73) +; *L. vulgaris* (63) +; *Malva moschata* (76) +; *Mentha arvensis* (21) +; *Milium effusum* (14) +, (16) +;*Myosotis arvensis* (22) +; *M. scorpioides* agg. (49) +, (77) +; *M. sylvatica* (20) +; *Odontites vulgaris* (9) +; *Ononis arvensis* (5) +; *Persicaria hydropiper* (61) r; *P. maculosa* (54) +, (56) r; *Phalaroides arundinacea* (63) b; *Pimpinella saxifraga* (5) r; *Plantago media* (1) +, (3) +; *Poa alpina* (1) 1; *Potentilla reptans* (41) 1, (47) r; *Prunella vulgaris* (1) +; *Prunus domestica* (25) b, (55) 1; *Rosa* sp. (19) +; *Rubus fruticosus*[1] (20) +; *Salix caprea* (55) 1; *S. fragilis* (49) b, (55) +; *Sambucus nigra* (60) +, (70) 1; *Sedum* sp. (54) +; *Senecio subalpinus* (1) +, (16) 1; *S. vulgaris* (56) +; *Silene dioica* (11) r; *Sinapis arvensis* (55) +, (56) +; *Sonchus arvensis* (26) +; *S. oleraceus* (69) +; *Stellaria graminea* (21) 1; *S. palustris* (4) +, (20) 1; *Thalictrum aquilegiifolium* (45) +; *Tragopogon orientalis* (59) +; *Trisetum flavescens* (59) +; *Urtica urens* (40) a; *Valeriana officinalis* (6) r; *Veronica* sp. (8) r; *Viola arvensis* (8) +, (77) +; *Viola* sp. (28) +.

E_0: *Brachythecium rutabulum* (48) 3; *Brachythecium* sp. (72) 1; *B. starkei* (40) a, (75) 1; *Cirriphyllum piliferum* (48) 3, (51) 3; *Eurhynchium schleicheri* (65) 1; *Eurhynchium* sp. (60) a; *Fissidens taxifolius* (40) +; *Plagiomnium rostratum* (53) a; *Pohlia* sp. (48) 1.

Notes:

[1] name includes two sections of subgenus *Rubus*, namely sect. *Rubus* and sect. *Corylifolii*

Localities of relevés:

Explanation: no. relevé in table, orographic unit, locality, habitat, soil, altitude (m), aspect (º), slope (º), relevé area (m^2), cover total (%), longitude (xxºxx′xx.xx″), latitude (xxºxx′xx.xx″), date (day.month.year), author of relevé (JM – Jana Medvecká, MZ – Marica Zaliberová, IJ – Ivan Jarolímek, OG – Oleg Grebenščikov, JK – Ján Kliment). Abbreviation: v. – village, N – north, S – south, E – east, W –west, OP – Oravská priehrada-dam.

1. Oravská Magura, Kubinská hoľa Mt., nitrophilous habitat, nitrotrophic, humic soil, 1000 m, 225°, 5°, 191700.00, 491600.00, OG.
2. Podbeskydská brázda, v. Sihelné, 730 m, 0°, 0°, 20 m^2, 100%, 192456.00, 493030.00, 9. 6. 1986, IJ.
3. Podbeskydská brázda, v. Rabčice, in front of the house no. 177, pile of wood, bark and small branches, moist from dung-water, 735 m, 0°, 0°, 16 m^2, 80%, 193156.00, 492959.00, 9. 7. 1986, IJ & MZ.
4. Oravská vrchovina, v. Podbiel, S, ruderal site near the houses no. 53-54, 558 m, 0°, 0°, 15 m^2, 100%, 192900.00, 491800.00, 10. 7. 1986, IJ.
5. Oravská kotlina, v. Klin, SW 1 km, road verge, 640 m, 135°, 10°, 20 m^2, 100%, 192919.00, 492541.00, 30. 7. 1995, IJ.
6. Oravská vrchovina, v. Oravský Podzámok, road verge on the way to Dolný Kubín, ditch, 531 m, 0°, 0°, 30 m^2, 100%, 192036.00, 491525.00, 30. 7. 1995, IJ.
7. Oravská kotlina, v. Lokca, NE, by the small brook, ditch along the road, 620 m, 0°, 0°, 30 m^2, 100%, 192428.00, 492213.00, 30. 7. 1995, IJ.
8. Oravská kotlina, v. Hruštín, ruderalized area between houses no. 324 and 326, loam, wood trash, 695 m, 180°, 5°, 12.5 m^2, 90%, 192054.00, 491926.00, 26. 8. 1987, MZ.
9. Oravská vrchovina, v. Krivá, behind the watermill, loam, 550 m, 90°, 10°, 15 m^2, 100%, 192842.00, 491657.00, 26. 8. 1987, MZ.
10. Oravská Magura, Minčol Mt., by the ski tow, 7th pillar from the bottom, by the former chalet, 1200 m, 203°, 7°, 40 m^2, 100%, 191512.00, 491514.00, 5. 9. 1993, IJ & JK.
11. Oravská Magura, Minčol Mt., ski tow, another end, approx. 100 m long stand, 1200 m, 225°, 7°, 40 m^2, 100%, 191510.00, 491530.00, 5. 9. 1993, IJ & JK.
12. Oravská Magura, Minčol Mt., ski tow, up the slope, 9th pillar, by the edge of the forest, 1210 m, 180°, 25°, 40 m^2, 100%, 191455.00, 491545.00, 5. 9. 1993, IJ & JK.
13. Oravské Beskydy, Babia hora Mt., Šťaviny, small isle of vegetation on the pasture, raspberry thicket, 1380 m, 180°, 20°, 40 m^2, 100%, 193025.00, 493401.00, 6. 9. 1993, IJ & JK.
14. Oravské Beskydy, Babia hora Mt., Šťaviny, S 200 m bellow no. 13, below the countour path, 1330 m, 203°, 10°, 40 m^2, 90%, 193025.00, 493400.00, 6. 9. 1993, IJ & JK.
15. Oravské Beskydy, Babia hora Mt., Šťaviny, by the shepherd's hut, easterly, 1280 m, 180°, 15°, 40 m^2, 100%, 193024.00, 493400.00, 6. 9. 1993, IJ & JK.
16. Oravské Beskydy, Babia hora Mt., Šťaviny, next to the previous relevé, W from the hut, 1270 m, 203°, 15°, 40 m^2, 100%, 193026.00, 493400.00, 6. 9. 1993, IJ & JK.
17. Oravské Beskydy, Babia hora Mt., Šťaviny, below the hut, edge of the spruce grove, 1250 m, 180°, 25°, 40 m^2, 100%, 193027.00, 493400.00, 6. 9. 1993, IJ & JK.
18. Podbeskydská brázda, v. Rabčice, house no. 176, ruderal site on the yard in front of a house, shaded, loam with slag, 730 m, 270°, 5°, 24 m^2, 95%, 193203.00, 493005.00, 9. 7. 1986, IJ.
19. Podbeskydská brázda, v. Rabčice, house no. 187, by the ditch between road and fence, 730 m, 90°, 40°, 20 m^2, 100%, 193158.00, 493007.00, 9. 7. 1986, IJ & MZ.
20. Podbeskydská brázda, v. Mútne, next to the entrance to the cemetery, left corner, 800 m, 225°, 35°, 24 m^2, 100%, 191922.00, 492746.00, 9. 7. 1986, IJ & MZ.
21. Oravská vrchovina, v. Horná Lehota, ruderal site by the former collective farm, clay-loam, 502 m, 0°, 0°, 50 m^2, 100%, 192405.90, 491509.70, 2. 8. 2006, JM.
22. Oravská vrchovina, v. Horná Lehota, next to the house no. 81, humic soil, 496 m, 141°, 3°, 20 m^2, 100%, 192408.40, 491510.90, 2. 8. 2006, JM.
23. Podbeskydská brázda, v. Rabčice, next to the house no. 234, ruderal site between houses, recultivated illegal rubbish dump and gravel terrace, 741 m, 160°, 5°, 50 m^2, 100%, 193124.10, 493022.90, 10. 8. 2006, JM & IJ.
24. Podbeskydská brázda, v. Rabčice, wet meadow between houses, wet clay-loamy soil, 730 m, 175°, 5°, 25 m^2, 100%, 193124.10, 493022.90, 10. 8. 2006, JM & IJ.
25. Podbeskydská brázda, v. Rabčice, above the church, next to the abandoned house no. 200, slope below its abandoned garden, ruderal site, sandy-loamy soil, 726 m, 175°, 25°, 17.5 m^2, 98%, 193107.00, 493021.00, 10. 8. 2006, JM & IJ.
26. Oravská vrchovina, v. Oravský Podzámok, house behind the guest house Toliar, edge of the wall, heap of soil and construction debris, 520 m, 0°, 0°, 3 m^2, 80%, 192124.50, 491540.40, 19. 5. 2007, JM.

