

PHYTOSOCIOLOGICAL DESCRIPTION OF *QUERCUS PETRAEA* FOREST STANDS WITH *CHAMAECYTISUS HIRSUTUS* AND *ERICA CARNEA* IN THE VIPAVSKA BRDA (SOUTHWESTERN SLOVENIA)
FITOCENOLOŠKA OZNAKA SESTOJEV GRADNA (*QUERCUS PETRAEA*) Z DLAKAVO RELIKO (*CHAMAECYTISUS HIRSUTUS*) IN SPOMLADANSKO RESO (*ERICA CARNEA*) V VIPAVSKIH BRDIH (JUGOZHODNA SLOVENIJA)

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ABSTRACT

We conducted a phytosociological study of *Quercus petraea* stands, whose herb layer is dominated by *Erica carnea* in the flysch hills of Vipavska brda and on the margins of the Vrhe plateau (southwestern Slovenia). We have determined that they are a long-term degradation stage on beech forest sites from the association *Seslerio autumnalis-Fagetum*. Based on comparisons with similar sessile oak stands from associations *Melampyro vulgati-Quercetum petraeae*, *Seslerio autumnalis-Quercetum petraeae* and *Erico carnea-Quercetum petraeae*, the studied stands are classified into the new association *Chamaecytiso hirsuti-Quercetum petraeae*. They are best differentiated from the stands of compared communities by the species *Erica carnea*, *Sorbus aria*, *Lathyrus linifolius*, *Loranthus europaeus* and *Erythronium dens-canis*. The new association is classified into the alliance *Carpinion orientalis* and order *Quercetalia pubescenti-petraeae*.

Key words: phytosociology, synsystematics, *Seslerio autumnalis-Fagetum*, *Chamaecytiso hirsuti-Quercetum petraeae*, *Carpinion orientalis*, degradation stage, Vipavska brda, Vrhe, Slovenia

IZVLEČEK

Fitocenološko smo raziskali sestoje gradna (*Quercus petraea*) v flišnem gričevju Vipavskih brd in na robu planote Vrhe (jugozahodna Slovenija), v katerih v zeliščni plasti prevladuje vrsta *Erica carnea*. Ugotovljamo, da so dolgotrajen degradacijski stadij na rastiščih bukovega gozda iz asociacije *Seslerio autumnalis-Fagetum*. Na podlagi primerjav s podobnimi gradnovimi sestoji iz asociacij *Melampyro vulgati-Quercetum petraeae*, *Seslerio autumnalis-Quercetum petraeae* in *Erico carnea-Quercetum petraeae* preučene sestoje uvrščamo v novo asociacijo *Chamaecytiso hirsuti-Quercetum petraeae*. Od sestojev primerjanih združb jih najbolj razlikujejo vrste *Erica carnea*, *Sorbus aria*, *Lathyrus linifolius*, *Loranthus europaeus* in *Erythronium dens-canis*. Novo asociacijo uvrščamo v zvezo *Carpinion orientalis* in v red *Quercetalia pubescenti-petraeae*.

Ključne besede: fitocenologija, sinsistematika, *Seslerio autumnalis-Fagetum*, *Chamaecytiso hirsuti-Quercetum petraeae*, *Carpinion orientalis*, degradacijski stadij, Vipavska brda, Vrhe, Slovenija

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1 INTRODUCTION

1 UVOD

The forest of the Vipavska brda in southwestern Slovenia as seen from a distance (e.g. from the Nanos plateau) gives a fairly uniform picture. A closer view, however, shows that these are secondary stands that clearly demonstrate the impact of past management. In terms of ecology – these are steep, shady flysch slopes cross-cut with streams – the highest stage of development in the primary post-glacial development in this area was probably beech forest. Individual beech trees can still be found in numerous spots, as well as many beech stands, especially on higher elevations on slopes under the Vrhe plateau and in the eastern part

of the hills towards Razdrto and Raša. We conducted a phytosociological inventory of several such beech stands that are mainly classified into the association *Seslerio autumnalis-Fagetum* (compare Dakskobler, 1997). The dominant species now is without a doubt sessile oak (*Quercus petraea*), and its stands, whose herb layer is dominated by autumn moor grass (*Sesleria autumnalis*), are classified into the association *Seslerio autumnalis-Quercetum petraeae* (Čarni et al., 2002). We were especially interested in low-growing oak coppice stands, where the herb layer is completely dominated by spring heath (*Erica carnea*). Elevation, geological bedrock, slope are similar as in beech or sessile oak stands with autumn moor grass, while the

herb layer is clearly different. Degradation and, in turn, deterioration of soil- and consequently of site conditions and changes in the species composition could have been caused by erosion (removal of soil still ongoing in several locations) and definitely also by past human activities, especially by litter gathering (Čokelj, in litt.). A phytosociological inventory was conducted for both beech and oak stands; the relevés were arranged into two tables and the results of our research are presented in this paper.

1.1 Ecological description of the study area

1.1 Ekološki opis raziskovanega območja

The name Vipavska brda denominates the hills situated south of the Vipava river, north of the Branica river and west of the Močilnik stream (Kladnik, 2000) in southwestern Slovenia. In the east, the hills gradually continue into the Vrhe plateau between the Vipava and Raša valleys. The shady slopes of the Vipavska brda and of the Vrhe plateau above the Močilnik and Pasji rep streams are now mainly covered with forests. Settlements are located both on the plateau and in the valley. Figure 1 shows the approximate location of inventoried sessile oak stands, whose herb layer is completely dominated by spring heath (*Erica carnea*). The

elevation of the localities is between 290 m and 535 m, the aspect is distinctly shady, northern, northeastern, eastern as well as southeastern, the slope is 5° to 30°. Geological bedrock of the Vipavska brda is Eocene flysch (Buser, 1973, 2009) and the predominant soil type is eutric brown soil (Lovrenčak, 1998, Prus, in litt.).

The climate is warm, with mean annual temperature of 10°C to 12°C (Cegnar, 1998) and mean annual precipitation of between 1,400 mm and 1,600 mm (B. Zupančič, 1998). The phytosociological map of potential natural forest vegetation of Slovenia, scale 1:400,000 (Čarni et al., 2002), indicates the study area as the association *Seslerio autumnalis-Quercetum petraeae*. According to our findings, beech forest is the potential natural vegetation of shady slopes of the Vipavska brda, especially the forest from the association *Seslerio autumnalis-Fagetum*, in part also from the association *Ornithogalo pyrenaici-Fagetum*. Stands of the association *Seslerio autumnalis-Quercetum petraeae* (see relevés 11 and 12 in Table 2) in this area are largely secondary degradation stage. Although the steep flysch slopes have always been largely wooded, the military map from the second half of the 18th century (Rajšp and Trpin, 1997) indicates relatively large viticultural areas also on the shady slopes, at least in the Pasji rep

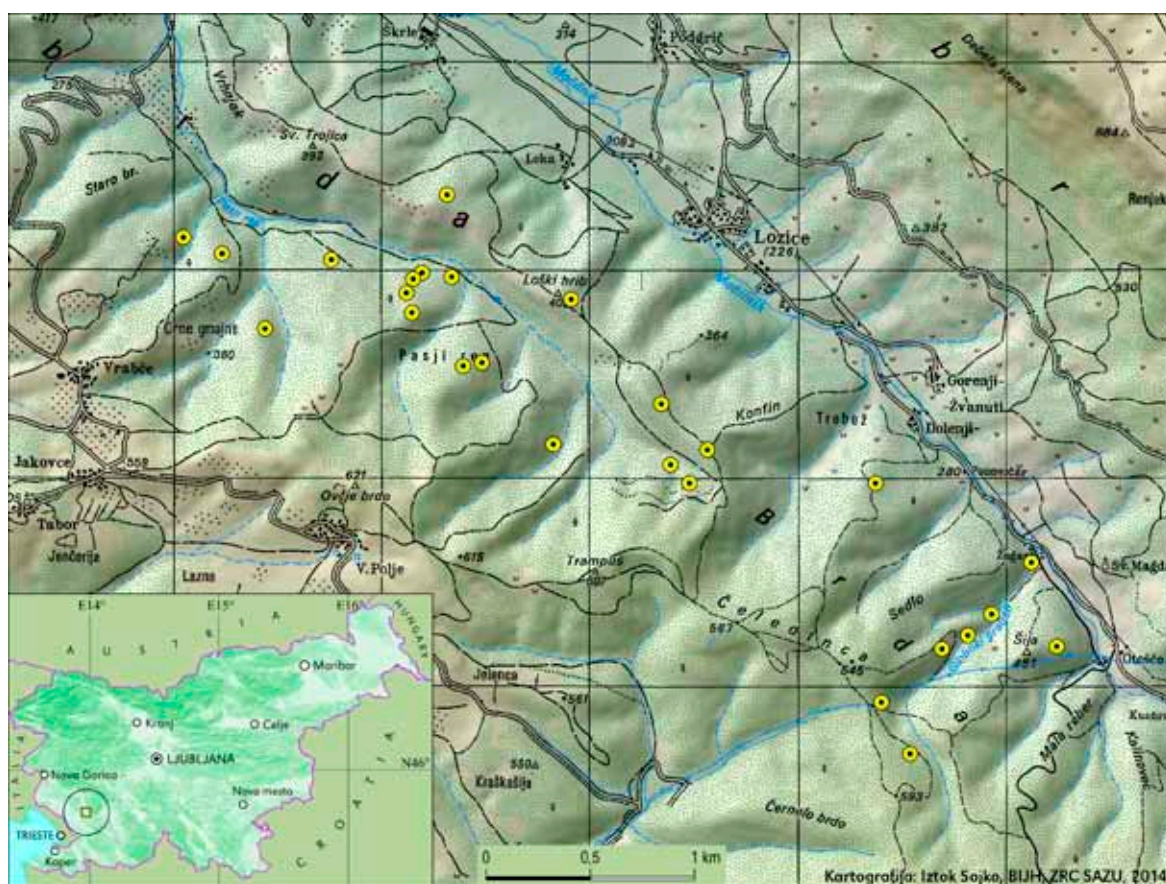


Fig. 1: Approximate localities of inventoried sessile oak stands in the Vipavska brda

Slika 1: Približna nahajališča raziskanih gradnovih sestojev v Vipavskih brdih

valley. Pioneer stands of various deciduous trees occur elsewhere too, especially in gullied slopes with deep soil. They frequently feature wild cherry (*Prunus avium*) – see relevé No. 13 in Table 2. Sites on what was once clearly agricultural land are increasingly overgrown by black locust (*Robinia pseudoacacia*).

2 MATERIALS AND METHODS

2 MATERIALI IN METODE

Vegetation in the Vipavska brda was researched applying the Central-European phytosociological method (Braun-Blanquet, 1964). A total of 39 relevés were made and entered into the FloVegSi database (Seliškar et al., 2003). Combined cover-abundance values were transformed into numerical values 1–9 (van der Maarel, 1979). Numerical comparisons were conducted with the software package SYN-TAX (Podani, 2001). Relevés were arranged into two analytic tables (Tables 1 and 2) based on hierarchical classification. We integrated the results of the (unweighted) pair group method with arithmetic mean “(Unweighted) average linkage” – UPGMA, where Wishart’s similarity ratio was applied. Phytosociological groups (= groups of diagnostic species) were formed on the basis of our own criteria, but with consideration of several authors (Aeschmann et al., 2004, Poldini, 1982, 1988, 1989, Zupančič, 1999). Similar oak communities from the sub-Mediterranean part of Slovenia (Poldini, 1982, Zupančič, 1999) and from serpentine areas in Bosnia (Krause and Ludwig, 1957, Ritter-Studnička, 1970) were compared through hierarchical classification and two-dimensional ordination (principal coordinates analysis, PCoA), as well as on the basis of Sørensen’s coefficient of floristic similarity (Sørensen, 1948) and analysis of percentage of diagnostic species of syntaxonomic groups. The nomenclature source for the names of vascular plants is Mala flora Slovenije (Martinčič et al., 2007). Martinčič (2003, 2011) is the nomenclature source for the names of mosses, Šilc and Čarni (2012) for the names of syntaxa (with the exception of the names of the class *Quercus-Fagetum* Braun-Blanquet et Vlieger in Vlieger 1937 and alliance *Carpinion orientalis* Horvat 1958) and Urbančič et al. (2005) for the names of soil types.