27. Oravská vrchovina, v. Oravský Podzámok, yard next to the house behind the guest house Toliar, edge of the concrete wall, heap of soil and big rocks, 520 m, 0°, 0°, 2 m^2, 90%, 192124.70, 491540.50, 19. 5. 2007, JM.
28. Oravská vrchovina, v. Oravský Podzámok, yard below the guest house Toliar, edge of the wall, gravel and loam, 518 m, 0°, 0°, 4 m^2, 95%, 192126.10, 491539.50, 19. 5. 2007, JM.
29. Oravská vrchovina, v. Oravský Podzámok, bank of Orava river, next to the bridge, below the castle, river terrace, loamy, moist, 512 m, 0°, 0°, 16 m^2, 100%, 192134.30, 481538.00, 19. 5. 2007, JM.
30. Oravská vrchovina, v. Horná Lehota, bank of Orava river, by the train station, loamy sand, moist, 508 m, 0°, 0°, 8 m^2, 100%, 192358.30, 491506.20, 20. 5. 2007, JM.
31. Oravská vrchovina, v. Horná Lehota, road to the former collective farm, edge of the wall, gravely loam, 528 m, 0°, 0°, 2 m^2, 100%, 192407.00, 491508.50, 20. 5. 2007, JM.
32. Oravská vrchovina, v. Horná Lehota, opposite to the house no. 81, moist soil, loamy sand, 529 m, 0°, 0°, 6 m^2, 100%, 192408.30, 491511.40, 20. 5. 2007, JM.
33. Oravská vrchovina, v. Horná Lehota, entrance to an old mansion, edge of the wall, 529 m, 0°, 0°, 4 m^2, 70%, 192409.00, 491509.50, 20. 5. 2007, JM.
34. Oravská vrchovina, v. Horná Lehota, wooden farm buildings next to the house no. 82, fringe between road and the building, loamy gravel, 529 m, 0°, 0°, 2 m^2, 75%, 192409.80, 491512.90, 20. 5. 2007, JM.
35. Oravská vrchovina, v. Sedliacka Dubová, banks of brook below the collective farm, loamy sand, 538 m, 0°, 0°, 8 m^2, 100%, 192528.70, 491543.70, 20. 5. 2007, JM.
36. Oravská vrchovina, v. Dlhá nad Oravou, next to the petrol station, banks of the road ditch, clay-loam, big stones on the surface, 501 m, 112°, 10°, 6 m^2, 98%, 192609.20, 491540.50, 20. 5. 2007, JM.
37. Oravská vrchovina, v. Dlhá nad Oravou, wall fringe along the wooden cottage no. 167, gravely loam, 508 m, 154°, 7°, 6 m^2, 60%, 192617.20, 491553.40, 20. 5. 2007, JM.
38. Oravská kotlina, v. Hruštín, pathway between yards next to the stream from the street Potok, stream bank, loamy, 695 m, 263°, 35°, 11 m^2, 100%, 192049.20, 491934.10, 21. 5. 2007, JM.
39. Oravská kotlina, v. Hruštín, pathway along stream from the street Potok, 692 m, 234°, 30°, 4 m^2, 100%, 192049.00, 491933.60, 21. 5. 2007, JM.
40. Oravská kotlina, v. Babín, stream bank close to the bridge to the football stadium, stream bank, loamy sand, 680 m, 0°, 0°, 12 m^2, 100%, 192049.00, 491933.60, 21. 5. 2007, JM.
41. Oravská kotlina, v. Vasiľov, road to fields on the S end of the v., ruderal site, mixture of soil, ash and sawdust, 648 m, 0°, 0°, 10 m^2, 55%, 192257.80, 492046.50, 21. 5. 2007, JM.
42. Oravská kotlina, v. Lokca, bridge to riverbank, stream bank, sandy loam, big cobbles/boulders on the surface, 622 m, 280°, 10°, 12 m^2, 95%, 192429.50, 492214.50, 21. 5. 2007, JM.
43. Oravská kotlina, v. Lokca, stream bank by the church, loam, 649 m, 41°, 30°, 6 m^2, 100%, 192451.20, 492151.70, 21. 5. 2007, JM.
44. Oravská kotlina, v. Lokca, wall fringe along old house above the local authority, wall fringe, sandy loam with small pebbles, 650 m, 0°, 0°, 3 m^2, 95%, 192451.90, 492149.30, 21. 5. 2007, JM.
45. Podbeskydská brázda, v. Oravské Veselé, stream bank close to the house no. 470, stream bank, loamy clay and organic material, deposited on the surface, 735 m, 0°, 0°, 20 m^2, 97%, 192250.50, 492831.80, 22. 5. 2007, JM.
46. Podbeskydská brázda, v. Oravské Veselé, wall fringe along wooden barn, loamy sand, big cobbles on the surface, 713 m, 46°, 10°, 3 m^2, 95%, 192301.90, 492701.90, 22. 5. 2007, JM.
47. Podbeskydská brázda, v. Oravské Veselé, wall fringe along house no. 91, wall fringe, loamy clay, gravel, 682 m, 0°, 0°, 1.5 m^2, 100%, 192305.90, 492716.30, 22. 5. 2007, JM.
48. Oravská vrchovina, v. Podbiel, railway station, along the wall of the last building, wall fringe, sandy loam, tarmacadam and cobbles, 561 m, 0°, 0°, 2 m^2, 100%, 192843.20, 491811.60, 17. 6. 2007, JM.
49. Podbeskydská brázda, v. Rabčice, wet place next to the road to fields, close to the Rabčice, konečná bus stop, periodically inundated depression, 797 m, 0°, 0°, 70 m^2, 100%, 193130.00, 493150.00, 9. 7. 2007, JM.

50. Podbeskydská brázda, v. Rabčice, street up from the Rabčice, rázc. bus stop, road verge with ditch in the middle, bank of the ditch, gravely clay loam, 739 m, 126°, 15°, 10 m^2, 95%, 193124.00, 493026.40, 9. 7. 2007, JM.
51. Podbeskydská brázda, v. Sihelné, along old abandoned ruin, opposite to the house no. 127, ruderal site along wall, clay loam, cobbles, decomposing wood, 706 m, 211°, 5°, 8 m^2, 100%, 192532.30, 493011.90, 12. 7. 2007, JM.
52. Podbeskydská brázda, v. Sihelné, banks of ditch next to the house no. 96, banks of ditch, loam, 691 m, 97°, 3°, 12 m^2, 100%, 192545.20, 493005.90, 12. 7. 2007, JM.
53. Podbeskydská brázda, v. Sihelné, ruderal site along the wall, 691 m, 211°, 3°, 17 m^2, 100%, 192550.90, 493004.00, 12. 7. 2007, JM.
54. Podbeskydská brázda, v. Rabčice, along the wall of barn, opposite to the house no. 201, ruderal site along wall, gravely loam, 718 m, 257°, 10°, 7 m^2, 95%, 193111.10, 493021.90, 16. 7. 2007, JM.
55. Podbeskydská brázda, v. Rabčice, ruderal site behind a house, below the Jednota bus stop, ruderal site along wall, loam, 691 m, 162°, 7°, 40 m^2, 97%, 193056.20, 493016.50, 16. 7. 2007, JM.
56. Podbeskydská brázda, v. Rabča, ruderal site along an old house, ruderal site, gravely loam with construction debris, 651 m, 0°, 0°, 50 m^2, 75%, 192729.10, 492943.10, 16. 7. 2007, JM.
57. Podbeskydská brázda, v. Rabča, nitrophilous fringe vegetation along barn, opposite to the house no. 903, ruderal site, loam, 626 m, 0°, 0°, 10 m^2, 100%, 192728.20, 492939.20, 16. 7. 2007, JM.
58. Podbeskydská brázda, v. Rabča, nitrophilous fringe vegetation along wall of last house below the church, ruderal site, clay loam, 653 m, 283°, 5°, 9 m^2, 95%, 192745.20, 492945.90, 16. 7. 2007, JM.
59. Oravská vrchovina, v. Dolná Lehota, wall fringe along house no. 508, wall fringe, loamy sand and gravel, 492 m, 0°, 0°, 5 m^2, 100%, 192242.20, 491550.80, 17. 7. 2007, JM.
60. Oravská kotlina, v. Hruštín, stream bank next to the fire station, ruderal site, loamy clay, 690 m, 230°, 10°, 28 m^2, 95%, 192049.80, 491930.00, 26. 7. 2007, JM.
61. Oravská kotlina, v. Babín, ruderal site below house no. 82, ruderal site, loam with proportion of ash and household waste, 667 m, 0°, 0°, 40 m^2, 95%, 192248.20, 492008.20, 26. 7. 2007, JM.
62. Oravská kotlina, v. Lokca, wet site below SEZ, wet meadow, clay loam and big cobbles on the surface, 647 m, 320°, 3°, 20 m^2, 100%, 192449.10, 492155.00, 26. 7. 2007, JM.
63. Oravská vrchovina, road between villages Podbiel and Krivá, on a bend below the cliff, depression below the road, soil covered with thick layer of undecomposed organic material, 550 m, 0°, 0°, 40 m^2, 100%, 192935.00, 491725.00, 1. 8. 2007, JM.
64. Oravská vrchovina, road between villages Podbiel and Krivá, approx. 100 m closer to Podbiel than the previous one, depression below road, 550 m, 0°, 0°, 50 m^2, 100%, 192932.00, 491727.00, 1. 8. 2007, JM.
65. Oravská vrchovina, road between villages Podbiel and Krivá, approx. 80 m closer to Podbiel than the previous one, slope above the road, loamy sand and gravel, 550 m, 0°, 0°, 36 m^2, 100%, 192923.00, 491738.00, 1. 8. 2007, JM.
66. Podbeskydská brázda, v. Oravské Veselé, above the supermarket, fringe vegetation along the wall of old barn, loam, 695 m, 344°, 15°, 15 m^2, 100%, 192307.90, 492700.90, 4. 8. 2007, JM.
67. Podbeskydská brázda, v. Mútne, wet meadow in the alluvium of the stream, below the house no. 78, wet meadow, 757 m, 0°, 0°, 50 m^2, 100%, 192017.30, 492740.50, 4. 8. 2007, JM.
68. Podbeskydská brázda, v. Oravská Polhora, behind the barn next to the old gamekeeper's lodge, bellow the Tisovnica nature reserve, ruderal site behind barn, compact, dark, humic soil, 747 m, 34°, 5°, 40 m^2, 100%, 192421.80, 493335.80, 9. 8. 2007, JM & IJ.
69. Podbeskydská vrchovina, v. Zákamenné, edge of plank store next to the entrance to firm Colorspol, heap of soil, loam, sand and gravel, 694 m, 69°, 3°, 30 m^2, 85%, 191715.00, 492256.30, 24. 8. 2007, JM.
70. Podbeskydská brázda, v. Oravská Polhora, on the way to ski tow, ruderal site next to the house, clay loam, 698 m, 0°, 0°, 36 m^2, 100%, 192612.00, 493133.30, 27. 8. 2007, JM.

71. Podbeskydská brázda, v. Oravská Polhora, ruderal site behind the football stadium, loam, 679 m, 220°, 3°, 40 m^2, 100%, 192624.60, 493126.70, 27. 8. 2007, JM.
72. Podbeskydská brázda, v. Oravská Polhora, site in front of the beginning of ski tow, ruderal site, clay loam with pebbles, 688 m, 70°, 20°, 40 m^2, 100%, 192609.40, 493118.80, 27. 8. 2007, JM.
73. Podbeskydská brázda, v. Oravská Polhora, wet meadow below the road, close to the football stadium, wet meadow, wet soil, covered with thick layer of undecomposed organic material, 670 m, 261°, 3°, 40 m^2, 100%, 192626.20, 493129.40, 27. 8. 2007, JM.
74. Oravská kotlina, v. Babín, ruderal site on the W end of the v., dark, clay loam soil, 660 m, 257°, 5°, 30 m^2, 100%, 192241.10, 492011.00, 28. 8. 2007, JM.
75. Oravská kotlina, v. Lokca, SW end of the v. on the way to Hruštín, ruderal site, 641 m, 316°, 5°, 36 m^2, 100%, 192425.70, 492147.40, 28. 8. 2007, JM.
76. Podbeskydská brázda, v. Mútne, ruderal site by a road to fields, below the cemetery, clay loam compact soil, 755 m, 119°, 7°, 36 m^2, 100%, 192022.90, 492740.60, 29. 8. 2007, JM.
77. Podbeskydská brázda, v. Oravské Veselé, ruderal site in the neighbourhood of house SE end of the village, ruderal site, well aerated, humic soil, 659 m, 0°, 0°, 40 m^2, 100%, 192321.00, 492652.30, 29. 8. 2007, JM.