3 RESULTS AND DISCUSSION

3 REZULTATI IN RAZPRAVA

3.1 Description of soils in the researched stands

3.1 Opis tal v preučениh sestojih

Soil conditions were described on the basis of the sample that was obtained in the Pasji rep valley and

analysed in the laboratory of the Slovenian Forestry Institute, as well as on the basis of the public data provided by the Infrastructural Centre for Pedology and Plant Protection at the Department of Agronomy of Biotechnical Faculty in Ljubljana, which were interpreted for us by Tomaž Prus (in litt.). Convex slopes with relatively shallow soil prevail, in places showing signs of erosion (leaching). The dominant soil type is lessivé eutric brown soil. Upper horizons are strongly acid (pH H₂O 4.8, pH CaCl 3.8 to 4.0), the humus type is moder (C/N ratio exceeds 20). Soil properties change with depth and pH increases considerably. This indicates past practices on surface soil horizons. Litter gathering is one of the likely reasons that accelerated the process of soil base cation (Ca, Mg, K) leaching. Although characteristic for alkaline soils, *Erica carnea* can thrive also on soils that have gradually become acid. In the event of further soil degradation (acidification), it would be replaced by *Calluna vulgaris*, which has only been found in isolated spots in our relevés. Abundant occurrence of *Erica carnea* in the Vipavska brda can be attributed to the distinctly shady aspect, i.e. local climate factors, erosion-associated processes on convex slopes and to past litter gathering.

3.2 Stand description and species composition (Table 1)

3.2 Oznaka sestojev in vrstna sestava (preglednica 1)

Pole- and mature sessile oak stands prevail on 39 researched plots; their diameter at breast height is between 25 cm and 35 cm and tree height between 10 m and 16 m. Many of them are of coppice origin. Frequent occurrence of the parasite *Loranthus europaeus* in sessile oak crowns indicates relatively poor vitality of sessile oak on these sites. The upper tree layer is admixed with individual trees of *Fagus sylvatica*, *Castanea sativa* and *Sorbus aria*, very rarely also by *Pinus nigra* (subspontaneously), *Betula pendula*, *Ostrya carpinifolia*, *Sorbus aucuparia* and *Pinus sylvestris*. The alien species *Robinia pseudoacacia* was recorded in the tree layer on one of the plots. The species that frequently occur in the lower tree layer and in the upper shrub layer include *Fraxinus ornus*, *Sorbus aria*, *S. torminalis*, *Juniperus communis*, in places also *Castanea sativa* and *Fagus sylvatica*, and only rarely *Laburnum alpinum*, *Pyrus pyraeaster*, *Amelanchier ovalis* and *Crataegus monogyna*. In the shrub layer, we inventoried the taxa *Sorbus graeca* and *S. austriaca*, but our determination is not completely reliable. Above Veliki graben above Otošče we found a rare hybrid between *Sorbus aria* and *S. torminalis* = *Sorbus latifolia* s. lat. In addition to the dominating *Erica*

carnea, the taxon *Molinia caerulea* subsp. *arundinacea*, in places also the species *Convallaria majalis*, *Serratula tinctoria* and *Vaccinium myrtillus*, on several spots also *Pteridium aquilinum*, have a higher medium coverage. Common grasses include *Sesleria autumnalis*, *Avenella flexuosa* and *Calamagrostis arundinacea*; *Luzula luzuloides* is also frequent. Species with high constancy (more than 50%) in the herb layer are also *Chamaecytisus hirsutus*, *Tanacetum corymbosum*, *Hieracium racemosum*, *H. sabaudum*, *H. murorum*, *Genista pilosa*, *Platanthera bifolia* and *Erythronium dens-canis*. Common species in the moss layer are *Hypnum cupressiforme*, *Thuidium tamariscinum* and *Polytrichum formosum* (= *Polytrichastrum formosum*), with *Leucobryum glaucum* observed on several plots.

3.3 Comparison with preserved beech stands (Table 2)

3.3 Primerjava z ohranjenimi bukovimi sestoji (preglednica 2)

Table 2 comprises 13 relevés from the same area (Vipavska brda, Vrhe), but with a different composition of the tree layer. Ten relevés (1 to 10) are classified into the association *Seslerio autumnalis-Fagetum*, two are a degradation stage with dominant sessile oak on a beech site (relevés 11 and 12, both classified into the association *Seslerio autumnalis-Quercetum petraeae*). Relevé No. 13 characterises a pioneer forest on former agricultural land dominated by *Prunus avium*, with individual specimens of *Ostrya carpinifolia*, *Acer pseudo-platanus*, *A. campestre* and *Robinia pseudoacacia*. We assume this is a pioneer stage on potential sites of the association *Ornithogalo pyrenaici-Fagetum*. Comparison of 26 relevés of sessile oak forest with ten relevés of the beech forest from the association *Seslerio autumnalis-Fagetum* from the same area indicates substantial differences not only in the tree layer, but also in the herb layer. In beech stands, it is usually dominated by *Sesleria autumnalis*, there are clearly more mesophilous species, character species of the order *Fagetalia sylvaticae* (see Tables 2 and 4). The soil is deeper, less acid and in places also moister.

3.4 Synsystematic classification

3.4 Sinsistematska opredelitev

Natural characteristics (flesch slopes), phytogeographical position and origin (secondary community) of the studied stands are similar to the conditions in which sessile oak stands of the syntaxon *Melampyro vulgati-Quercetum petraeae* var. geogr. *Fraxinus ornus* (Puncer and Zupančič, 1979, Zupančič, 1994) grow in the hills of Brkini. We conducted a comparison between

19 relevés of this association and our relevés; floristic similarity according to Sørensen (1948) is about 56%, which allows for classification into the same association, but new subassociation *Melampyro-Quercetum ericetosum carnea*. Such classification is conditionally supported also by the presence of diagnostic species from the association *Melampyro-Quercetum* in the studied stands in the Vipavska brda. In addition to sessile oak, *Luzula luzuloides*, *Hieracium sabaudum* and the geographical differential species *Avenella flexuosa* (= *Deschampsia flexuosa*) also frequently occur in these stands. *Melampyrum pratense* subsp. *vulgatum* and *Chamaecytisus supinus* occur with considerably lower frequency and medium coverage, whereas *Lembotropis nigricans* and geographical differential species *Orobancha nana* (*O. ramosa* subsp. *nana*) were not recorded. There are obvious differences in the proportion of diagnostic species (Table 4). The studied stands comprise a considerably higher proportion of thermophilous species of the order *Quercetalia pubescenti-petraeae* and class *Erico-Pinetea* and a much smaller proportion of acidophilous species of the order *Quercetalia roboris* and class *Vaccinio-Piceetea* than the stands of the association *Melampyro-Quercetum*. Soil conditions are different. Dystric brown soils prevail in the stands of the association *Melampyro-Quercetum*, whereas the soil in our stands is eutric, although frequently leached. The fundamental difference is in potentially natural vegetation. In terms of the association *Melampyro-Quercetum*, this is most frequently a moderate acidophilous beech-oak forest from the association *Castaneo-Fagetum sylvaticae*, in our case the sub-Mediterranean beech forest from the association *Seslerio autumnalis-Fagetum*. This is also the basis for classification into two different orders. The association *Melampyro-Quercetum* is classified into the alliance *Quercion roboris* (or *Genisto germanicae-Quercion roboris*) and into the order *Quercetalia roboris*, while the studied stands with their floristic composition are classified into the alliance *Carpinion orientalis* and into the order *Quercetalia pubescenti-petraeae*. If these stands were classified as the new subassociation *Melampyro-Quercetum petraeae ericetosum carnea* it should be classified into the same alliance as the previously described subassociations (Puncer and Zupančič, 1979), i.e. into the alliance *Quercion roboris* (or *Genisto germanicae-Quercion roboris*), which does not correspond to its full floristic composition. We therefore conducted additional comparisons with another two syntaxa, the association *Seslerio autumnalis-Quercetum petraeae* (Zupančič, 1999, Table 5, Poldini, 1982, Table 4, columns 27–34) and with the association *Erico carnea-*

ae-Quercetum petraeae (Krause and Ludwig, 1957: 118–120, Ritter-Studnička, 1970: 114–115, Beus, 1997: 94–95). We also made a synthetic table (Table 3) with six columns and compared them with hierarchical classification and two-dimensional ordination (Figures 2 and 3). In terms of floristics, our stands are most similar to the stands of the association *Melampyro-Quercetum petraeae*. Floristic similarity with the association *Seslerio autumnalis-Quercetum petraeae* according to Sørensen (1948) is already lower at about 45%. Similarity is only slightly higher (47%) with the most acidophilous form of this association described by Poldini (1982) as *Seslerio autumnalis-Quercetum petraeae avenelletesum flexuosae*. It is differentiated by *Castanea sativa*, *Luzula luzuloides*, *Avenella flexuosa* and some other species. Poldini (ibid.) described two variants: the variant with *Erica carnea* on sites with less acid soil and the variant with *Polytrichum formosum*, *Leucobryum glaucum*, *Genista germanica* and *Dicranum scoparium* on more acid soil. He found such stands both on flysch and limestone. The tree layer is frequently dominated by Turkey oak (*Quercus cerris*). Poldini attributed the increased soil acidity to the past litter gathering. Despite certain similarities with the studied stands in the Vipavska brda (occurrence of *Erica carnea*, but with less medium coverage, and of some other acidophilous species except *Vaccinium myrtillus*), the dendrogram (Figures 2 and 3) shows the stands of the subassociation *-avenelletesum flexuosae* grouping with stands of other forms of the association *Seslerio autumnalis-Quercetum petraeae* and not with our community.

With consideration of the dominant species of the tree and herb layers, the studied stands could be classified into the association *Erica carnea-Quercetum petraeae* that was described in northern Bosnia (Krause and Ludwig, 1957: 90–91 and Table 1, column 3 on pages 118–120, Horvat, 1959: 30, Ritter-Studnička, 1970), but in very different ecological conditions, on serpentine bedrock (in western Bosnia the oak stands with *Erica carnea* were described also on Permian sandstones and on dystric soils and were classified into the syntaxon *Betulo-Quercetum petraeae ericetosum* – Fabijanić et al., 1963, Stefanović, 1984). Stands of this association are syndynamically closely related to the black and red pine on serpentinite (see also Horvat et al., 1974: 461) and their progressive development also leads to the (fir)beech forest. Floristic similarity of 23 relevés from the synthetic table of the association *Erico-Quercetum petraeae* Krause et Ludwig ex Horvat 1959 (the correct author citation, Theurillat, in litt.) – Ritter-Studnička (1970: 114–115) with our stands is

only 20% according to Sørensen (1948), while floristic similarity of 5 relevés from the synthetic table of the same association (Krause and Ludwig, ibid.) is slightly higher (31%), which does not allow for its classification into the same association. In addition, Zupančič et al. (1986: 12) classify the association *Erico-Quercetum petraeae* into the alliance *Quercion robori-petraeae* = *Quercion roboris* and into the order *Quercetalia robori-petraeae* = *Quercetalia roboris*, while we classify the studied stands into the order *Quercetalia pubescenti-petraeae*. Floristic dissimilarity is further confirmed by hierarchical classification (Figures 2 and 3).