Tab. 2. Plant communities of the order *Convolvuletalia sepii* in the Horná Orava Region

A – *Convolvulo-Epilobietum hirsute*
B – *Impatiens glandulifera* community
C – *Echinocystis lobata* community
D – *Aster lanceolatus* community
E – *Fallopia japonica* community
F – *Fallopia sachalinensis* community
G – *Solidago canadensis* community
H – *Solidago gigantea* community
I – *Helianthus tuberosus* agg. community

Community	A		B		C	D	E		F	G	H	I
No. of relevé	21222		111		22	1	23132321		3	21	1	1
	2595627	%	47412	%	34	9	902331187	%	0	656	8	1308
Epilobium hirsutum	**5555554**	100^{5}	..1..	20^{1}	..	.	....	.	.	...	.	....
Equisetum palustre	**bbb.a..**	57^{b}	.....	.	..	.	....	.	.	...	.	....
Lathyrus pratensis	**+...131**	57^{1}	.....	.	..	+	....	.	.	..1	.	....
Angelica sylvestris	**+...+.+**	43^{+}	.....	.	..	1	....	.	.	...	.	....
Phleum pratense	**.+a..+.**	43^{+}	.....	.	..	+	....	.	.	...	.	....
Mentha longifolia	**...1a1.**	43^{1}	.....	.	..	.	....	.	.	..1	.	...b
Scirpus sylvaticus	**....b+1**	43^{1}	.....	.	..	.	....	.	.	...	.	....
Juncus effusus	**....+++**	43^{+}	.....	.	..	.	....	.	.	...	.	....
Impatiens glandulifera	.....	.	**55544**	100^{5}	..	.	....	.	.	...	.	....
Petasites hybridus	3	14^{3}	**+1++1**	100^{+}	1b	.	....	.	.	...	r	....
Chaerophyllum aromaticum	.....	.	**.++.a**	60^{+}	..	.	....	.	.	..a	1	....
Echinocystis lobata	.....	.	.....	.	**55**	.	....	.	.	...	.	....
Atriplex patula	.....	.	.....	.	**b1**	.	....	.	.	...	.	....
Aster lanceolatus	.....	.	.....	.	..	**3**	....	.	.	...	.	....
Fallopia japonica	.....	.	.....	.	..	.	**555555555**	100^{5}	.	...	.	....
Fallopia sachalinensis	.....	.	.....	.	..	.	....	.	**5**	...	.	....
Solidago canadensis	.....	.	.....	.	..	.	....	.	.	**554**	.	....
Valeriana officinalis	1	14^{1}	.....	.	..	.	....	.	.	**.aa**	.	....
Solidago gigantea	.....	.	.....	.	..	.	....	.	.	...	**3**	.+..
Helianthus tuberosus agg.	.....	.	.....	.	..	.	....	.	.	...	.	**4553**
Rubus idaeus	.....	.	.....	.	..	.	....	.	.	...	.	**1..1**
***Senecionion fluviatilis*:**												
Calystegia sepium	.....	.	1.+b.	60^{1}	..	.	..b.1....	22^{1}	.	...	.	baa.
Rubus caesius	.....	.	.....	.	..	.	+..+..1.b	44^{+}	.	.ba	a	b...
Myosoton aquaticum	..++...	29^{+}	+....	20^{+}	..	.	....	.	.	...	.	1...
Stachys palustris	1+.....	29^{+}	.....	.	..	.	....	.	.	...	.	....
Cuscuta europaea	.....	.	...+.	20^{+}	..	.	....	.	.	...	.	....
***Galio-Urticetea*:**												
Urtica dioica	+.1..++	57^{+}	.13aa	80^{a}	a+	.	+11++aaa+	100^{1}	a	b.+	1	b1..
Galium aparine	.....	.	11111	100^{1}	..	.	++...+...	33^{+}	+	+..	a	a1.1
Aegopodium podagraria	.....a.	14^{a}	.+1.1	60^{1}	++	.	...1+11+.	56^{1}	.	..b	4	....
Rumex obtusifolius	+.+....	29^{+}	..1++	60^{+}	1.	.	.......+.	11^{+}	.	...	r	..+.
Poa trivialis	1.3+..+	57^{+}	..++.	40^{+}	..	+	.1.....	11^{1}	.	...	.	...+
Anthriscus sylvestris	.+.....	14^{+}	....+	20^{+}	..	.	..+..r...	22^{r}	.	...	.	...+
Scrophularia nodosa	.....	.	..r..	20^{r}	..	.	+.....	11^{+}	.	..+	r	....
Impatiens noli-tangere	...+...	14^{+}	....+	20^{+}	..	.	....	.	.	...	.	...+
Impatiens parviflora	.....	.	.b...	20^{b}	..	.	+.+.....	22^{+}	.	...	.	....
Chelidonium majus	.....	.	..1+.	40^{+}	..	.	.....1...	11^{1}	.	...	.	....
Aethusa cynapium	.....	.	..b..	20^{b}	..	.	a.....	11^{a}	.	...	+	....
Heracleum sphondylium	+....1.	29^{+}	.....	.	..	.	....	.	.	...	.	....
Roegneria canina	+.....	14^{+}	.....	.	..	.	....	.	.	...	.	1...
Lamium maculatum	.....	.	+....	20^{+}	..	.	.+.....	11^{+}	.	...	.	....
Lapsana communis	.....	.	...+.	20^{+}	..	.	....	.	.	...	r	....
Glechoma hederacea	.....	.	.....	.	..	.	.....+...	11^{+}	.	+..	.	....
Chenopodium bonus-henricus	.....	.	.....	.	+.	.	....	.	.	...	.	....
Alliaria petiolata	.....	.	.....	.	..	.	....	.	.	...	+	....
***Artemisietea vulgaris*:**												
Elytrigia repens	11+..++	71^{+}	1..++	60^{+}	..	.	.+.....	11^{+}	.	.1.	+	++++
Artemisia vulgaris	.....	.	+b+a+	100^{+}	+.	.	1..+...+.	33^{+}	.	.1.	+	+.b3
Tanacetum vulgare	.....	.	+..+.	40^{+}	.+	1	....	.	.	.ba	.	..+3
Armoracia rusticana	.....	.	+..++	60^{+}	a.	.	.......+.	11^{+}	+	...	.	..+.
Medicago lupulina	.....	.	.....	.	++	+	....	.	.	.1.	+	....
Melilotus albus	.....	.	...+.	20^{+}	..	.	....	.	.	...	+	..b+
Arctium tomentosum	.....	.	...+1	40^{+}	..	.	.+.....	11^{+}	.	...	.	..+.

Tab. 2. – cont. 1

Community	A		B		C	D	E		F	G	H	I
No. of relevé	21222		111		22	1	23132321		3	21	1	1
	2595627	%	47412	%	34	9	902331187	%	0	656	8	1308
Tussilago farfara	+..1...	29^{+}	.....	.	..	.	....	.	.	...	.	...+
Other taxa:												
Ranunculus repens	1+1....	43^{1}	+..++	60^{+}	++	.	.....++..	22^{+}	.	.+.	+	..1+
Dactylis glomerata	.....1+	29^{+}	.++++	80^{+}	..	1	......+..	11^{+}	.	+++	+	...+
Cirsium arvense	1....r.	29^{r}	.+.+1	60^{+}	..	1	....	.	.	a++	.	+..b
Potentilla anserina	++1....	43^{+}	+..+.	40^{+}	..	+	....	.	.	++.	.	..++
Symphytum officinale	11.....	29^{1}	+a.+.	60^{+}	..	.	r........	11^{r}	.	++.	.	...+
Agrostis stolonifera	1..a...	29^{1}	..1..	20^{1}	..	.	.......1+	22^{+}	.	.a.	+	....
Vicia cracca	.....++	29^{+}	.....	.	..	1	....	.	.	+b.	.	..++
Fallopia convolvulus	.....	.	.++..	40^{+}	++	.	+......+.	22^{+}	.	...	+	....
Phalaroides arundinacea	.....	.	.+..1	40^{+}	..	4	........a	11^{a}	.	..3	.	1...
Plantago major	.....	.	...+.	20^{+}	+.	.	.+.....	11^{+}	.	...	+	..++
Salix fragilis	...+...	14^{+}	.....	.	..	3	.......1a	22^{1}	.	..3	+	....
Taraxacum sect. *Ruderalia*	.+.....	14^{+}	...+.	20^{+}	..	+	.....+...	11^{+}	.	...	+	....
Filipendula ulmaria	....+.1	29^{+}	.....	.	..	1	......r.1	22^{r}	.	...	.	....
Chenopodium strictum	.....	.	.....	.	11	.	.......+.	11^{+}	+	...	b	....
Achillea millefolium	.....	.	.....	.	..	.	....	.	.	.a1	+	..++
Tripleurospermum perforatum	.....	.	...+.	20^{+}	+.	.	....	.	.	...	+	..+.
Vicia sepium	.....+.	14^{+}	+....	20^{+}	..	.	....	.	.	.1+	.	....
Salix caprea	3	14^{3}	.....	.	..	.	....	.	.	.+a	r	....
Poa annua	.....	.	...++	40^{+}	..	.	.+.....	11^{+}	.	...	+	....
Alopecurus pratensis	++.....	29^{+}	.....	.	..	.	....	.	.	...	.	...a
Agrostis gigantea	.b.....	14^{b}	.....	.	..	3	....	.	.	..1	.	....
Galeopsis bifida	..1....	14^{1}	.....	.	+.	.	....	.	.	...	1	....
Bidens tripartita	..+....	14^{+}	.....	.	.+	.	....	.	.	...	+	....
Ranunculus lanuginosus	...1...	14^{1}	..+..	20^{+}	..	.	....	.	.	...	+	....
Veronica chamaedrys	...a.+.	29^{+}	.....	.	..	.	....	.	.	..+	.	....
Cirsium rivulare	....1+.	29^{+}	.....	.	+.	.	....	.	.	...	.	....
Galeopsis tetrahit	.....r.	14^{r}	.1+..	40^{+}	..	.	....	.	.	...	.	....
Stellaria media	.....	.	...1.	20^{1}	..	.	.+.....	11^{+}	+	...	.	....
Stellaria holostea	.....	.	....+	20^{+}	.+	.	....	.	.	...	.	...+
Sonchus oleraceus	.....	.	.....	.	1.	.	+r.....	22^{r}	.	...	.	....
Equisetum arvense	.....	.	.....	.	.+	.	....	.	.	..+	.	...3
Poa pratensis	.....	.	.....	.	..	.	....	.	.	.1+	.	..1.