Based on these comparisons, we decided to classify sessile oak stands from the Vipavska brda into the new association *Chamaecytiso hirsuti-Quercetum petraeae* ass. nov. hoc loco. Its diagnostic species are *Quercus petraea* (the edifier of all four compared communities that characterises the newly described association against the primary association *Seslerio autumnalis-Fagetum*), *Erica carnea*, *Sorbus aria*, *Sesleria autumnalis*, *Chamaecytisus hirsutus*, *Lathyrus linifolius*, *Loranthus europaeus* and *Erythronium dens-canis*. These species undoubtedly differentiate the studied stands both from floristically slightly similar stands of the associations *Seslerio autumnalis-Quercetum petraeae* and *Melampyro-Quercetum petraeae* as well as from physiognomically similar (with dominant *Erica carnea* in the herb layer) stands of the association *Erico-Quercetum petraeae* in Bosnia. The differential species that distinguish them from the stands of the association *Seslerio-Quercetum* are *Loranthus europaeus*, *Lathyrus linifolius* and *Erythronium dens-canis*, partly also *Erica carnea* and *Sorbus aria*. The species that differentiate them from the stands of the association *Melampyro-Quercetum* are *Sorbus aria*, *Sesleria autumnalis*, *Chamaecytisus hirsutus*, *Lathyrus linifolius*, *Erythronium dens-canis* and *Loranthus europaeus*, and the species that differentiate them from the stands of the association *Erico-Quercetum* are *Sorbus aria*, *Sesleria autumnalis*, *Lathyrus linifolius* and *Loranthus europaeus*. The diagnostic species characterise the new association both ecologically (*Erica carnea*, *Sorbus aria*, *Chamaecytisus hirsutus*, *Lathyrus linifolius*, *Loranthus europaeus*) and phytogeographically (especially *Sesleria autumnalis* and *Erythronium dens-canis*). The nomenclature type of the new association, *holotypus*, is relevé No. 5 in Table 1.

4 CONCLUSIONS

4 ZAKLJUČKI

Stands of *Quercus petraea* with *Chamaecytisus hirsutus* and *Erica carnea* on shady slopes of the Vipavska

brda under the Vrhe plateau are an easily recognised degradation stage on potential sites of beech forest from the association *Seslerio autumnalis-Fagetum* and are also easily distinguishable from other stands. The forest's surface area is estimated at between 500 ha and 1,000 ha (so far, it has been mapped as the association *Melampyro vulgati-Quercetum petraeae*, Rešičič, in litt.). Stands of this stage are mainly distributed in the Karst forest management region, in the forest management unit Vrhe and on a smaller area also in the Ajdovščina forest management unit within the Tolmin forest management region. Progressive development back into the beech forest has been very slow. Now, in the absence of human impact (such as litter gathering), it is hindered by natural factors (convex slopes subject to erosion) and by the fact that due to the warm climate beech in this area occurs on the edge of its natural distribution area. It therefore makes sense to treat these stands at the level of the association *Chamaecytisus hirsuti-Quercetum petraeae* and to make sure that their

role of protection against erosion is considered in forest management practice. They play a significant role also as a biotope, i.e. as a site of the rare hybrid *Sorbus latifolia* s. lat. (see Avdibegović et al., 2013), protected species *Erythronium dens-canis*, *Platanthera bifolia*, *P. chlorantha*, *Lilium martagon*, *Cephalanthera longifolia*, *Neottia nidus-avis*, *Sedum maximum* (Anon., 2004) and of *Leucobryum glaucum*, a moss species of conservation concern (Anon., 2002). In terms of floristics and site conditions, the stands of the new association slightly resemble the stands of associations *Melampyro vulgate-Quercetum petraeae*, *Seslerio autumnalis-Quercetum petraeae* and *Erico carnea-Quercetum petraeae*, but also distinctly differ from them in terms of syndynamics, certain ecological factors and in the occurrence of several species. They are characterised by the shady aspect, flysch bedrock, lessivé eutric brown soils, the sub-Mediterranean climate and differential species such as *Erica carnea*, *Sorbus aria*, *Lathyrus linifolius*, *Loranthus europaeus* and *Erythronium dens-canis*.

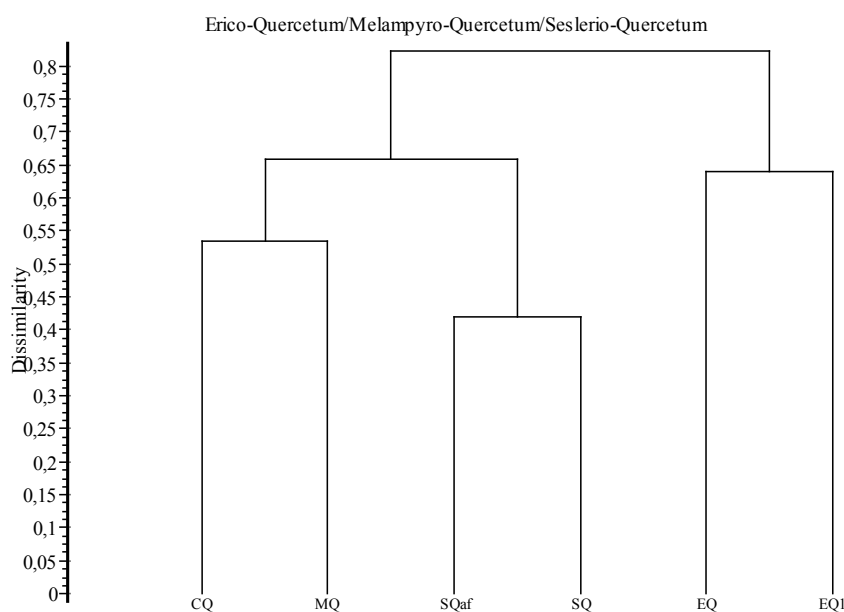


Fig. 2: Dendrogram of stands of the syntaxa *Chamaecytisus hirsuti-Quercetum petraeae* (CQ), *Melampyro-Quercetum petraeae* (MQ), *Seslerio autumnalis-Quercetum petraeae* (SQ), *Seslerio autumnalis-Quercetum petraeae avenelletesum flexuosae* (SQaf) and *Erico-Quercetum petraeae* (EQ, EQ1) from southwestern Slovenia and Bosnia, UPGMA, similarity ratio

Slika 2: Dendrogram sestojev sintaksonov *Chamaecytisus hirsuti-Quercetum petraeae* (CQ), *Melampyro-Quercetum petraeae* (MQ), *Seslerio autumnalis-Quercetum petraeae* (SQ), *Seslerio autumnalis-Quercetum petraeae avenelletesum flexuosae* (SQaf) in *Erico-Quercetum petraeae* (EQ, EQ1) iz jugovzhodne Slovenije in Bosne, UPGMA, količnik podobnosti »similarity ratio«

CQ	<i>Chamaecytisus hirsuti-Quercetum petraeae</i> ass. nov., this article
MQ	<i>Melampyro vulgati-Quercetum petraeae</i> Puncer & Zupančič 1979 var. geogr. <i>Fraxinus ornus</i> (Puncer & Zupančič) Zupančič 1994 (Puncer in Zupančič, 1979)
SQaf	<i>Seslerio autumnalis-Quercetum petraeae</i> Poldini (1964) 1982 <i>avenelletesum flexuosae</i> Poldini 1982 (Poldini, 1982)
SQ	<i>Seslerio autumnalis-Quercetum petraeae</i> Poldini (1964) 1982 (Zupančič, 1999)
EQ	<i>Erico-Quercetum petraeae</i> Krause et Ludwig ex Horvat 1959 (Ritter-Studnička, 1970)
EQ1	<i>Erico-Quercetum petraeae</i> Krause et Ludwig ex Horvat 1959 (Krause and Ludwig, 1957)

Classification of the new association into higher syntaxonomical units is as follows:

Class: *Quercus-Fagetum* Br.-Bl. et Vlieger in Vlieger 1937

Order: *Quercetalia pubescenti-petraeae* Klika 1933

Alliance: *Carpinion orientalis* Horvat 1958

Suballiance: *Seslerio autumnalis-Ostryenion* Blasi, Di Pietro & Filesi 2004 = *Ostryo-Carpinenion orientalis* Horvat (1954) 1958 nom. illeg.

Association: *Chamaecytiso hirsuti-Quercetum petraeae* ass. nov. hoc loco

5 POVZETEK

5 SUMMARY

Po standardni srednjeevropski metodi smo fitocenološko preučili sestoje gradna (*Quercus petraea*) v flišnem gričevju Vipavskih brd in na robu planote Vrhe (jugozahodna Slovenija), v katerih v zeliščni plasti prevladuje vrsta *Erica carnea* (slika 1, preglednica 1). Uspevajo na položnih do strmih osojnih pobočjih, na nadmorski višini od 250 m do 550 m. Prevladujoči talni tip so evtrična rjava tla, ki so pogosto izprana. Potencialno naravna vegetacija osojnih pobočij tega gričevja je bukov gozd iz asociacije *Seslerio autumnalis-*

Fagetum, kar potrjujejo nekateri še ohranjeni sestoji, ki smo jih prav tako fitocenološko popisali (preglednica 2). Zdaj prevladujoče sestoje gradna uvrščamo v asociacijo *Seslerio autumnalis-Quercetum petraeae*. Nizki panjevski hrastovi sestoji s spomladansko reso uspevajo v podobnih rastiščnih razmerah kot sestoji bukve ali gradna z jesensko vilovino, a imajo očitno različno zeliščno plast. Degradacijo in s tem poslabšanje talnih in posledično rastiščnih razmer in spremembo vrstne sestave je povzročila erozija (odnašanje prsti, na več krajih jo vidimo še zdaj) in človekova pretekla dejavnost, predvsem steljarjenje. To se kaže v zgornjih horizontih tal, ki so precej kisli (pH H₂O 4,8, pH CaCl 3,8 do 4,0), oblika humusa je prhnina (razmerje C/N je nad 20). Z globino se lastnosti tal spremenijo in je pH precej višji. Steljarjenje je eden izmed verjetnih razlogov, ki je posledično pospešil procese izpiranja bazično delujočih kationov (Ca, Mg, K). Vrsta *Erica carnea* je sicer značilna za bazična tla, vendar lahko dobro uspeva tudi na tleh, ki so v teku razvoja postala kislila. Preučene hrastove sestoje smo primerjali s podobnimi gradnovimi združbami iz asociacij *Melampyro vulgati-Quercetum petraeae*, *Seslerio autumnalis-Quercetum petraeae* in *Erica carnea-Quercetum petraeae* in ugotovili največjo

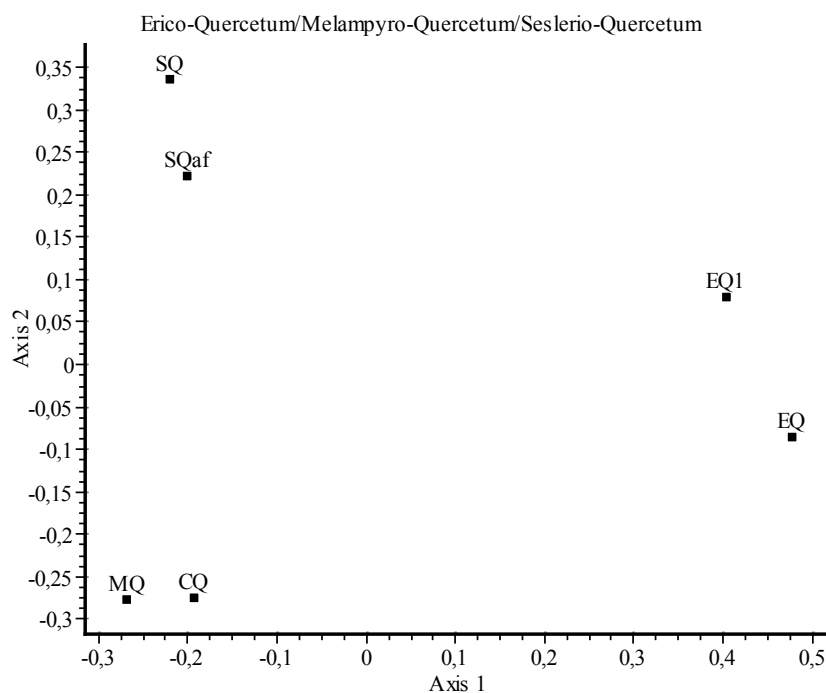


Fig. 3: Two-dimensional scatter diagram of stands of the syntaxa *Chamaecytiso hirsuti-Quercetum petraeae* (CQ), *Melampyro-Quercetum petraeae* (MQ), *Seslerio autumnalis-Quercetum petraeae* (SQ), *Seslerio autumnalis-Quercetum petraeae avenelletsom flexuosae* (SQaf) and *Erico-Quercetum petraeae* (EQ, EQ1) from southwestern Slovenia and Bosnia, PCoA, similarity ratio

Slika 3: Dvorazsežni ordinacijski diagram sestojev sintaksionov *Chamaecytiso hirsuti-Quercetum petraeae* (CQ), *Melampyro-Quercetum petraeae* (MQ), *Seslerio autumnalis-Quercetum petraeae* (SQ), *Seslerio autumnalis-Quercetum petraeae avenelletsom flexuosae* (SQaf) in *Erico-Quercetum petraeae* (EQ, EQ1) iz jugovzhodne Slovenije in Bosne, PCoA, količnik podobnosti »similarity ratio«

floristično podobnost s sestoji asociacije *Melampyro vulgati-Quercetum petraeae* iz flišnih Brkinov. Od njih se razlikujejo v talnih razmerah, sestavi po skupinah diagnostičnih vrst (preglednica 5), po izvirni združbi, ki je v primeru asociacije *Melampyro-Quercetum* kisloljubno bukovje (*Castaneo-Fagetum sylvaticae*), in po pripadnosti višjim sintaksonomskim enotam (asociacija *Melampyro-Quercetum* uvrščamo v zvezo *Quercion roboris* in v red *Quercetalia roboris*). Ekološko nekoliko podobni so tudi sestoji subasociacije *Seslerio autumnalis-Quercetum petraeae avenelletosum flexuosae*, a je njihova floristična sestava že precej drugačna, kar potrjuje hierarhična klasifikacija (sliki 2 in 3). Ta kaže tudi na očitno floristično različnost s sestoji asociacije *Erico-Quercetum petraeae*, ki so jo opisali v Bosni, na serpentski podlagi. Ti sestoji imajo kljub podobnosti v dominantnih vrstah drevesne in zeliščne plasti, gradnu in spomladanski resi, drugačno sindinamiko in so povezani z združbami črnega in rdečega bora. Na podlagi teh primerjav drugotne gradnove sestoje iz Vipavskih brd uvrščamo v novo asociacijo *Chamaecytisohirsuti-Quercetum petraeae* ass. nov. hoc loco (zveza *Carpinion orientalis*, red *Quercetalia pubescent-petraeae*). Njen nomenklaturni tip, *holotypus*, je popis št. 5 v preglednici 1. Njene diagnostične vrste so *Quercus petraea*, *Erica carnea*, *Sorbus aria*, *Sesleria autumnalis*, *Chamaecytisus hirsutus*, *Lathyrus linifolius*, *Loranthus europaeus* in *Erythronium dens-canis*. Sestoji novo opisane asociacije so lahko prepoznaven in od drugih sestojev lahko ločljiv degradacijski stadij na potencialnih rastiščih bukovega gozda iz asociacije *Seslerio autumnalis-Fagetum*. Njegova površina ni zanemarljiva in jo ocenjujemo med 500 ha in 1000 ha. Razširjeni so v Kraškem gozdnogospodarskem območju, v gozdnogospodarski enoti Vrhe in na manjši površini tudi v Tolminskem gozdnogospodarskem območju, v gozdnogospodarski enoti Ajdovščina. Progresivni razvoj nazaj v bukov gozd je zelo počasen. Zdaj ko ni več človekovih vplivov (na primer steljarjenja), ga zavirajo naravni dejavniki (izbokla pobočja, izpostavljena eroziji) in dejstvo, da je bukev tu zaradi toplega podnebja na robu svojega naravnega areala.

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Table 1: *Chamaecytisus hirsuti-Quercetum petraeae* ass. nov. hoc loco

Preglednica 1: *Chamaecytisus hirsuti-Quercetum petraeae* ass. nov. hoc loco

	Number of relevé (Zaporedna številka popisa)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	Pr.	Fr.	
Database number of relevé (Delovna številka popisa)		248259	251385	237721	248186	251102	251367	251388	251365	251388	251389	251366	248190	248193	251381	251382	251383	251392	248255	248257	248258	251384	251359	251391	251393	251390	251369			
Elevation in m (Nadmorska višina v m)		410	305	400	290	360	415	360	535	425	455	500	340	390	310	335	380	395	320	460	440	410	420	450	375	455	315			
Aspect (Lega)		E	NE	N	E	E	SE	SE	NE	N	N	NEE	NE	NE	N	NNE	N	NE	NNE	NE	NE	NE	SE	NE	NE	NE	NE	SEE		
Slope in degrees (Nagib v stopinjah)		25	5	25	25	25	25	25	20	15	15	25	20	20	25	25	20	15	25	10	15	10	15	15	20	15	30			
Parent material (Matična podlaga)		Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly			
Soil (Tla)		Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu			
Stoniness in % (Kamnitost v %)		10	0	0	10	0	0	5	0	0	0	0	1	5	0	5	1	5	0	0	0	0	0	5	0	0	5			
Cover in % (Zastiranje v %):																														
Upper tree layer (Zgornja drevesna plast)	E3b	80	80	70	80	80	80	70	80	80	80	80	90	90	80	80	80	80	80	80	80	80	90	90	80	90	80			
Lower tree layer (Spodnja drevesna plast)	E3a	5	10	20	10	10	10	20	10	5	5	10	5	5	5	10	5	5	0	5	5	5	0	5	10	0	5			
Shrub layer (Grmovna plast)	E2	20	30	50	10	20	20	30	20	10	20	20	10	20	20	25	15	30	20	20	20	20	20	20	20	10	10			
Herb layer (Zeliščna plast)	E1	90	90	90	70	90	95	90	100	95	100	100	80	80	95	90	95	95	90	90	95	95	95	95	95	100	90			
Moss layer (Mahovna plast)	E0	10	10	1	20	5	5	5	5	5	5	5	30	30	5	10	10	5	10	10	5	10	5	5	5	5	5			
Maximum diameter of trees (Največji prsni premer dreves)	cm	30	30	25	30	35	35	30	25	25	25	30	30	30	25	25	35	30	30	25	25	25	25	25	30	25	30			
Maximum height of trees (Največja drevesna višina)	m	15	17	13	17	16	14	15	10	14	12	14	15	16	14	15	15	12	15	15	14	12	12	12	14	9	15			
Number of species (Število vrst)		32	49	21	38	28	24	30	26	32	28	34	39	28	36	39	37	28	37	28	26	26	26	20	26	23	38			
Relevé area (Velikost popisne ploskve)	m ²	400	200	400	200	400	400	400	400	200	200	400	200	200	200	400	400	200	400	400	400	400	200	200	200	200	400			
Date of taking relevé (Datum popisa)		10.5.2013	15.5.2013	13.10.2010	22.4.2013	3.6.2013	3.6.2013	3.6.2013	3.6.2013	3.6.2013	15.5.2013	15.5.2013	3.6.2013	22.4.2013	22.4.2013	15.5.2013	15.5.2013	15.5.2013	10.5.2013	10.5.2013	10.5.2013	15.5.2013	3.6.2013	15.5.2013	15.5.2013	15.5.2013	3.6.2013			
Locality (Nahajališče)		Pasji rep	Pasji rep	Lozice - Žvanuti	Pasji rep	Otošče	Otošče - Globoki graben	Otošče - Globoki graben	Otošče - Globoki graben	Pasji rep	Pasji rep	Raša - Kobentovka	Pasji rep	Pasji rep	Pasji rep	Pasji rep	Pasji rep	Pasji rep-Loški hrib	Pasji rep	Pasji rep	Pasji rep	Pasji rep	Vipavska brda - Šija	Pasji rep-Lahovc	Pasji rep-Sv. Trojica	Pasji rep-Lahovc	Otošče - Globoki graben			
Quadrant (Kvadrant)		0249/2	0249/2	0250/1	0249/2	0250/1	0250/1	0250/1	0250/1	0250/1	0250/1	0250/1	0249/2	0249/2	0249/2	0249/2	0249/2	0249/2	0249/2	0249/2	0249/2	0249/2	0250/1	0250/1	0249/2	0250/1				
Coordinate GK Y (D-48)	m	421825	421338	423371	420050	423928	423690	423814	423538	423388	422478	423400	420235	420441	421195	421153	421120	421911	420760	421392	421482	421147	424241	422344	421315	422564	424120			
Coordinate GK X (D-48)	m	5070163	5070968	5069976	5071157	5069349	5069181	5069247	5068678	5070065	5069977	5068925	5071079	5070719	5070987	5070958	5070891	5070859	5071051	5070539	5070556	5070796	5069193	5070358	5071362	5070137	5069596			
Diagnostic species of the association (Dijagnostične vrste asociacije)																														
QR <i>Quercus petraea</i>	E3b	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	5	5	5	5	5	5	5	5	5	26	100	
QR <i>Quercus petraea</i>	E3a	.	+	.	+	1	+	1	.	.	+	+	+	+	+	.	+	.	.	+	+	.	.	.	.	1	15	58	
QR <i>Quercus petraea</i>	E2b	.	.	.	.	+	.	.	+	.	+	.	.	+	+	.	.	.	.	.	.	.	.	1	.	.	.	8	31
QR <i>Quercus petraea</i>	E2a	.	.	.	.	+	.	.	.	+	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+	1	6	23
QR <i>Quercus petraea</i>	E1	1	1	1	1	1	+	1	+	1	.	1	1	1	1	+	+	+	+	1	+	.	1	1	+	1	.	23	88	
EP <i>Erica carnea</i>	E1	4	3	5	4	5	5	5	5	5	4	5	4	4	5	4	4	5	4	4	5	5	5	5	5	5	5	5	26	100
QP <i>Sorbus aria</i>	E3	+	.	+	1	+	.	+	+	+	+	.	+	.	+	+	+	+	1	+	+	+	+	.	+	+	+	21	81	
QP <i>Sorbus aria</i>	E2b	1	+	.	1	+	+	1	1	+	1	+	2	2	1	1	1	+	1	+	+	1	+	1	+	.	1	24	92	
QP <i>Sorbus aria</i>	E2a	1	1	.	+	+	1	.	+	1	.	+	1	+	1	.	1	+	1	+	1	1	.	+	+	1	.	20	77	
QP <i>Sorbus aria</i>	E1	.	.	.	.	.	.	.	+	+	.	+	+	+	.	+	+	.	+	1	+	1	+	+	.	+	.	15	58
CO <i>Sesleria autumnalis</i>	E1	2	2	+	+	1	+	2	.	+	+	1	+	+	+	.	+	1	.	.	+	2	+	+	+	+	+	22	85	
EP <i>Chamaecytisus hirsutus</i>	E1	+	+	+	.	+	+	+	.	+	+	.	.	.	+	+	+	+	+	1	+	+	1	.	+	+	.	19	73	
QR <i>Lathyrus linifolius</i>	E1	+	1	.	+	.	.	.	+	+	+	+	1	+	1	1	1	+	.	+	.	+	+	.	+	.	+	18	69	