Taxa in one or two relevés:

E_1: *Ajuga reptans* (20) 1; *Arctium* sp. (14) +, (18) r; *Arrhenatherum elatius* (16) +; *Asarum europaeum* (7) +; *Atriplex sagittata* (23) +; *Bistorta major* (26) +; *Calendula officinalis* (23) +; *Callitriche palustris* (15) 1; *Caltha palustris* (26) +; *Campanula trachelium* (25) +; *Capsella bursa-pastoris* (18) +; *Carex hirta* (4) +, (16) +; *C. paniculata* (26) 3; *Cirsium oleraceum* (7) +, (27) +; *Corylus avellana* (24) +; *Chaerophyllum hirsutum* (1) +; *Chamerion angustifolium* (16) +; *Chenopodium* sp. (18) +; *Conringia orientalis* (18) +; *Convolvulus arvensis* (30) +; *Crepis biennis* (18) +; *Daucus carota* (6); +; *Deschampsia cespitosa* (25) 3; *Epilobium ciliatum* (29) +; *E. roseum* (14) a, (26) +; *Festuca pratensis* (5) +; *Galeopsis speciosa* (8) 1; *Galinsoga* sp. (9) r; *G. urticifolia* (23) +; *Galium mollugo* (22) +, (25) 1; *Geranium robertianum* (8)+, (11) +; *Geum rivale* (26) +; *Glyceria fluitans* (5) 1; *Jacea phrygia* (16) +; *Lolium perenne* (19) +; *Lycopus europaeus* (19) r; *Lonicera xylosteum* (12) 1; *Lysimachia nummularia* (6) 1; *Melampyrum nemorosum* (8) +; *Mentha arvensis* (8) +; *Microrrhinum minus* (18) +; *Myosotis caespitosa* (15) 1; *Oxalis acetosella* (7) +; *Pastinaca sativa* (25) 1; *Persicaria lapathifolia* (11) +; *P. maculosa* (20) r, (24) 1; *Phragmites australis* (4) +; *Plantago lanceolata* (19) +; *Poa palustris* (5) +; *Polygonum arenastrum* (20) +; *Rhinanthus serotinus* (16) +; *Ribes* sp. (27) b; *Rorippa sylvestris* (18) 1; *Rumex crispus* (2) +, (5) +; *R.* sp. (15) +; *Salix purpurea* (17) a; *Scrophularia scopolii* (14) r; *Scutellaria galericulata* (8) 1; *Silene *alba* (8) +; *S. dioica* (18) +; *Sonchus arvensis* (18) r; *Stenactis annua* (25) +; *Swida sanguinea* (16) 1, (18) r; *Trifolium hybridum* (18) +; *T. repens* (19) +, (24) +; *Veronica beccabunga* (27) +; *V. persica* (20) r.

E_0: *Brachythecium salebrosum* (25) a.

Localities of relevés: (explanations see Tab. 1)

1. Oravská kotlina, town Tvrdošín, right bank of the Oravica River, terrace elevated above the water level, 550 m, 135°, 20°, 32 $m^{2,}$ 100%, 193398.00, 492054.00, 11. 9. 1997, IJ.
2. Oravská kotlina, town Trstená, N 500 m, large spring seep at the base of hill next to the road, loamy colluvium with numerous small streams, 610 m, 135°, 5°, 100 m^2, 100%, 193752.00, 492241.00, 11. 9. 1997, IJ.
3. Oravská kotlina, town Tvrdošín, right bank of the Oravica River, 570 m, 0°, 0°, 50 m^2, 100%, 193337.00, 492003.00, 11. 9. 1997, IJ.
4. Oravská vrchovina, v. Krivá, left bank of the Orava River, uneven gravely substrate, with illegal dump on the bank, 540 m, 0°, 0°, 30 m^2, 100%, 192871.00, 491718.00, 11. 9. 1997, IJ.
5. Oravská kotlina, town Trstená, NE next to the road, loamy, wet, water is flowing through the spot,
6. 640 m, 0°, 0°, 30 m^2, 100%, 193752.00, 492240.00, 11. 9. 1997, IJ.
7. Oravská vrchovina, v. Nižná, Nižnianska roveň, on the road verge, road verge, loamy clay, 514 m, 25°, 5°, 40 m^2, 100%, 193209.40, 491858.40, 27. 8. 2005, JM.
8. Oravská vrchovina, v. Podbiel, approx. 200 m from the railway station, 559 m, 0°, 0°, 40 m^2, 100%, 92845.90, 491806.80, 27. 8. 2005, JM.
9. Oravská vrchovina, v. Podbiel, illegal rubbish dump approx. 1 km from the v., loamy soil with household waste, 524 m, 0°, 0°, 24 m^2, 80%, 192842.20, 491802.60, 27. 8. 2005, JM.
10. Oravská kotlina, town Tvrdošín, bank of the Oravica River close to the collective farm, riverbank, clay loam, fresh soil, 566 m, 305°, 10°, 60 m^2, 100%, 193328.60, 491955.50, 28. 8. 2005, JM.
11. Oravská vrchovina, v. Krivá, heap of garden rubbish at the edge of field, heap of garden rubbish, clay loam with remnants of garden trash, 557 m, 0°, 0°, 80 m^2, 100%, 192845.80, 491710.50, 30. 8. 2005, JM.
12. Oravská vrchovina, v. Krivá, garden rubbish dump at the edge of field, clay loam with remnants of garden trash, 549 m, 0°, 0°, 50 m^2, 95%, 192843.70, 491710.40, 30. 8. 2005, JM.
13. Oravská vrchovina, v. Krivá, close to the railway station, undergrowth at the edge of alluvial forest, 545 m, 0°, 0°, 75 m^2, 95%, 192833.60, 491712.70, 30. 8. 2005, JM.
14. Oravská vrchovina, v. Horná Lehota, close to the bridge on a way to the railway station, riverbank, moist loamy soil, 515 m, 223°, 25°, 50 m^2, 100%, 192400.90, 491510.30, 2. 8. 2006, JM.
15. Podbeskydská vrchovina, v. Zubrohlava, below the third bus stop, next to the house no. 526, opposite to the diversion to the collective farm, riverbank, loamy, gravely with household and garden waste, 628 m, 248°, 30°, 40 m^2, 100%, 193034.60, 492657.10, 10. 8. 2006, JM & IJ.
16. Podbeskydská brázda, v. Rabča, banks of small brook close to an old bridge, banks of brook, deposited material on a bank of village brook, 630 m, 0°, 0°, 20 m^2, 90%, 192842.00, 492852.00, 10. 8. 2006, JM & IJ.
17. Oravská vrchovina, between Podbiel and Nižná villages, close to the sewage water treatment plant, alluvium on the bank of the Orava River, riverbank, 560 m, 333°, 20°, 16 m^2, 100%, 193011.80, 491839.90, 17. 8. 2006, JM.
18. Oravská vrchovina, v. Nižná, next to the sewage water treatment plant, bank of the Orava River, riverbank, alluvium, 555 m, 337°, 12°, 35 m^2, 100%, 193019.90, 491840.30, 17. 8. 2006, JM.
19. Oravská vrchovina, v. Sedliacka Dubová, recultivated illegal rubbish dump, driveway to the river, heaped soil and other substrate, high proportion of clay, 507 m, 145°, 30°, 6 m^2, 80%, 192537.70, 491527.30, 21. 8. 2006, JM.
20. Oravská kotlina, town Námestovo, embankment on a side of polder, close to the outfall of the Biela Orava River, bank of dam, clay loam, 605 m, 0°, 0°, 6 m^2, 100%, 192868.30, 492405.40, 6. 9. 2006, JM.
21. Oravská vrchovina, v. Dolná Lehota, village end, ruderal site, loam, 509 m, 95°, 7°, 40 m^2, 95%, 192225.80, 491606.70, 17. 7. 2007, JM.
22. Oravská vrchovina, v. Dolná Lehota, parking place next to the bus stop, riverbank, loamy clay with proportion of construction debris, 491 m, 227°, 15°, 48 m^2, 98%, 192244.70, 491548.30, 17. 7. 2007, JM.
23. Podbeskydská brázda, v. Oravská Polhora, road ditch close to diversion to the Biela Farma hotel, wet terrain depression, wet meadow, well aerated loamy soil, 743 m, 5°, 3°, 16 m^2, 100%, 192356.60, 493219.90, 10. 8. 2007, JM & IJ.

24. Podbeskydská vrchovina, v. Zákamenné, stream bank next to the house no. 733, stream bank, loamy sand with household, garden and construction waste, 684 m, 152°, 25°, 36 m^2, 95%, 191757.10, 492313.60, 24. 8. 2007, JM.
25. Podbeskydská vrchovina, v. Zákamenné, heap of garden rubbish, loamy well aerated soil, 688 m, 311°, 15°, 30 m^2, 100%, 191730.30, 492301.80, 24. 8. 2007, JM.
26. Oravská vrchovina, v. Oravský Podzámok, railway station, sunny site, 507 m, 0°, 0°, 36 m^2, 100%, 192151.40, 491539.90, 25. 8. 2007, JM.
27. Podbeskydská brázda, v. Oravská Polhora, wet meadow bellow road, close to the football stadium, wet meadow, terrain depression, humic, 672 m, 240°, 3°, 36 m^2, 100%, 192626.40, 493129.80, 27. 8. 2007, JM.
28. Oravská Magura, v. Hruštín, bed of stream flowing from fields to the v., S from the v., not far from the dung hole, stream bed, 707 m, 42°, 50°, 21 m^2, 95%, 192114.40, 491859.50, 28. 8. 2007, JM.
29. Oravská kotlina, v. Lokca, illegal rubbish dump at the end of the v., stream bank, clay loam, covered with stalks from the previous year, 621 m, 129°, 35°, 35 m^2, 100%, 192428.60, 492215.80, 28. 8. 2007, JM.
30. Podbeskydská brázda, v. Rabča, road to fields on the W end of the village, at the end of the Radová Street, wet meadow, soil covered with decaying organic material, 635 m, 261°, 3°, 36 m^2, 100%, 192836.00, 492853.10, 30. 8. 2007, JM.
31. Oravská vrchovina, v. Krivá, heap of garden rubbish, NW end of the village, garden and household rubbish, 545 m, 0°, 0°, 36 m^2, 100%, 192843.10, 491709.90, 17. 9. 2007, JM.
32. Oravská vrchovina, v. Nižná, road between Tvrdošín and Nižná, close to the crucifix, wet terrain depression, dark humic and well aerated substrate, 569 m, 19°, 7°, 40 m^2, 100%, 193203.10, 491903.90, 17. 9. 2007, JM.
33. Oravská kotlina, town Tvrdošín, right bank of the Oravica River, 580 m, 0°, 0°, 35 m^2, 100%, 11. 9. 1997, MZ & IJ.
34. Oravská vrchovina, v. Dlhá nad Oravou, right bank of the Orava River, 530 m, 270°, 30°, 40 m^2, 100%, 192631.00, 491563.00, 11. 9. 1997, MZ & IJ.