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	Pr.	Fr.		
QP	<i>Loranthus europaeus</i>	E3a	.	+	.	.	+	+	+	+	.	.	.	r	+	r	+	+	.	+	+	+	+	+	.	.	.	+	16	62	
EC	<i>Erythronium dens-canis</i>	E1	.	+	+	.	+	.	.	1	1	1	.	.	1	.	+	1	.	1	1	+	.	.	.	.	.	+	13	50
QP	Quercetalia pubescenti-petraeae																														
	<i>Fraxinus ornus</i>	E3	.	.	+	.	+	+	.	+	.	+	.	.	.	+	+	.	+	.	.	.	+	.	.	.	+	10	38		
	<i>Fraxinus ornus</i>	E2b	+	2	1	1	1	1	2	+	1	1	1	2	1	2	2	1	1	1	+	+	1	1	1	2	1	1	26	100	
	<i>Fraxinus ornus</i>	E2a	1	1	.	1	2	1	2	.	1	1	1	1	2	1	.	1	.	1	2	1	1	1	1	1	1	+	2	20	77
	<i>Fraxinus ornus</i>	E1	+	1	.	+	1	.	1	.	1	.	1	.	.	+	.	.	+	1	.	1	1	1	1	1	1	1	16	62	
	<i>Convallaria majalis</i>	E1	.	.	+	r	+	+	+	3	3	3	2	1	1	+	3	3	3	3	2	1	1	3	3	3	2	1	24	92	
	<i>Sorbus torminalis</i>	E3a	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	1	.	.	+	.	.	.	.	.	4	15
	<i>Sorbus torminalis</i>	E2b	+	.	+	+	+	+	1	.	+	.	+	.	.	+	+	+	2	1	+	+	1	+	.	+	.	1	19	73	
	<i>Sorbus torminalis</i>	E2a	+	+	+	.	+	+	1	.	+	+	.	.	.	+	+	+	2	1	1	1	+	.	.	+	.	+	18	69	
	<i>Sorbus torminalis</i>	E1	+	2	.	.	.	+	1	.	.	+	+	+	+	.	.	+	1	.	2	1	1	+	.	.	.	+	15	58	
	<i>Tanacetum corymbosum</i>	E1	+	+	.	.	.	.	+	.	.	.	+	+	.	+	+	+	+	+	+	+	+	+	.	+	.	.	15	58
	<i>Lathyrus niger</i>	E1	.	+	.	+	.	.	+	.	.	.	.	.	.	.	.	.	r	+	.	.	.	.	.	.	+	.	6	23
	<i>Ostrya carpinifolia</i>	E3	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	+	3	12
	<i>Ostrya carpinifolia</i>	E2	+	.	.	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	8
	<i>Campanula persicifolia</i>	E1	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	2	8
	<i>Sorbus austriaca s. lat.</i>	E3a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
	<i>Sorbus austriaca s. lat.</i>	E2b	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	8
	<i>Sorbus austriaca s. lat.</i>	E1	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
	<i>Sorbus latifolia s. lat.</i>	E2	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
	<i>Sorbus latifolia s. lat.</i>	E1	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
	<i>Sorbus graeca</i>	E2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
QR	Quercetalia roboris, Calluno-Ulicetea, Molinietalia																														
	<i>Hieracium sabaudum</i>	E1	2	1	+	+	.	+	+	+	1	+	1	+	1	1	1	1	1	1	1	1	1	+	1	1	+	+	25	96	
	<i>Serratula tinctoria</i>	E1	1	.	+	+	.	.	.	.	1	+	1	1	1	2	2	2	3	2	2	1	2	+	1	1	1	2	21	81
	<i>Hieracium racemosum</i>	E1	.	1	+	1	1	.	1	.	+	+	+	1	.	+	+	.	.	+	+	.	+	+	.	+	+	1	18	69	
	<i>Genista pilosa</i>	E1	+	.	+	+	+	1	+	.	+	+	.	.	+	+	.	+	+	.	+	1	+	.	.	+	+	.	17	65	
	<i>Castanea sativa</i>	E3a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	r	+	.	.	.	.	.	.	.	.	.	.	2	8
	<i>Castanea sativa</i>	E2b	.	.	+	+	.	.	.	.	.	.	1	.	.	+	+	+	.	.	.	.	.	.	.	+	.	+	8	31
	<i>Castanea sativa</i>	E2a	.	+	+	r	.	.	+	.	.	.	.	+	.	+	+	+	.	r	.	.	.	.	.	+	.	+	12	46
	<i>Castanea sativa</i>	E1	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	+	.	.	+	.	.	.	5	19
	<i>Potentilla erecta</i>	E1	.	+	.	+	.	.	.	+	+	+	.	.	1	1	1	+	+	.	.	.	.	.	.	.	+	.	11	42
	<i>Pteridium aquilinum</i>	E1	.	+	.	1	.	1	.	.	.	.	1	1	3	3	2	1	.	.	.	+	+	.	.	.	.	.	11	42
CU	<i>Calluna vulgaris</i>	E1	.	.	+	.	+	+	.	+	.	+	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	+	8	31
	<i>Chamaecytisus supinus</i>	E1	.	.	.	+	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	5	19
	<i>Melampyrum pratense subsp. vulgatum</i>	E1	.	+	.	.	.	.	1	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	15
	<i>Hieracium lachenalii</i>	E1	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	3	12
MO	<i>Laserpitium prutenicum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	2	8
CU	<i>Genista germanica</i>	E1	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
	<i>Betonica officinalis</i>	E1	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
	<i>Betula pendula</i>	E3b	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
CU	<i>Phyteuma zahlbruckneri</i>	E1	+	1	4
FS	Fagetalia sylvaticae																														
	<i>Fagus sylvatica</i>	E3b	1	.	.	r	+	+	r	+	.	.	r	.	.	.	+	r	.	.	.	.	.	.	.	.	.	.	9	35
	<i>Fagus sylvatica</i>	E3a	+	+	+	.	1	+	r	+	r	r	+	.	r	.	.	.	.	.	+	.	.	+	.	.	.	+	14	54
	<i>Fagus sylvatica</i>	E2b	+	.	.	.	1	.	+	+	.	.	.	+	+	.	.	.	.	.	.	.	.	+	.	.	.	+	9	35
	<i>Fagus sylvatica</i>	E2a	.	.	.	r	+	+	.	+	.	.	.	.	.	r	.	.	.	.	.	+	+	.	.	.	.	.	9	35
	<i>Fagus sylvatica</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
	<i>Galium laevigatum</i>	E1	.	+	.	.	.	.	+	.	.	.	+	+	.	.	.	.	.	.	+	.	.	.	.	.	.	.	6	23
	<i>Prenanthes purpurea</i>	E1	.	.	.	.	.	.	.	+	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	6	23
	<i>Laburnum alpinum</i>	E3a	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
	<i>Laburnum alpinum</i>	E2a	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
	<i>Laburnum alpinum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
	<i>Lilium martagon</i>	E1	.	+	.	.	.	.	.	.	.	.	.	.	.	.	r	.	.	r	.	.	.	.	.	.	.	.	3	12
	<i>Acer pseudoplatanus</i>	E1	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
	<i>Neottia nidus-avis</i>	E1	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
	<i>Dryopteris filix-mas</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1	4
QF	Quercu-Fagetea																														
	<i>Platanthera bifolia</i>	E1	.	+	.	r	.	.	.	+	+	.	r	+	.	+	+	+	+	+	.	.	.	.	+	.	.	+	13	50
	<i>Carex digitata</i>	E1	.	+	.	.	.	.	.	.	.	.	.	+	.	.	+	+	.	+	+	.	.	+	+	.	.	.	8	31

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	Pr.	Fr.		
<i>Pyrus pyraeaster</i>	E3a	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
<i>Pyrus pyraeaster</i>	E2b	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	8
<i>Pyrus pyraeaster</i>	E2a	.	+	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	+	.	5	19
<i>Pyrus pyraeaster</i>	E1	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
<i>Carex montana</i>	E1	.	.	.	.	.	.	.	.	.	.	+	+	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	4	15
<i>Anemone nemorosa</i>	E1	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	2	8
<i>Cephalanthera longifolia</i>	E1	+	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	8
<i>Hedera helix</i>	E3a	+	1	4
<i>Hedera helix</i>	E1	.	r	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	8
<i>Malus sylvestris</i>	E3b	r	1	4
<i>Malus sylvestris</i>	E2a	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	8
<i>Rosa arvensis</i>	E2a	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	2	8
<i>Corylus avellana</i>	E2a	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
<i>Corylus avellana</i>	E1	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
<i>Platanthera chlorantha</i>	E1	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
EP	Erico-Pinetea																														
<i>Molinia caerulea</i> subsp. <i>arundinacea</i>	E1	1	2	1	2	2	2	1	3	3	3	2	2	1	3	3	4	3	3	2	4	3	3	2	3	2	2	26	100		
<i>Pinus nigra</i>	E3b	.	.	.	+	+	.	.	.	.	.	r	.	.	r	.	.	.	.	.	.	.	.	.	.	.	r	.	5	19
<i>Pinus nigra</i>	E3a	.	.	.	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
<i>Pinus nigra</i>	E2b	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
<i>Scleropodium purum</i>	E0	.	.	.	.	+	.	.	1	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	4	15
<i>Amelanchier ovalis</i>	E2	.	.	.	.	.	.	.	.	+	+	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	4	15
<i>Pinus sylvestris</i>	E3b	.	.	+	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	r	3	12
VP	Vaccinio-Piceetea																														
<i>Calamagrostis arundinacea</i>	E1	3	1	1	1	+	+	+	+	1	1	+	1	2	.	+	1	1	1	2	1	2	2	1	1	1	+	25	96		
<i>Hypnum cupressiforme</i>	E0	1	+	.	.	+	+	+	+	1	.	+	2	2	2	1	1	+	1	+	+	+	+	+	+	+	+	+	23	88	
<i>Avenella flexuosa</i> (<i>Deschampsia flexuosa</i>)	E1	1	1	.	1	1	1	.	1	1	+	1	+	+	+	+	.	+	+	+	+	.	1	+	+	+	+	1	22	85	
<i>Luzula luzuloides</i>	E1	.	+	.	.	.	.	.	+	+	+	+	r	+	.	+	+	+	+	+	+	+	+	+	+	+	+	+	19	73
<i>Vaccinium myrtillus</i>	E1	.	.	+	+	2	.	.	4	3	4	2	1	3	2	1	2	.	.	2	.	+	.	.	.	.	.	14	54	
<i>Hieracium murorum</i>	E1	+	+	.	+	.	.	.	.	.	.	.	+	.	+	+	+	+	+	+	.	+	.	+	+	.	+	13	50	
<i>Thuidium tamariscinum</i>	E0	.	+	.	.	.	.	+	.	+	.	+	+	+	1	1	.	.	1	.	.	.	.	.	.	.	.	+	10	38
<i>Polytrichum formosum</i> (<i>Polytrichastrum formosum</i>)	E0	+	+	.	+	+	.	.	+	+	.	.	+	.	.	.	.	.	.	+	.	.	.	.	.	.	.	+	9	35
<i>Atrichum undulatum</i>	E0	+	+	.	+	.	+	.	+	.	+	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	8	31
<i>Pleurozium schreberi</i>	E0	.	.	.	2	.	.	.	+	.	.	+	1	1	+	.	.	.	.	.	.	.	.	.	.	.	.	.	6	23
<i>Solidago virgaurea</i>	E1	+	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	5	19
<i>Leucobryum glaucum</i>	E0	+	+	.	1	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	4	15
<i>Rhytidiadelphus triquetrus</i>	E0	.	.	.	.	.	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	2	8
<i>Aposeris foetida</i>	E1	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
<i>Picea abies</i>	E3a	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
<i>Dicranum scoparium</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	1	4
RP	Rhamno-Prunetea, Sambuco-Salicion capreae																														
<i>Crataegus monogyna</i>	E2	+	+	.	.	.	+	+	.	.	.	+	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	6	23
SSC <i>Sorbus aucuparia</i>	E3b	.	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
SSC <i>Sorbus aucuparia</i>	E2a	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
TG	Trifolio-Geranietea																														
<i>Vincetoxicum hirundinaria</i>	E1	.	+	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	8
<i>Thesium bavarum</i>	E1	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
<i>Anthericum ramosum</i>	E1	+	1	4
<i>Silene nutans</i>	E1	+	1	4
FB	Festuco-Brometea																														
<i>Dianthus hyssopifolius</i> (<i>D. monspessulanus</i>)	E1	+	+	.	.	.	.	+	.	.	.	.	.	.	.	r	.	.	+	.	.	+	.	.	.	.	+	+	8	31
<i>Genista tinctoria</i>	E1	.	+	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	4	15
<i>Peucedanum oreoselinum</i>	E1	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
<i>Inula hirta</i>	E1	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
<i>Hypochoeris maculata</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
AT	Asplenietea trichomanis																														
<i>Polypodium vulgare</i>	E1	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	r	.	+	.	.	.	.	.	.	.	.	+	4	15