Tab. 3. Plant communities of the class *Epilobietea angustifolii* in the Horná Orava Region

A – *Calamagrostis villosa* community
B – *Eupatorietum cannabini*
C – *Senecietum fuchsii*
D – *Rubetum idaei*
E – *Senecioni sylvatici-Epilobietum angustifolii*
F – *Rubo idaei-Calamagrostietum arundinaceae*
G – *Sambucetum racemosae*

Community	A	B	C		D		E		F		G
No. of relevé	1	6	5 236422155225242225		1365333663356		443345453 45		4112 111141		4
	4	2	435901668328371542140	%	5554246033174	%	163087815369959	%	2989078012677	%	2
Calamagrostis villosa	**5**	.	.....	.	......1..+...	15^{+}	.....	.	.....	.	.
Eupatorium cannabinum	.	**5**	.....1.....11...	14^{1}	.....	.	.....1a.....	13^{1}	.....	.	+
Senecio ovatus	.	+	**345555555444444444444**	100^{4}	+1a+1a1.++3.+	85^{1}	+.+1.b1++b.1.+.	67^{+}	1.++.....+++	46^{+}	a
Galeopsis speciosa	.	.	**.+.1.+.bb+..++.b+a+a.**	62^{+}	+.....1..	15^{+}	+..1..11.....	27^{1}	.....	.	+
Viola reichenbachiana	.	.	**.+++..+...+.+..1+..+.**	43^{+}	r.....	8^{r}	.....	.	.....+.	8^{+}	.
Asarum europaeum	.	+	**...+..++.....+...1+**	29^{+}	.....	.	..+.....	7^{+}	.....+.	8^{+}	1
Mycelis muralis	.	.	**..+1+.1..+++..+.....**	38^{+}	.....	.	.....	.	.....+.	8^{+}	.
Epilobium montanum	.	.	**..+..+1..++1....+....**	33^{+}	.....r	8^{r}	1+.....+	20^{+}	.....+.r.	15^{r}	.
Rubus idaeus	1	1	1a111.baa1babab+1a3b3	95^{a}	**4444555554455**	100^{5}	11aab11+1aa+a41	100^{1}	a111.+++11bba	92^{1}	4
Senecio hercynicus	.	.	....a.....+..	10^{+}	**.+..+++...b..**	38^{+}	.....	.	.....	.	.
Chamerion angustifolium	+	+	+++1+++++..1.+++..1+.	71^{+}	a.++.++.1.a1+	69^{+}	**555555544455443**	100^{5}	++.+.a111+.+.	69^{+}	1
Calamagrostis epigejos	.	.	.....1.....+...	10^{+}	+..+.....	15^{+}	**++....+.+.+.1.a**	47^{+}	.....++1.....	23^{+}	.
Senecio sylvaticus	.	.	..+.....	5^{+}	.....	.	**+++.r.....**	27^{+}	.....	.	.
Calamagrostis arundinacea	.	.	+..+a1.+1....a.....	33^{1}	.a.+.a1+.b..+	54^{1}	.+..1.....+..+1	33^{+}	**5555555555554**	100^{5}	.
Sambucus racemosa E2	1	.	.....1.....	5^{1}	+.....a	15^{+}	.....	.	.....	.	**3**
***Atropion*:**											
Cirsium vulgare	.	.	.....r.....r....	10^{r}	.....+..	8^{+}	.....	.	.....	.	.
Hordelymus europaeus	.	.	.....+.....+.1..	14^{+}	.....	.	.....+.....	7^{+}	.....	.	.
Salvia glutinosa	.	.	.....b.....	5^{b}	.....+..	8^{+}	+.....	7^{+}	.....r.	8^{r}	.
Stachys alpina	.	.	.....+....	5^{+}	.....	.	.....	.	.....	.	.
***Carici piluliferae-Epilobion angustifolii, Epilobietea angustifolii*:**											
Rubus hirtus	.	1	14a..1.1.bb11+.bb1+1.	71^{1}	..1....b+.b44	46^{b}	+1.++..b1.+.4.1	60^{1}	.++..baaaa.+b	69^{a}	.
Salix caprea	+	.	1.++++r.++.+1+.+..1+.	67^{+}	++...++.++..1	46^{+}	r+r.++1...+++.a	67^{+}	r++++.r++....	62^{+}	.
Sambucus racemosa juv.	.	+	...++....+1...11.....	29^{+}	..1.1...+.a.1	38^{1}	.r1+.+.1.+..r++	60^{+}	.....r..++r.+	38^{+}	+
Omalotheca sylvatica	.	.	+..+1+..+..+.....1.	33^{+}	r+....+.+.+..	38^{+}	++.+.....+.....	27^{+}	......r..+...	15^{r}	.
Galeopsis tetrahit	.	+	...++..ab+...1.....+.	33^{+}	.+...1...+a.a	38^{1}	..........+...	7^{+}	..++......+.+	31^{+}	.
Fragaria vesca	.	.	+..1...1+.++.++.a....	43^{+}	1.....	8^{1}	...+.+11...+...	33^{+}	.....	.	.
Festuca gigantea	.	1	.....+.....+bb1.	24^{1}	....+.....1..	15^{+}	...+.11....1...	27^{1}	.....	.	.
Stachys sylvatica	.	.	.....++.....111+..	29^{+}	.....+..	8^{+}	.....	.	.....	.	+
Scrophularia nodosa	.	.	.....+..r.....++1...	24^{+}	.....	.	.....	.	.....r...	8^{r}	.
Carex muricata agg.	.	.	+.....r.....+.1..	19^{+}	.....	.	.....	.	.....	.	.
Shrub storey E_2:											
Sorbus aucuparia	+	.	.....+.....+..1...	14^{+}	.....1...1	15^{1}	....1.....+.	13^{+}	.+.....	8^{+}	a
Fagus sylvatica	.	.	.....1..a...+3..1	24^{1}	.....	.	.....	.	.....1...	8^{1}	1

Tab. 3. – cont. 1

Community	A	B	C		D		E		F		G
No. of relevé	1	6	5 2364221552252422 25		1365333663356		443345453 45		4112 111141		4
	4	2	4359016683283715421 40	%	5554246033174	%	163087815369959	%	2989078012677	%	2
Salix caprea	.	.	.....1.+.1....	14^{1}	.....+	15^{+}	.....1.	7^{1}	.....	.	+
Picea abies	.	.	.....a.....	5^{a}	...1.....	8^{1}	.....+.	7^{+}	.1.....+...	15^{+}	.
Corylus avellana	.	.	.....+...b....	10^{+}	.....	.	.....	.	.+.....	8^{+}	.
Bryophytes:											
Polytrichum formosum	.	.	1.....1.....	10^{1}	.....a....	8^{a}	.....	.	.....1.	8^{1}	.
Polytrichum sp.	.	.	1.1.....	10^{1}	.....	.	.....	.	......+.....	8^{+}	.
Atrichum undulatum	.	.	1.....a.....+	14^{1}	.....	.	.....	.	.....	.	.
Plagiomnium affine	.	.	.....1.....	5^{1}	.....	.	.....	.	.a.....+.	15^{+}	.
***Vaccinio-Picetea*:**											
Picea abies juv.	+	+	++++++r...+++.+.+++++	76^{+}	1++a1++a+++.+	92^{+}	+++r+++++++++1b	100^{+}	1a+.++++.++1+	85^{+}	.
Athyrium filix-femina	+	a	1b1++1++11+.111+++...	81^{1}	+aa+.++1a1+bb	92^{1}	.1+.1+++a+.+1.a	73^{+}	11++1+a11+.+.	85^{1}	a
Sorbus aucuparia	.	.	.+....1..++1+.+.+++1.	52^{+}	+..1.+.a11+++	62^{+}	r++.+...+.1.+.+	53^{+}	r1++.++++++11	92^{+}	.
Prenanthes purpurea	.	.	+.+1+.+++++.1+...+r+.	67^{+}	.+1.++++.+...	54^{+}	+++++.r++.....	53^{+}	+r+.+..r.r.++	62^{+}	.
Vaccinium myrtillus	+	.	1.+...+...+b..+.....	29^{+}	+a+b...aba..+	62^{a}	+1+.1..ab.3..bb	60^{a}	.111a11+++.+a	85^{1}	.
Gentiana asclepiadea	+	.	+1+..a.+1.1+.+.....1+	52^{+}	++.+.1++11+.+	77^{+}	+.r.a.....	20^{+}	++++1..++++.1	77^{+}	.
Oxalis acetosella	a	.	+1+..++...11..a1.++++	62^{+}	r.....++.a.+	38^{+}	+.a+...1.....	27^{+}	+++.+..+...+.	46^{+}	1
Dryopteris filix-mas	.	1	...+..+1+1..11....+1b	48^{1}	....1.....+.+	23^{+}	+..+++..+.....	33^{+}	+...+....+++1	46^{+}	a
Abies alba juv.	.	+	...+.+.r.++++.....r	38^{1}	..a.....++.	23^{1}	....+...+.r....	20^{1}	.+.+.rrrr+r.+	69^{r}	.
Avenella flexuosa	.	.	...1...11....+....+.+	29^{+}	.1....a..b+.+	38^{1}	...+.+.....11	27^{+}	.++aa.....++.	46^{+}	.
Dryopteris carthusiana	.	.	++r.....+.....	19^{+}	..+.....+..++	31^{+}	+++.+.....	27^{+}	++.....	15^{+}	.
Polygonatum verticillatum	.	.	.++...+...1.+.....	24^{+}	r.++.....	23^{+}	++..+.....	20^{+}	+.....1.	15^{+}	.
Maianthemum bifolium	+	.	+....++...++....+....	29^{+}	..+.....+....	15^{+}	+...1.....	13^{+}	....+.....+.	15^{+}	.
Lonicera nigra	.	.	.....+...+...1..+...	19^{+}	..+.....+...+	23^{+}	+.....	7^{+}	++.....r..+.	31^{+}	.
Luzula sylvatica	+	.	.++.....1.....	14^{+}	.....	.	.....	.	1	8^{1}	.
***Querco-Fagetea*:**											
Fagus sylvatica juv.	.	1	+..++.r++a..1+.1+++1.	67^{+}	.+...++..++..	38^{+}	+..+..+.+.....	27^{+}	.11++....r+.+	54^{+}	.
Luzula luzuloides	.	.	+..++.....+.....	19^{+}	+++..++.+b..+	62^{+}	.1.....++.....	20^{+}	...+..+..+..1	31^{+}	.
Galium odoratum	.	1	.+.1..a1+1..1.....1.1	43^{1}	....+..+.....	15^{+}	+....++.....	20^{+}	+.....++.	23^{+}	1
Veronica officinalis	.	.	1..a..+..+1a..1.1....	38^{1}	+.....a	15^{+}	.+..+.....+...+	27^{+}	.....++....	15^{+}	.
Acer pseudoplatanus juv.	.	.	.....++.....++....+.	24^{+}	.....+...	8^{+}	...+r.r.....	20^{r}	+r+....r..+r+	54^{+}	.
Hieracium murorum	.	.	r.r..+....+...+.....	24^{+}	..+.....+...+	23^{+}	++..1..+r.....	33^{+}	.....r.+.	15^{r}	.
Corylus avellana juv.	.	+	.....r..1.....1+...	19^{+}	.....	.	r.....	7^{r}	r.....+.	15^{r}	.
Carex sylvatica	.	a	.++...+..+.+...+.....	29^{+}	.....+	8^{+}	.....	.	.....	.	.
Sanicula europaea	.	.	..++.....+..+....+...	24^{+}	.....	.	.....	.	.....	.	.
Actaea spicata	.	.	.....r.....+	10^{r}	.....	.	+.+.....	13^{+}	.....	.	.
Galeobdolon luteum	.	.	.....+.....	5^{+}	.....	.	..+.....	7^{+}	.....+.	8^{+}	.
Tithymalus amygdaloides	.	.	.....+.....+...	10^{+}	.....	.	.....	.	.....+.	8^{+}	.
Other taxa:											
Deschampsia cespitosa	.	.	+.++1+.+1.++.1..1+...	57^{+}	.1+..1+.a11..	54^{1}	.....+++..+...	27^{+}	...++..+.+1.+	46^{+}	.
Galeopsis bifida	r	.	+.1+.+....ba.....1.b.	38^{1}	.+bb+..1+.1a.	62^{1}	+.+1.....+1..	33^{+}	.....+.r.....	15^{r}	.