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	Pr.	Fr.			
<i>Asplenium adiantum-nigrum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	+	2	8
<i>Sedum maximum</i>	E1	r	1	4
<i>Asplenium trichomanes</i>	E1	r	1	4
O Other species (Druge vrste)																																
<i>Juniperus communis</i>	E2b	.	.	.	+	+	1	1	.	r	.	.	r	+	.	.	.	.	.	.	.	1	1	.	+	.	.	.	10	38	
<i>Juniperus communis</i>	E2a	+	.	3	.	+	+	1	.	.	+	.	+	+	r	r	+	+	+	+	+	+	+	+	+	+	+	+	22	85		
<i>Aster</i> sp.	E1	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
<i>Robinia pseudoacacia</i>	E3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	1	4
<i>Robinia pseudoacacia</i>	E2a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	1	4
ML Other mosses and lichens (Drugi mahovi in lišaji)																																
<i>Cladonia</i> sp.	E0	.	.	.	+	.	.	.	.	.	.	+	+	+	+	+	.	.	.	.	.	+	.	.	.	.	.	.	7	27	
<i>Eurhynchium striatum</i>	E0	1	+	.	.	.	.	.	.	.	.	.	.	1	1	+	.	.	2	.	.	.	.	.	.	.	.	.	6	23	
<i>Bryum capillare</i>	E0	.	.	.	.	.	+	.	.	.	.	+	+	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	5	19	
<i>Mnium</i> sp.	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	+	.	.	.	+	.	4	15	
<i>Isothecium alopecuroides</i>	E0	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	+	3	12
<i>Plagiothecium</i> sp.	E0	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	2	8
<i>Tortella tortuosa</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	2	8
<i>Fissidens taxifolius</i>	E0	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
<i>Ctenidium molluscum</i>	E0	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
<i>Neckera crispa</i>	E0	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
<i>Abietinella abietina</i>	E0	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
<i>Bryum</i> sp.	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	1	4
<i>Rhodobryum roseum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1	4

Legend - Legenda

Fly - Flysch / fliš

EU - Eutric brown soil / Evtrična rjava tla

CO *Carpinion orientalis*EC *Erythronio-Carpinion*CU *Calluno-Ulicetea*MO *Molinietalia caeruleae*SSC *Sambuco-Salicion capreae*

Table 2: *Sesleria autumnalis*-*Fagetum*, *Sesleria autumnalis*-*Quercetum petraeae* - Vipavska brda, Vrhe**Preglednica 2:** *Sesleria autumnalis*-*Fagetum*, *Sesleria autumnalis*-*Quercetum petraeae* - Vipavska brda, Vrhe

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	Pr. (1-10)	Fr. (1-10)	Pr. (Total)	Fr. (Total)
Database number of relevé (Delovna številka popisa)		251373	237716	251103	251370	251372	251371	248247	251386	248244	251387	248254	237720	248195				
Elevation in m (Nadmorska višina v m)		330	580	400	450	440	370	440	380	440	385	320	440	360				
Aspect (Lega)		NE	N	NE	NE	NE	NE	NNW	NW	N	N	N	NE	NE				
Slope in degrees (Nagib v stopinjah)		35	20	25	30	25	25	25	20	20	20	15	10	20				
Parent material (Matična podlaga)		Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly	Fly				
Soil (Tla)		Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu	Eu				
Stoniness in % (Kamnitost v %)		10	10	5	5	10	10	5	10	20	5	0	0	20				
Cover in % (Zastiranje v %):																		
Upper tree layer (Zgornja drevesna plast)	E3b	70	80	80	90	90	80	90	90	80	90	90	70	80				
Lower tree layer (Spodnja drevesna plast)	E3a	20	10	10	5	5	20	10	5	10	5	10	30	0				
Shrub layer (Grmovna plast)	E2	20	10	10	5	5	20	5	10	30	10	20	10	20				
Herb layer (Zeliščna plast)	E1	70	70	70	60	50	60	30	60	30	70	80	100	60				
Moss layer (Mahovna plast)	E0	10	5	5	5	15	20	5	5	10	5	5	1	0				
Maximum diameter of trees (Največji prsni premer dreves)	cm	40	40	35	40	40	35	35	50	35	35	30	30	40				
Maximum height of trees (Največja drevesna višina)	m	18	24	18	20	22	19	22	26	24	22	20	14	26				
Number of species (Število vrst)		59	49	33	27	27	46	34	41	50	45	45	16	27				
Relevé area (Velikost popisne ploskve)	m ²	400	400	400	400	400	400	400	200	400	200	400	400	200				
Locality (Nahajališče)		Otošče - Močilnik	Gradišče pri Štjaku	Otošče - Globoki graben	Otošče - Globoki graben	Otošče - Globoki graben	Otošče - Globoki graben	Pasji rep - Pekel	Pasji rep	Pasji rep - Pekel	Pasji rep	Pasji rep	Lozice - Čeledinca	Pasji rep				
Quadrant (Kvadrant)		0250/1	0249/2	0250/1	0250/1	0250/1	0250/1	0249/2	0249/2	0249/2	0249/2	0249/2	0250/1	0249/2				
Coordinate GK Y (D-48)	m	424342	416859	423673	423649	423691	423841	421200	421905	421034	422055	420760	423298	420549				
Coordinate GK X (D-48)	m	5069312	5072382	5069279	5068961	5068986	5069221	5070527	5070184	5070444	5070116	5071051	5069845	5070680				
Diagnostic species of the syntaxa (Diagnostične vrste sintaksonov)																		
FS <i>Fagus sylvatica</i>	E3b	4	5	5	5	5	5	4	4	4	4	+	.	.	10	100	11	85
FS <i>Fagus sylvatica</i>	E3a	.	+	1	1	+	1	1	+	1	1	1	.	.	9	90	10	77
FS <i>Fagus sylvatica</i>	E2b	1	1	1	+	+	1	1	+	1	+	+	r	.	10	100	12	92
FS <i>Fagus sylvatica</i>	E2a	.	.	+	.	.	+	.	+	+	.	+	.	.	4	40	5	38
FS <i>Fagus sylvatica</i>	E1	.	1	+	.	+	.	.	+	1	+	.	.	.	6	60	6	46
CO <i>Sesleria autumnalis</i>	E1	4	4	3	3	+	+	1	1	3	3	4	5	.	10	100	12	92
QP <i>Lathyrus venetus</i>	E1	.	.	+	.	.	r	+	+	1	+	1	.	.	6	60	7	54
QR <i>Quercus petraea</i>	E3b	2	1	+	1	r	+	1	1	1	2	5	4	.	10	100	12	92
QR <i>Quercus petraea</i>	E3a	.	.	.	.	.	+	.	.	.	.	.	1	.	1	10	2	15
QR <i>Quercus petraea</i>	E1	.	+	+	.	.	.	+	.	.	.	1	1	.	3	30	5	38
FS <i>Prunus avium</i>	E3b	.	.	.	r	.	.	2	.	r	.	.	.	4	3	30	4	31
FS <i>Prunus avium</i>	E3a	.	+	.	.	.	.	.	.	.	.	.	.	.	1	10	1	8
FS <i>Prunus avium</i>	E1	.	.	+	+	+	.	1	.	+	+	+	.	.	6	60	7	54
AF Aremonio-Fagion																		
<i>Lamium orvala</i>	E1	r	.	.	r	+	.	1	3	+	.	.	.	3	6	60	7	54
<i>Hacquetia epipactis</i>	E1	r	.	.	.	.	r	1	1	1	1	1	.	.	6	60	7	54
EC <i>Primula vulgaris</i>	E1	+	+	.	.	.	.	+	+	.	1	+	.	+	5	50	7	54
EC <i>Erythronium dens-canis</i>	E1	.	.	.	.	.	.	1	.	1	+	r	.	.	3	30	4	31
<i>Anemone trifolia</i>	E1	1	.	.	.	.	.	.	.	.	.	.	.	.	1	10	1	8
<i>Anemone x pittonii</i>	E1	+	.	.	.	.	.	.	.	.	.	.	.	.	1	10	1	8
<i>Euphorbia carniolica</i>	E1	+	.	.	.	.	.	.	.	.	.	.	.	.	1	10	1	8
<i>Calamintha grandiflora</i>	E1	.	.	.	r	.	.	.	.	.	.	.	.	.	1	10	1	8
<i>Cradamine enneaphyllos</i>	E1	.	.	.	.	+	.	.	.	.	.	.	.	.	1	10	1	8

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	Pr. (1-10)	Fr. (1-10)	Pr. (Total)	Fr. (Total)	
	<i>Knautia drymeia</i>	E1	.	.	.	.	.	.	.	.	r	.	.	.	1	10	1	8
FS	Fagetalia sylvaticae																		
	<i>Galium laevigatum</i>	E1	2	+	+	.	+	+	.	+	1	1	1	.	8	80	9	69	
	<i>Prenanthes purpurea</i>	E1	.	1	1	2	2	1	1	+	1	1	.	.	9	90	9	69	
	<i>Symphytum tuberosum</i>	E1	+	.	.	.	.	1	1	1	+	1	+	.	6	60	8	62
	<i>Dryopteris filix-mas</i>	E1	.	1	+	+	.	.	+	+	+	.	+	.	1	6	60	8	62
	<i>Euphorbia dulcis</i>	E1	r	.	+	.	.	r	.	+	+	+	+	.	6	60	7	54	
	<i>Salvia glutinosa</i>	E1	1	+	.	.	.	.	.	+	+	+	+	.	5	50	7	54
	<i>Asarum europaeum</i> subsp. <i>caucasicum</i>	E1	.	.	.	.	.	.	+	1	+	1	+	.	4	40	6	46
	<i>Lilium martagon</i>	E1	+	.	.	.	.	+	+	.	+	.	.	+	5	50	6	46
	<i>Carpinus betulus</i>	E3b	.	.	r	.	.	.	.	+	.	.	.	.	2	20	2	15
	<i>Carpinus betulus</i>	E3a	+	.	.	.	.	.	+	+	.	r	+	.	4	40	5	38
	<i>Carpinus betulus</i>	E2b	r	.	.	.	.	.	+	.	.	.	.	.	2	20	2	15
	<i>Carpinus betulus</i>	E1	.	.	.	.	.	.	+	.	.	.	.	+	1	10	2	15
	<i>Laburnum alpinum</i>	E3a	+	.	.	.	r	r	.	.	.	.	.	.	3	30	3	23
	<i>Laburnum alpinum</i>	E2b	+	.	.	+	.	.	.	.	.	.	.	.	2	20	2	15
	<i>Laburnum alpinum</i>	E2a	1	.	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Laburnum alpinum</i>	E1	+	.	+	+	+	+	.	.	.	.	.	.	5	50	5	38
	<i>Lathyrus vernus</i>	E1	+	.	.	.	.	r	.	.	+	+	1	.	4	40	5	38
	<i>Acer pseudoplatanus</i>	E3b	+	.	.	.	.	.	.	.	.	.	.	+	1	10	2	15
	<i>Acer pseudoplatanus</i>	E2a	+	.	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Acer pseudoplatanus</i>	E1	.	+	.	+	+	.	.	.	.	.	.	+	3	30	4	31
	<i>Pulmonaria officinalis</i>	E1	.	+	.	.	.	.	.	+	.	.	+	.	2	20	4	31
	<i>Senecio nemorensis</i>	E1	.	+	.	.	.	.	1	+	.	+	.	.	4	40	4	31
	<i>Campanula trachelium</i>	E1	.	+	.	.	.	.	+	.	.	+	.	.	3	30	3	23
	<i>Mycelis muralis</i>	E1	.	+	.	+	.	.	.	+	.	.	.	.	3	30	3	23
	<i>Polygonatum multiflorum</i>	E1	.	+	.	.	.	+	.	.	+	.	.	.	3	30	3	23	
	<i>Sanicula europaea</i>	E1	.	.	.	.	.	.	.	+	+	+	.	.	3	30	3	23
	<i>Acer platanoides</i>	E1	.	.	.	+	+	.	.	.	.	.	.	.	2	20	2	15
	<i>Neottia nidus-avis</i>	E1	+	.	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Sambucus nigra</i>	E2b	.	+	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Sambucus nigra</i>	E1	.	.	.	.	.	.	.	.	.	.	.	+	0	0	1	8
	<i>Senecio ovatus</i> (S. <i>fuchsii</i>)	E1	.	+	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Fraxinus excelsior</i>	E3b	.	.	.	.	.	r	.	.	.	.	.	.	1	10	1	8
	<i>Aruncus dioicus</i>	E1	.	.	.	.	+	.	.	.	.	.	.	.	1	10	1	8
	<i>Actaea spicata</i>	E1	.	.	.	.	.	.	+	.	.	.	.	+	1	10	2	15
	<i>Cardamine bulbifera</i>	E1	.	.	.	.	.	.	+	.	.	.	.	.	1	10	1	8
	<i>Viola reichenbachiana</i>	E1	.	.	.	.	.	.	.	+	.	.	.	.	1	10	1	8
	<i>Mercurialis perennis</i>	E1	.	.	.	.	.	.	.	.	.	+	.	.	1	10	1	8
	<i>Circaea lutetiana</i>	E1	.	.	.	.	.	.	.	.	.	.	.	1	0	0	1	8
	<i>Ulmus glabra</i>	E1	.	.	.	.	.	.	.	.	.	.	.	r	0	0	1	8
QP	Quercetalia pubescenti-petraeae																		
	<i>Fraxinus ornus</i>	E3a	1	+	.	+	.	+	+	.	+	1	2	+	7	70	10	77	
	<i>Fraxinus ornus</i>	E2b	1	+	.	.	.	1	.	.	.	+	2	2	4	40	6	46	
	<i>Fraxinus ornus</i>	E2a	2	+	+	.	.	1	.	.	.	+	1	1	5	50	7	54	
	<i>Fraxinus ornus</i>	E1	1	+	.	+	+	1	.	+	+	.	1	1	7	70	9	69	
	<i>Tanacetum corymbosum</i>	E1	1	+	+	.	+	+	.	.	1	+	1	1	7	70	9	69	
	<i>Campanula persicifolia</i>	E1	1	+	+	+	+	.	.	.	+	+	r	.	7	70	8	62	
	<i>Sorbus aria</i>	E3b	.	.	.	.	.	+	.	.	.	.	.	.	1	10	1	8
	<i>Sorbus aria</i>	E3a	.	+	.	+	.	+	.	.	+	+	+	.	4	40	6	46	
	<i>Sorbus aria</i>	E2b	+	.	.	.	.	+	+	.	r	+	1	+	5	50	7	54
	<i>Sorbus aria</i>	E2a	+	+	.	.	.	+	.	.	+	+	+	.	5	50	6	46	
	<i>Ostrya carpinifolia</i>	E3b	1	+	.	.	.	.	+	.	+	.	.	.	4	40	5	38
	<i>Ostrya carpinifolia</i>	E3a	1	.	.	.	.	.	.	.	.	+	r	.	2	20	3	23
	<i>Ostrya carpinifolia</i>	E2b	+	.	.	.	.	.	.	.	.	.	.	.	1	10	1	8
CO	<i>Asparagus tenuifolius</i>	E1	.	+	.	.	.	.	.	+	+	.	+	.	3	30	4	31
	<i>Melittis melissophyllum</i>	E1	1	.	.	.	.	.	.	+	.	+	1	.	3	30	4	31
	<i>Sorbus torminalis</i>	E3a	.	.	+	.	.	.	.	.	.	.	1	+	1	10	3	23
	<i>Sorbus torminalis</i>	E2b	.	.	.	.	.	.	.	.	+	.	+	.	1	10	2	15
	<i>Sorbus torminalis</i>	E2a	.	.	+	.	.	+	.	.	+	.	1	.	3	30	4	31	
	<i>Sorbus torminalis</i>	E1	.	.	+	.	.	.	.	.	.	.	.	.	1	10	1	8

	Number of relevé (Zaporedna številka popisa)	1	2	3	4	5	6	7	8	9	10	11	12	13	Pr. (1-10)	Fr. (1-10)	Pr. (Total)	Fr. (Total)	
	<i>Convallaria majalis</i>	E1	1	.	.	.	+	.	+	.	.	.	.	.	3	30	3	23
	<i>Lathyrus niger</i>	E1	1	.	.	.	.	.	.	.	.	.	+	.	1	10	2	15
CO	<i>Aristolochia lutea</i>	E1	.	.	.	.	.	+	+	.	.	.	.	.	2	20	2	15
FB	<i>Dianthus monspessulanus</i>	E1	+	.	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Hypericum montanum</i>	E1	.	+	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Arabis turrata</i>	E1	.	.	.	r	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Buglossoides purpureoaeerulea</i>	E1	.	.	.	.	.	.	r	.	.	.	.	.	1	10	1	8
	<i>Calamintha sylvatica</i>	E1	.	.	.	.	.	.	r	.	.	.	.	.	1	10	1	8
QR	Quercetalia roboris																		
	<i>Hieracium racemosum</i>	E1	1	1	1	+	1	1	.	+	.	1	+	+	8	80	10	77	
	<i>Serratula tinctoria</i>	E1	1	.	.	.	.	.	.	+	1	+	2	.	3	30	5	38
	<i>Hieracium sabaudum</i>	E1	+	.	.	.	+	.	.	1	.	.	.	.	3	30	3	23
AG	<i>Alnus glutinosa</i>	E3b	.	.	.	.	r	.	r	.	.	.	.	.	2	20	2	15
	<i>Castanea sativa</i>	E3a	r	.	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Castanea sativa</i>	E2b	.	+	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Castanea sativa</i>	E1	+	+	.	.	.	.	.	.	.	.	.	.	2	20	2	15
	<i>Hieracium lachenalii</i>	E1	r	.	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Lathyrus linifolius</i>	E1	+	.	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Rubus hirtus</i>	E2a	.	+	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Melampyrum pratense</i> subsp. <i>vulgatum</i>	E1	.	.	.	.	1	.	.	.	.	.	.	.	1	10	1	8
	<i>Pteridium aquilinum</i>	E1	.	.	.	.	.	.	.	+	.	.	.	.	1	10	1	8
QF	Quercu-Fagetea																		
	<i>Anemone nemorosa</i>	E1	+	3	.	1	+	+	1	2	1	2	+	.	1	9	90	11	85
	<i>Carex digitata</i>	E1	.	+	+	.	.	.	+	+	+	+	.	+	6	60	8	62	
	<i>Hedera helix</i>	E3a	.	.	.	.	.	.	.	+	.	r	.	.	1	10	2	15
	<i>Hedera helix</i>	E1	+	1	.	.	.	.	+	+	+	+	.	+	6	60	7	54
	<i>Aegopodium podagraria</i>	E1	.	+	.	.	r	.	1	.	+	.	.	+	4	40	5	38	
	<i>Hepatica nobilis</i>	E1	r	.	.	.	.	.	1	+	1	1	.	.	4	40	5	38
	<i>Acer campestre</i>	E3b	.	.	.	.	.	.	r	.	.	.	.	r	1	10	2	15
	<i>Acer campestre</i>	E3a	r	.	.	.	.	+	+	.	+	.	.	.	4	40	4	31
	<i>Acer campestre</i>	E2a	+	.	.	.	.	.	.	.	+	.	.	.	2	20	2	15
	<i>Acer campestre</i>	E1	.	+	.	.	.	.	.	.	.	+	.	+	1	10	3	23
	<i>Corylus avellana</i>	E3a	2	0	0	1	8
	<i>Corylus avellana</i>	E2b	.	.	.	.	.	1	+	.	+	1	.	.	3	30	4	31
	<i>Corylus avellana</i>	E2a	+	.	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Cephalanthera longifolia</i>	E1	.	.	1	.	.	.	.	+	.	.	+	.	2	20	3	23
	<i>Crataegus laevigata</i>	E2b	.	.	.	.	.	+	.	r	.	.	.	.	2	20	2	15
	<i>Clematis vitalba</i>	E1	.	+	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Moehringia trinervia</i>	E1	.	+	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Pyrus pyraeaster</i>	E2a	.	.	.	.	.	+	.	.	.	.	.	.	1	10	1	8
	<i>Dactylorhiza fuchsii</i>	E1	.	.	.	.	.	+	.	.	.	.	.	.	1	10	1	8
	<i>Rosa arvensis</i>	E2a	.	.	.	.	.	.	.	+	.	.	.	.	1	10	1	8
	<i>Platanthera chlorantha</i>	E1	.	.	.	.	.	.	.	.	.	r	.	.	0	0	1	8
VP	Vaccinio-Piceetea																		
	<i>Calamagrostis arundinacea</i>	E1	1	.	1	1	2	2	.	.	+	+	.	1	7	70	8	62	
	<i>Aposeris foetida</i>	E1	.	.	1	.	.	+	1	1	1	1	+	.	6	60	7	54	
	<i>Hieracium murorum</i>	E1	1	+	1	1	1	1	.	.	1	.	.	.	7	70	7	54	
	<i>Luzula luzuloides</i>	E1	+	1	1	1	2	1	.	.	.	.	+	.	6	60	7	54
	<i>Avenella flexuosa</i> (<i>Deschampsia flexuosa</i>)	E1	1	+	+	+	1	1	.	.	.	.	.	.	6	60	6	46
	<i>Atrichum undulatum</i>	E0	+	+	+	+	.	.	.	.	+	.	.	.	5	50	5	38
	<i>Solidago virgaurea</i>	E1	+	+	+	.	+	.	.	.	.	.	.	.	4	40	4	31
	<i>Hypnum cupressiforme</i>	E0	1	.	+	.	1	.	.	.	.	+	.	.	4	40	4	31
	<i>Veronica urticifolia</i>	E1	.	.	.	+	+	.	.	.	.	.	.	.	3	30	3	23
	<i>Polytrichum formosum</i> (<i>Polytrichastrum formosum</i>)	E0	.	.	+	+	1	.	.	.	.	.	.	.	3	30	3	23
	<i>Gentiana asclepiadea</i>	E1	.	.	.	.	.	+	.	.	+	.	.	.	2	20	2	15
	<i>Abies alba</i>	E3a	.	.	.	.	.	.	.	.	.	.	.	r	0	0	1	8
	<i>Abies alba</i>	E2a	.	+	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Vaccinium myrtillus</i>	E1	.	.	.	.	.	+	.	.	.	.	.	.	1	10	1	8
	<i>Thuidium tamariscinum</i>	E0	.	.	.	.	.	+	.	.	.	.	.	.	1	10	1	8
EP	Erico-Pinetea																		
	<i>Erica carnea</i>	E1	1	.	.	.	.	+	.	.	.	.	.	+	2	20	3	23