Tab. 3. – cont. 2

Community	A	B	C		D		E		F		G
No. of relevé	1	6	5 2364221552252422225		1365333663356		443345453 45		4112 111141		4
	4	2	435901668328371542140	%	5554246033174	%	163087815369959	%	2989078012677	%	2
Agrostis capillaris	1	.	b.+..+.....1..+.....	24^{+}	+..+..+.b...1	38^{+}	.1+.....1..b.	27^{1}	1.1+.++1+1.+.	69^{+}	.
Hypericum maculatum	.	.	++...++...r.....1++.	38^{+}	rb+..11..1..+	54^{1}	+.....+.....	13^{+}	..+.++...++.1	46^{+}	.
Urtica dioica	.	+	....+.+++....+a1.1..	43^{+}	....+..+..+..	23^{+}	..++.1...a.a.+.	40^{+}	+.....	8^{+}	a
Impatiens noli-tangere	.	+	..++..111+.++....1+1+	57^{+}	....+..+..1..	23^{+}	..+..+1.....	20^{+}	.....	.	+
Tussilago farfara	.	b	.1b...+1....a.....a33	38^{a}	r.....+.....	15^{r}	1...+.b....+..+	33^{+}	+.....++.	23^{+}	.
Lysimachia nemorum	.	1	1+1++1.1+.+.a.....1..	52^{1}	r.....+1....	23^{+}	.+.....	7^{+}	1.....++....	23^{+}	.
Dryopteris dilatata	1	.	......1....1..+.....1	19^{1}	+..b.....	15^{+}	+.....+.a.1.1	33^{1}	.+...1+.++.+.	46^{+}	.
Cirsium palustre	.	+	+..++.....+1..1111+.	48^{+}	.....r..	8^{r}	...1..++.....	20^{+}	rr.....r.....	23^{r}	.
Dactylis glomerata	.	.	....+.....+.1...++.1.	29^{+}	.....+..	8^{+}	.++..++....+...	33^{+}	.....	.	.
Juncus inflexus	+	.	+.....+.....	10^{+}	.....+.+....	15^{+}	.+.....+...+	20^{+}	+.....+++...	31^{+}	.
Epilobium ciliatum	.	+	+1+.....+....+...r	29^{+}	.....	.	+.....	7^{+}	++.....+...	23^{+}	.
Betula pendula juv.	+	.	+.r.....	10^{r}	.....+....	8^{+}	.+.....r.r...b	27^{r}	.....+r1r...	31^{r}	.
Lapsana communis	.	.	.+....+..1.....1..++.	29^{+}	.....r.....	8^{r}	...1.++....+...	27^{+}	.....	.	.
Silene dioica	.	.	.....+..++.+...1.+..	29^{+}	..+.....+.+	23^{+}	..r.....1.....	13^{r}	.....	.	.
Epilobium collinum	.	.	...++..++.....1..+a.	33^{+}	....+.....	8^{+}	...+...1.....	13^{+}	.....	.	.
Homogyne alpina	a	.	.....+.....+.....	10^{+}	.+.....+.+...	23^{+}	.....	.	..+11.....	23^{1}	.
Cirsium arvense	.	+	.....++.....1...+....	19^{+}	.....	.	+..+.1.....3...	27^{+}	.....	.	.
Carex lachenalii	.	.	.....+....+....	10^{+}	.....1....	8^{1}	.....+..1.	13^{+}	...++...+....	23^{+}	.
Geranium robertianum	.	+	.....1..+..1...+.	19^{+}	.....	.	+....+.....	13^{+}	.....	.	.
Equisetum arvense	.	+	..+.....+.1...+....	19^{+}	.....	.	.....1.+.....	13^{+}	.....	.	.
Solidago virgaurea	.	.	....+.....+.....+...	14^{+}	1+1.....	23^{1}	+.....	7^{+}	.....	.	.
Galeopsis pubescens	.	.	.....+.....1.....	10^{+}	.....	.	..1.....	7^{1}	+.....+r+	31^{+}	.
Potentilla erecta	1	.	+.....	5^{+}	+.....+.1....	23^{+}	.....	.	.....++.....	15^{+}	.
Carex tumidicarpa	.	.	..+.....+.....	10^{+}	.....	.	.+.....+	13^{+}	.....++....	15^{+}	.
Equisetum sylvaticum	+	.	b.1.....+..1.....	19^{1}	.....1....	8^{1}	.....	.	.....	.	.
Angelica sylvestris	.	+	.....r.....1+1..	19^{+}	.....	.	..r.....	7^{r}	.....	.	.
Poa nemoralis	.	+	...+...+..+.....+..	19^{+}	.....	.	.....+...	7^{+}	.....	.	.
Carex sp.	.	.	+..+.....+....1...	19^{+}	.....+.	8^{+}	.....+...	7^{+}	.....	.	.
Carex pallescens	.	.	.....r...+.....1....	14^{+}	..1.....	8^{1}	....1.....+.	13^{+}	.....	.	.
Milium effusum	.	.	.....a..+.....+.	14^{+}	.....1..	8^{1}	.....+.....+.	13^{+}	.....	.	.
Stellaria nemorum	.	1	.....+..+.....a	14^{+}	..+.....	8^{+}	.....	.	+.....	8^{+}	.
Alchemilla vulgaris agg.	.	.	..+..+.+.....	14^{+}	.....+....	8^{+}	.....r.....	7^{r}	.....	.	.
Chaerophyllum aromaticum	.	.	....1..+....+...+.+..	24^{+}	.....	.	.....	.	.....	.	.
Sambucus nigra	.	.	.....1.....+....	10^{+}	.....	.	+...a.....	13^{+}	.....1.	8^{1}	.
Carex viridula	+	.	1.+.....	10^{+}	.....	.	+.....	7^{+}	.....	.	.
Lathyrus pratensis	.	+	.....1..	5^{1}	.....	.	.....+...	7^{+}	+.....	8^{+}	.
Ranunculus repens	.	+	+.+...1.....	14^{+}	.....	.	.....	.	.....	.	.
Carex remota	.	.	+.....1.....	10^{+}	.....+....	8^{+}	.....	.	.....+....	8^{+}	.
Polystichum aculeatum	.	.	.....+..r.....	10^{r}	.....	.	....+.....	7^{+}	.....+.	8^{+}	.
Pulmonaria obscura	.	.	.....++.....1	14^{+}	.....	.	.....	.	+.....	8^{+}	.

Tab. 3. – cont. 3

Community	A	B	C		D		E		F		G
No. of relevé	1	6	5 2364221552252422 25		1365333663356		443345453 45		4112 111141		4
	4	2	4359016683283715421 40	%	5554246033174	%	163087815369959	%	2989078012677	%	2
Galium album	.	.	.....1....+.1.	14^{1}	.....	.	.....+.....	7^{+}	.....	.	.
Glechoma hederacea	.	.	.....b.1...	10^{1}	.....	.	.....a...1.....	13^{1}	.....	.	.
Rumex obtusifolius	.	.	.....+..	5^{+}	.....+.+	15^{+}	.....+.....	7^{+}	.....	.	.
Taraxacum sect. *Ruderalia*	.	.	.....	.	.+.....	8^{+}	.....+.....+.r.	20^{+}	.....	.	.
*Veratrum *lobelianum*	r	.	.....	.	.....r.....	8^{r}	.....	.	.+.....	8^{+}	.
Ajuga reptans	.	+	.....1.....	5^{1}	r.....	8^{r}	.....	.	.....	.	.
Daphne mezereum	.	.	.r.....	5^{r}	.....	.	+.....	7^{+}	r.....	8^{r}	.
Poa annua	.	.	...+..+...+.....	14^{+}	.....	.	.....	.	.....	.	.
Poa trivialis	.	.	....+.....	5^{+}	.....	.	.....+.	7^{+}	.....+.....	8^{+}	.
Cerastium holosteoides	.	.	.....+...++.....	14^{+}	.....	.	.....	.	.....	.	.
Rosa canina agg.	.	.	.....r.....	5^{r}	r.....	8^{r}	r.....	7^{r}	.....	.	.
Aegopodium podagraria	.	.	.....+.....+	10^{+}	.....	.	.....	.	r.....	8^{r}	.
Agrostis stolonifera	.	.	.....+.....	5^{+}	+.....	8^{+}	.....	.	.....+....	8^{+}	.
Stellaria nemorum	.	.	.....1..	5^{1}	+.....	8^{+}	.....a.....	7^{a}	.....	.	.

Taxa in one or two relevés:

E_2: *Acer pseudoplatanus* (22) 1, (23) +; *Sambucus nigra* (46), (48)1.

E_1: *Acetosa arifolia* (43) b; *Acetosella vulgaris* (8) +, (15) +; *Achillea millefolium* (15) +; *Agrostis gigantea* (44) +; *Anthoxanthum odoratum* (45) +; *Anthriscus nitidus* (46) +; *A. sylvestris* (44) +; *Arenaria serpyllifolia* (44) +; *Aruncus vulgaris* (3) 1; *Astragalus glycyphyllos* (62) 1; *Athyrium distentifolium* (1) 1, (45) +; *Blechnum spicant* (45) 1; *Brachypodium sylvaticum* (44) b, (62) 1; *Calluna vulgaris* (19) +, (20) +; *Caltha palustris* (52) *Campanula patula* (52) +; +; *Centaurium erythraea* (44) r; *Chaerophyllum hirsutum* (52) +, (61) +; *C. temulum* (13) +; *Circaea ×intermedia* (46) a, (53) 1; *C. lutetiana* (25) +; *Cirsium eriophorum* (40) r; *C. oleraceum* (23) +, (31) +; *Corylus avellana* juv. (13) 1; *Dentaria bulbifera* (50) r; *Epilobium hirsutum* (62) 1; *Epipactis atrorubens* (13) r; *Equisetum telmateia* (44) +; *Fagus sylvatica* juv. (12) r; *Fallopia convolvulus* (52) r; *Festuca drymeja* (24) 1, (31) b; *F. pratensis* (52) +; *Festuca* sp. (60) +, (63) 1; *Fraxinus excelsior* (42) +; *Galeobdolon montanum* (62) +; *Galinsoga parviflora* (13) +; *G. urticifolia* (52) r; *Galium schultesii* (44) +, (50) +; *Geum rivale* (52) +; *Glechoma hirsuta* (32) 1;*Gymnocarpium robertianum* (45) r; *Holcus mollis* (8) +; *Hypericum perforatum* (44) +; *Juncus conglomeratus* (14) +; *J. effusus* (44) +, (45) +; *Lamium maculatum* (25) +, (26) r; *Leucanthemum vulgare* (21) +; *Lonicera nigra* (15) +; *L. xylosteum* (44) +; *Luzula luzulina* (45) +; *Lychnis flos-cuculi* (63) +; *Melica nutans* (41) +; *Mercurialis perennis* (25) +; *Moehringia trinervia* (46) +; *Myosotis sylvatica* (30) +; *Nardus stricta* (18) +, (19) +; *Paris quadrifolia* (50) +, (64) r; *Petasites albus* (37) 1; *Phalaroides arundinacea* (2) +; *Phegopteris connectilis* (1) +, (3) +; *Phleum pratense* (52) +, (63) +; *Pinus sylvestris* (48) r; *Plantago major* (46) +; *Poa pratensis* (6) +; *Populus tremula* (59) a, (64) +; *Potentilla aurea* (15) r; *Primula veris* (62) +; *Prunella vulgaris* (46) +, (58) +; *Pulmonaria officinalis* (43) +; *Ranunculus lanuginosus* (46) +, (52) +; *Rosa pendulina* (52) +, (60) 1; *Rubus caesius* (15) +; *Rumex alpinus* (43) +; *Solanum dulcamara* (44) +; *Stellaria media* (51) +; *Symphytum tuberosum* agg. (46) +; *Trifolium pratense* (4) +; *Vaccinium vitis-idaea* (63) 1; *Verbascum* sp. (46) r; *Veronica chamaedrys* (44) +, (45) +; *V. montana* (58) +; *Viburnum opulus* (51) +; *Vicia cracca* (31) +, (44) +; *V. sepium* (5) +, (39) +.

E_0: *Amblystegium serpens* (50) +; *Brachythecium albicans* (47) +; *Ceratodon purpureus* (53) 1, (56) +; *Dicranella heteromalla* (11) 1; *Dicranum scoparium* (50) 1; *D.* sp. (58) +; *Ditrichium pusillum* (15) +; *Entodon schleicheri* (15) +; *Funaria hygrometrica* (12) 1, (58) 1; *Hylocomium* sp. (15) +; *Hypnum mammilatum* (6) +; *Marchantia polymorpha* (58) +; *Mnium* sp. (2) 1, (4) +; *Plagiomnium rostratum* (50) a, (63) +; *Plagiothecium denticulatum* (50) +; *P. undulatum* (58) +; *Pleuridium subulatum* (14) a; *Pleurozium schreberi* (49) +, (63) +; *Polytrichum commune* (49) 1; *P. juniperinum* (59) 1; *Rhytidiadelphus squarrosus* (15) +; *Sphagnum* sp. (14) a.

Localities of relevés: (explanations see Tab. 1)

1. Podbeskydská vrchovina, v. Oravská Jasenica, S, elevation point Slepčianka, (925.1), NNW 2 km, clearing in spruce forest, place is partially burnt, 783 m, 3°, 25°, 40 m^2, 85%, 192629.00, 492557.50, 7. 8. 2007, IJ.
2. Podbeskydská vrchovina, S from the v. Oravské Veselé, elevation point Mrázová (1000.1), NW 2 km, old clearing in spruce forest, 813 m, 350°, 10°, 40 m^2, 98%, 192335.50, 492618.20, 7. 8. 2007, IJ.
3. Oravské Beskydy, v. Oravská Polhora, N end of the v., opposite to the sawmill, clearing after windthrow in spruce forest, site is partially burnt, 712 m, 46°, 30°, 40 m^2, 100%, 192456.90, 493304.80, 8. 8. 2007, IJ.
4. Oravské Beskydy, Jasenická hoľa Mt., elevation point Vysoká (966), NW 3 km, clearing after recent windthrow in spruce forest, noticeable mosaic, 751 m, 309°, 10°, 40 m^2, 75%, 192607.80, 493312.20, 8. 8. 2007, IJ & JM.
5. Oravské Beskydy, Jasenická hoľa, elevation point Vysoká, (966), NW 1,5 km, clearing after recent windthrow in spruce forest, partially burnt, 825 m, 1°, 15°, 40 m^2, 90%, 192624.30, 493303.60, 8. 8. 2007, IJ.
6. Oravské Beskydy, elevation point Vysoká (996.4), NW 1 km, like previous one, upper part of enormous clearing after windthrow, clearing in spruce forest, 865 m, 224°, 25°, 36 m^2, 95%, 192632.40, 493259.30, 8. 8. 2007, IJ.
7. Oravské Beskydy, elevation point Vysoká (996.4), below the peak, enormous clearing after windthrow in spruce forest, 949 m, 12°, 15°, 48 m^2, 98%, 192645.90, 493259.80, 8. 8. 2007, IJ.
8. Oravské Beskydy, elevation point Vysoká (996.4), E approx 1 km, flat top of the elevation point, clearing in the spruce forest, 975 m, 180°, 10°, 36 m^2, 98%, 192712.60, 493256.90, 8. 8. 2007, IJ.
9. Oravské Beskydy, elevation point Vysoká (996.4), opposite side of the top to the previous relevé, oriented to Babia hora Mt., clearing in spruce forest, 979 m, 56°, 20°, 36 m^2, 100%, 192718.10, 493257.00, 8. 8. 2007, IJ.
10. Oravské Beskydy, elevation point Poľany (880.9) N, clearing after windthrow in spruce forest, approx. 5-10 cm of undecomposed needles, 780 m, 22°, 15°, 40 m^2, 100%, 192423.10, 493317.70, 9. 8. 2007, IJ.
11. Oravské Beskydy, elevation point Poľany (880.9), opposite side of the clearing then the previous one, W from gamekeeper's lodge Vydrovka, clearing in spruce forest, 814 m, 44°, 15°, 40 m^2, 98%, 192403.90, 493323.00, 9. 8. 2007, IJ.
12. Oravské Beskydy, elevation point Poľany (880.9) N, gamekeeper's lodge Vydrovka NW, clearing after windthrow in spruce forest, light-brown oligotrophic soil without distinct A horizon, 9. 8. 2007, 855 m, 89°, 10°, 40 m^2, 95%, 192351.90, 493339.40, IJ.
13. Oravská Magura, Kubínska hoľa Mt., saddle Príslop, W, clearing in spruce-beech forest, 864 m, 151°, 30°, 36m^2, 95%, 192040.60, 491803.40, 9. 8. 2007, IJ.
14. Oravské Beskydy, Pilsko Mt., NW from v. Oravská Polhora, the Biela Farma hotel, clearing in spruce forest, deep soil with gravel, windthrown stumps 749 m, 137°, 5°, 30 m^2, 95%, 192348.40, 493208.00, 10. 8. 2007, IJ.
15. Oravská Magura, S slope of Kubínska hoľa Mt., 950 m, 180°, 25°, 45%, 191700.00, 491600.00, OG.
16. Skorušinské vrchy, W from the cabin in Oravice, clearing in spruce forest, flysch, 990 m, 113°, 5°, 30 m^2, 100%, 194334.00, 491753.00, 27. 8. 1987, IJ.

17. Skorušinské vrchy, 500 m W from the cabin in Oravice, top of the ridge, 970 m, 180°, 15°, 30 m^2, 100%, 194304.00, 491752.00, 27. 8. 1987, IJ.
18. Skorušinské vrchy, below Skorušina Mt. on the red-marked pathway, 1200 m, 158°, 25°, 30 m^2, 100%, 194111.00, 491723.00, 27. 8. 1987, IJ.
19. Skorušinské vrchy, Skorušina Mt., E approx. 50 m, clearing, 1290 m, 180°, 15°, 30 m^2, 95%, 194049.00, 491747.00, 27. 8. 1987, IJ.
20. Skorušinské vrchy, halfway between Skorušina and Javorková, clearing, 1200m, 338°, 10°, 30 m^2, 100%, 194004.00, 491725.00, 27. 8. 1987, IJ.
21. Oravská Magura, Jaloviarka, clearing (na úrovni kľučky cesty), flysch, 870 m, 158°, 25°, 25 m^2, 100%, 191850.00, 491752.00, 26. 8. 1987, IJ.
22. Oravská Magura, clearing opposite to the gamekeeper's lodge Prístop, flysch, 840 m, 270°, 15°, 48 m^2, 100%, 192113.00, 491755.00, 26. 8. 1987, IJ.
23. Oravská Magura, Poľana (899), S 1 km, approx. 1 hour away from the crossroad, 800 m, 225°, 10°, 30 m^2, 100%, 192209.00, 491736.00, 26. 8. 1987, IJ.
24. Oravská Magura, close to the top of Javorová (1078) ridge, 1000 m, 315°, 35°, 30 m^2, 100%, 192245.00, 491723.00, 26. 8. 1987, IJ.
25. Oravská Magura, Uhlisko Mt., S approx. 1000 m, flysch, 650 m, 90°, 8°, 30 m^2, 95%, 193432.00, 492124.00, 26. 8. 1987, IJ.
26. Skorušinské vrchy, Blatná (1142), E 1 km, clearing in spruce-beech forest, flysch, 900 m, 113°, 15°, 30 m^2, 95%, 194410.00, 491805.00, 27. 8. 1987, IJ.
27. Skorušinské vrchy, S from Blatná, opposite to rock cliff, close to the top of the ridge on the red pathway, 1000 m, 0°, 0°, 30 m^2, 100%, 194325.00, 491748.00, 27. 8. 1987, IJ.
28. Skorušinské vrchy, E from Blatná approx. 700 m, 950 m, 113°, 25°, 30 m^2, 95%, 194357.00, 491803.00, 27. 8. 1987, IJ.
29. Skorušinské vrchy, Skorušina Mt., SEE 1 km, flysch, 1000 m, 113°, 25°, 30 m^2, 90%, 194159.00, 491717.00, 27. 8. 1987, IJ.
30. Skorušinské vrchy, Skorušina Mt., SE 500 m, 1280 m, 180°, 30°, 30 m^2, 100%, 194151.00, 491732.00, 27. 8. 1987, IJ.
31. Oravská Magura, Jaloviarka, 1st clearing W from crossroad with red-marked pathway, clearing in spruce forest, 850 m, 135°, 15°, 25 m^2, 100%, 191836.00, 491752.00, 26. 8. 1987, IJ.
32. Skorušinské vrchy, Blatná (1142), E 1 km, 500 m up, older part of the clearing, flysch, 1000 m, 113°, 25°, 30 m^2, 100%, 194159.00, 491718.00, 27. 8. 1987, IJ.
33. Skorušinské vrchy, Blatná (1142), SE 500 m, opposite to the Radové skaly, clearing in spruce forest, flysch, 1050 m, 180°, 25°, 30 m^2, 100%, 194347.00, 491751.00, 27. 8. 1987, IJ.
34. Skorušinské vrchy, Blatná (1142), SE 1000 m, slope bellow the top of the Blatná Mt., 1100 m, 0°, 0°, 30 m^2, 100%, 194343.00, 491739.00, 27. 8. 1987, IJ.
35. Skorušinské vrchy, Skorušina (1314), S 300 m, base of the clearing, 1290 m, 180°, 15°, 30 m^2, 95%, 194137.00, 491734.00, 27. 8. 1987, IJ.
36. Skorušinské vrchy, before crossroad of red- and blue-marked pathway, broad range of Javorková, clearing in spruce forest, 1140 m, 0°, 0°, 30 m^2, 100%, 193802.00, 491648.00, 27. 8. 1987, IJ.
37. Oravská Magura, Jaloviarka, 2nd clearing W from the crossroad with red-marked pathway, flysch, cambisol, 860 m, 135°, 25°, 30 m^2, 100%, 191854.00, 491752.00, 26. 8. 1987, IJ.
38. Oravská Magura, Jaloviarka, behind the 3rd clearing, below unpaved forest road, flysch, clay loam, gravely substrate, 1010 m, 180°, 15°, 25 m^2, 100%, 191920.00, 491751.00, 26. 8. 1987, IJ.

39. Oravská Magura, 1st clearing from crossroad, between road and forest tree nursery, 840 m, 135°, 18°, 25 m^2, 100%, 191835.00, 491752.00, 26. 8. 1987, IJ.
40. Oravská Magura, Javorová (1078), close to blue-marked pathway leading to v. Oravský Podzámok, small clearing, 850 m, 270°, 25°, 30 m^2, 90%, 192246.00, 491723.00, 26. 8. 1987, IJ.
41. Oravská Magura, Uhlisko Mt., recent clearing in spruce-beech forest, 750 m, 135°, 15°, 30 m^2, 85%, 193439.00, 492150.00, 26. 8. 1987, IJ.
42. Oravská Magura, Jaloviarka, 2nd clearing, upper corner of old clearing, 850 m, 135°, 35°, 100 m^2, 100%, 191854.00, 491752.00, 26. 8. 1987, IJ.
43. Oravská Magura, Kubínska hoľa Mt., clearing below cabin "Na Kubínskej holi" in spruce forest, flysch, 1060 m, 180°, 20°, 100 m^2, 100%, 191600.00, 491606.00, 5. 9. 1993, IJ.
44. Oravská Magura, Kubínska hoľa Mt., v. Oravský Podzámok, N 2 km, clearing in bend 50 m above the road, 580 m, 180°, 20°, 100 m^2, 90%, 191729.00, 491702.00, 30. 7. 1995, IJ.
45. Podbeskydská brázda, v. Oravské Veselé, N, valley of the Veselianka stream, clearing in the spruce forest, flysch, 850 m, 113°, 25°, 100 m^2, 100%, 192325.00, 492812.00, 1. 8. 1995, IJ.
46. Podbeskydská vrchovina, v. Oravská Jasenica, Riečka valley, fresh clearing in spruce forest, oligotrophic cambisol, clay loam, 755 m, 284°, 15°, 56 m^2, 90%, 192612.20, 492554.40, 6. 8. 2007, IJ & JM.
47. Podbeskydská vrchovina, v. Oravská Jasenica, Riečka valley, clearing in spruce forest, 757 m, 310°, 20°, 49 m^2, 95%, 192610.60, 492552.20, 6. 8. 2007, IJ & JM.
48. Podbeskydská vrchovina, v. Oravská Jasenica, Riečka valley, relatively fresh clearing in spruce forest, oligotrophic cambisol, 790 m, 252°, 20°, 40 m^2, 95%, 192631.40, 492557.30, 7. 8. 2007, JM.
49. Podbeskydská vrchovina, v. Oravské Veselé, S of Veselské Hájiky, N from elevation point Mrázová (1000.1), clearing in spruce forest with planted juveniles of spruce, 762 m, 312°, 25°, 40 m^2, 98%, 192325.70, 492617.50, 7. 8. 2007, JM.
50. Podbeskydská vrchovina, v. Oravské Veselé, Veselské Hájiky, N from elevation point Mrázová (1000.1), clearing after windthrow, 816 m, 342°, 15°, 40 m^2, 95%, 192335.30, 492616.90, 7. 8. 2007, JM.
51. Oravská Magura, v. Slanická Osada, clearing in spruce forest approx. 15 m from the main road, clearing in spruce forest, loamy cambisol, 620 m, 355°, 10°, 40 m^2, 90%, 193015.30, 492407.20, 7. 8. 2007, IJ & JM.
52. Oravské Beskydy, v. Oravská Polhora, behind sawmill, clearing next to the road, clearing in spruce forest, cambisol, 712 m, 48°, 20°, 40 m^2, 95%, 192436.80, 493304.90, 8. 8. 2007, JM.
53. Oravské Beskydy, v. Oravská Polhora, elevation point Vysoká (966.4), clearing in spruce forest, cambisol, 814 m, 345°, 10°, 36 m^2, 97%, 192624.90, 493302.20, 8. 8. 2007, JM.
54. Oravské Beskydy, v. Oravská Polhora, elevation point Vysoká (966.4), close to the ridge, clearing in spruce forest, oligotrophic cambisol, 935 m, 271°, 10°, 36 m^2, 95%, 192642.20, 493259.90, 8. 8. 2007, JM.
55. Oravské Beskydy, v. Oravská Polhora, elevation point Vysoká (966.4), close to the top of the ridge, clearing in the spruce forest, oligotrophic cambisol, 929 m, 313°, 15°, 40 m^2, 85%, 192642.10, 493301.20, 8. 8. 2007, JM.
56. Oravské Beskydy, v. Oravská Polhora, elevation point Vysoká (966.4), top of the ridge, clearing in spruce forest, cambisol, burnt place, 980 m, 279°, 7°, 40 m^2, 97%, 192712.60, 493258.50, 8. 8. 2007, JM.
57. Oravské Beskydy, v. Oravská Polhora, elevation point Vysoká (966.4), top of the ridge, clearing in spruce forest, cambisol, vast amount of undecomposed branches, 982 m, 198°, 5°, 40 m^2, 100%, 192714.10, 493258.10, 8. 8. 2007, JM.

58. Oravské Beskydy, v. Oravská Polhora, N from elevation point Poľana (880), clearing in spruce forest, cambisol, 766 m, 43°, 10°, 40 m^2, 97%, 192430.20, 493320.90, 9. 8. 2007, JM.
59. Oravské Beskydy, v. Oravská Polhora, N from elevation point Poľana (880), clearing in spruce forest, cambisol, 780 m, 281°, 7°, 40 m^2, 95%, 192415.10, 493327.00, 9. 8. 2007, JM.
60. Oravské Beskydy, v. Oravská Polhora, N from elevation point Poľana (880), clearing in spruce forest, cambisol, 770 m, 0°, 0°, 36 m^2, 97%, 192412.40, 493326.10, 9. 8. 2007, JM.
61. Oravské Beskydy, v. Oravská Polhora, N from elevation point (880m), clearing in spruce forest, shallow cambisol, 836 m, 79°, 10°, 36 m^2, 85%, 192353.70, 493337.90, JM.
62. Oravská Magura, the Prístop saddle, clearing, gravely cambisol, 880 m, 0°, 0°, 36 m^2, 95%, 192040.00, 491804.00, 9. 8. 2007, JM.
63. Oravské Beskydy, Pilsko Mt., forest road close to the Biela Farma hotel, clearing in spruce forest, cambisol, 747 m, 93°, 3°, 36 m^2, 97%, 192350.20, 493209.00, 10. 8. 2007, JM.
64. Oravská Magura, v. Slanická Osada, clearing above the Slanica hotel, clearing in spruce forest, cambisol, 669 m, 27°, 20°, 36 m^2, 95%, 193046.10, 492350.80, 15. 9. 2007, JM.
65. Oravská Magura, Magurka Mt., almost on the top, clearing in spruce forest, cambisol, 1021 m, 120°, 25°, 40 m^2, 85%, 192934.70, 492159.70, 15. 9. 2007, JM.

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