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	Pr. (1-10)	Fr. (1-10)	Pr. (Total)	Fr. (Total)	
	<i>Chamaecytisus hirsutus</i>	E1	+	.	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Molinia caerulea</i> subsp. <i>arundinacea</i>	E1	.	.	.	.	.	.	.	.	.	.	+	.	0	0	1	8
RP	Rhamno-Prunetea																		
	<i>Crataegus monogyna</i>	E3a	+	.	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Crataegus monogyna</i>	E2a	.	+	.	.	.	+	.	+	+	.	+	.	4	40	5	38	
	<i>Crataegus monogyna</i>	E2b	.	.	.	.	.	.	+	+	+	+	.	.	3	30	4	31
	<i>Ligustrum vulgare</i>	E2a	.	+	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Rubus fruticosus</i> agg.	E1	.	.	.	.	.	.	.	.	.	.	.	+	0	0	1	8
TG	Trifolio-Geranietea																		
	<i>Campanula rapunculoides</i>	E1	2	.	+	.	.	+	+	+	1	1	1	.	7	70	8	62	
	<i>Vincetoxicum hirundinaria</i>	E1	.	.	.	.	.	.	.	+	+	1	.	.	2	20	3	23
	<i>Iris graminea</i>	E1	.	.	.	.	.	.	.	.	.	+	.	.	0	0	1	8
AT	Asplenietea trichomanis																		
	<i>Polypodium vulgare</i>	E1	1	1	+	+	1	+	.	.	+	+	+	.	8	80	9	69	
	<i>Asplenium trichomanes</i>	E1	+	.	.	.	.	.	.	+	.	+	.	.	2	20	3	23
O	Other species (Druge vrste)																		
MA	<i>Veronica chamaedrys</i>	E1	.	+	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Juglans regia</i>	E3b	1	0	0	1	8
	<i>Juniperus communis</i>	E2a	.	.	.	.	.	.	.	.	.	.	+	.	0	0	1	8
	<i>Juniperus communis</i>	E2b	.	.	.	.	.	.	.	.	.	.	+	.	0	0	1	8
	<i>Robinia pseudoacacia</i>	E3a	r	.	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Robinia pseudoacacia</i>	E3b	.	.	.	.	.	.	.	.	.	.	.	r	0	0	1	8
	<i>Robinia pseudoacacia</i>	E2b	r	.	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Solanum dulcamara</i>	E1	.	+	.	.	.	.	.	.	.	.	.	.	1	10	1	8
GU	<i>Geum urbanum</i>	E1	.	+	.	.	.	.	.	.	.	.	.	.	1	10	1	8
ML	Other mosses (Drugi mahovi)																		
	<i>Isoetes macrospora</i>	E0	1	+	+	.	.	+	+	+	+	+	+	.	8	80	9	69	
	<i>Schistidium apocarpum</i>	E0	+	+	.	.	+	.	+	+	.	.	.	.	6	60	6	46
	<i>Peltigera canina</i>	E0	+	.	+	.	.	.	.	.	.	.	.	.	2	20	2	15
	<i>Eurhynchium striatum</i>	E0	+	.	.	.	.	.	.	.	.	+	.	.	1	10	2	15
	<i>Plagiothecium denticulatum</i>	E0	.	.	.	+	+	.	.	.	.	.	.	.	2	20	2	15
	<i>Neckera crispa</i>	E0	.	.	.	.	.	+	.	.	+	.	.	.	2	20	2	15
	<i>Fissidens taxifolius</i>	E0	.	.	.	.	.	+	.	.	.	.	+	.	1	10	2	15
	<i>Tortella tortuosa</i>	E0	+	.	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Marchantia polymorpha</i>	E0	.	+	.	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Dicranum</i> sp.	E0	.	.	+	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Plagiochila porelloides</i>	E0	.	.	+	.	.	.	.	.	.	.	.	.	1	10	1	8
	<i>Anomodon attenuatus</i>	E0	.	.	.	.	+	.	.	.	.	.	.	.	1	10	1	8
	<i>Porella platyphylla</i>	E0	.	.	.	.	.	+	.	.	.	.	.	.	1	10	1	8
	<i>Cladonia</i> sp.	E0	.	.	.	.	.	+	.	.	.	.	.	.	1	10	1	8
	<i>Ctenidium molluscum</i>	E0	.	.	.	.	.	.	.	+	.	.	.	.	1	10	1	8

Legend - Legenda

Fly - Flysch / fliš

EU - Eutric brown soil / Evtrična rjava tla

CO *Carpinion orientalis*EC *Erythronio-Carpinion*AG *Alnetea glutinosae*FB *Festuco-Brometea*MA *Molinio-Arrhenetheretea*GU *Galio-Urticetea*

Table 3: Synoptic table of the forest communities with dominant *Quercus petraea* in southwestern Slovenia and in northern Bosnia

	Successive number (Zaporedna številka)	1	2	3	4	5	6
	Number of relevés (Število popisov)	26	19	8	15	23	5
	Sign for syntaxa (Oznaka sintaksonov)	Q	MQ	SQaf	SQ	EQ	EQ1
Diagnostic species of the association <i>Chamaecytisus-Quercetum</i>							
EP	<i>Erica carnea</i>	100	5	38	.	100	100
QP	<i>Sorbus aria</i>	92	11	13	13	.	.
QP	<i>Sesleria autumnalis</i>	85	5	93	93	.	.
EP	<i>Chamaecytisus hirsutus</i>	73	.	50	33	30	40
QP	<i>Loranthus europaeus</i>	62	.	.	.	.	.
QR	<i>Lathyrus linifolius</i>	69	5	.	.	.	.
EC	<i>Erythronium dens-canis</i>	50	.	.	.	.	100
Diagnostic species of the association <i>Melampyro-Quercetum</i>							
QR	<i>Melampyrum pratense</i> subsp. <i>vulgatum</i>	15	95	38	40	.	40
QR	<i>Chamaecytisus supinus</i>	19	95	25	13	.	.
VP	<i>Luzula luzuloides</i>	73	89	13	.	.	.
QR	<i>Hieracium sabaudum</i>	96	89	25	.	.	.
VP	<i>Avenella flexuosa</i> (<i>Deschampsia flexuosa</i>)	85	89	100	.	.	.
QR	<i>Lembotropis nigricans</i>	.	47	13	.	.	.
FB	<i>Orobancha ramosa</i> subsp. <i>nana</i>	.	16	.	.	.	.
Diagnostic species of the association <i>Sesleria autumnalis-Quercetum petraeae</i>							
CO	<i>Knautia drymeia</i> subsp. <i>tergestina</i>	.	.	75	53	.	.
CO	<i>Helleborus odoratus</i> subsp. <i>istriacus</i>	.	.	38	27	.	.
TG	<i>Pulmonaria australis</i>	.	.	25	20	.	.
QR	<i>Serratula tinctoria</i>	81	5	75	93	10	60
QR	<i>Hieracium racemosum</i>	69	100	100	87	.	.
FS	<i>Salvia glutinosa</i>	.	.	75	33	.	.
QF	<i>Carex digitata</i>	31	.	25	27	.	60
QF	<i>Carex montana</i>	15	16	50	13	.	.
QF	<i>Corylus avellana</i>	4	37	75	27	.	.
FS	<i>Carpinus betulus</i>	.	53	50	47	.	.
QP	<i>Campanula persicifolia</i>	8	11	38	13	30	60
FS	<i>Lathyrus vernus</i>	.	.	25	13	.	.
TG	<i>Digitalis grandiflora</i>	.	16	13	7	.	.
Diagnostic species of the association <i>Erico-Quercetum petraeae</i>							
QR	<i>Potentilla alba</i>	.	.	38	7	70	40
AF	<i>Epimedium alpinum</i>	.	.	.	.	70	80
TG	<i>Trifolium alpestre</i>	.	.	50	.	50	.
QR	<i>Calluna vulgaris</i>	31	95	38	13	50	20
QR	<i>Potentilla erecta</i>	42	68	50	53	50	20
FB	<i>Genista tinctoria</i> (incl. <i>G. ovata</i>)	15	32	50	47	50	40
FS	<i>Melica nutans</i>	.	5	.	.	50	80
FS	<i>Euphorbia amygdaloides</i>	.	.	.	13	30	.
QR	<i>Veronica officinalis</i>	.	21	13	.	30	.
QR	<i>Danthonia decumbens</i>	.	11	.	.	30	.
FS	<i>Asarum europaeum</i>	.	.	.	.	30	.
AF	<i>Primula vulgaris</i>	.	.	63	53	30	.
QR	<i>Agrostis tenuis</i>	.	21	38	.	30	.
QP	<i>Dianthus giganteus</i> subsp. <i>croaticus</i>	.	.	.	.	30	.
FB	<i>Danthonia alpina</i>	.	.	.	.	30	.
VP	<i>Luzula pilosa</i>	.	.	.	.	10	.
TG	<i>Centaurium erythraea</i>	.	.	.	.	10	.
QP	<i>Quercetalia pubescenti-petraeae</i>						
	<i>Fraxinus ornus</i>	100	47	75	100	30	60
	<i>Convallaria majalis</i>	92	53	38	20	.	.
	<i>Sorbus torminalis</i>	69	5	25	93	30	40
	<i>Tanacetum corymbosum</i>	58	26	75	40	50	40
	<i>Lathyrus niger</i>	23	63	63	100	.	.
	<i>Ostrya carpinifolia</i>	15	.	25	27	10	.
	<i>Malus sylvestris</i>	8	5	.	27	.	.

Preglednica 3: Sintezna tabela gradnovih združb v jugozahodni Sloveniji in severni Bosni

	Successive number (Zaporedna številka)	1	2	3	4	5	6
	<i>Sorbus austriaca</i> s. lat.	4	.	.	.	.	.
	<i>Sorbus graeca</i>	4	.	.	.	.	.
	<i>Sorbus latifolia</i> s. lat.	4	.	.	.	.	.
	<i>Quercus cerris</i>	.	63	50	33	.	.
	<i>Carex flacca</i>	.	5	13	60	.	.
	<i>Buglossoides porpurocaerulea</i>	.	5	13	13	.	.
	<i>Melittis melissophyllum</i>	.	.	63	53	.	40
	<i>Hypericum montanum</i>	.	.	50	7	.	.
	<i>Cornus mas</i>	.	.	38	20	.	.
	<i>Sorbus domestica</i>	.	.	13	40	.	.
	<i>Ruscus aculeatus</i>	.	.	13	33	.	.
	<i>Quercus pubescens</i>	.	.	13	20	.	.
	<i>Hierochloë australis</i>	.	.	13	.	.	.
	<i>Tamus communis</i>	.	.	.	47	.	.
CO	<i>Lonicera etrusca</i>	.	.	.	40	.	.
CO	<i>Asparagus tenuifolius</i>	.	.	.	27	.	.
	<i>Carpinus orientalis</i>	.	.	.	20	.	.
CO	<i>Cotinus coggygria</i>	.	.	.	20	10	.
	<i>Quercus x streimii</i>	.	.	.	13	.	.
	<i>Orchis purpurea</i>	.	.	.	13	.	.
	<i>Rosa sempervirens</i>	.	.	.	13	.	.
CO	<i>Coronilla emeroides</i>	.	.	.	7	.	.
	<i>Cephalanthera rubra</i>	.	.	.	.	30	.
	<i>Acer tataricum</i>	.	.	.	.	30	20
	<i>Prunus mahaleb</i>	.	.	.	.	10	.
CO	<i>Mercurialis ovata</i>	.	.	.	.	10	.
	<i>Clematis recta</i>	.	.	.	.	.	40
	<i>Pulmonaria mollissima</i>	.	.	.	.	.	60
QR	<i>Quecetalia roboris, Calluno-Ulicetea</i>						
	<i>Quercus petraea</i>	100	100	88	100	100	100
	<i>Genista pilosa</i>	65	42	.	.	50	60
	<i>Castanea sativa</i>	46	68	50	60	.	.
	<i>Pteridium aquilinum</i>	42	58	13	20	30	100
	<i>Hieracium lachenalii</i>	12	.	.	.	.	.
	<i>Genista germanica</i>	4	74	25	20	.	.
	<i>Phyteuma zahlbruckneri</i>	4	37	.	.	.	.
	<i>Betonica officinalis</i> s. lat.	4	26	75	80	50	80
	<i>Betula pendula</i>	4	5	.	.	.	.
	<i>Frangula alnus</i>	.	37	.	.	10	40
	<i>Chamaespartium sagittale</i>	.	32	.	.	.	.
	<i>Populus tremula</i>	.	16	.	13	.	.
CU	<i>Nardus stricta</i>	.	16	.	.	.	.
	<i>Carex fritschii</i>	.	.	38	.	.	.
CU	<i>Festuca filiformis</i>	.	.	25	.	.	40
	<i>Rubus hirtus</i>	.	.	.	.	50	80
AF	<i>Aremonio-Fagion, Erythronio-Carpinion</i>						
EC	<i>Lonicera caprifolium</i>	.	.	13	33	.	.
	<i>Cyclamen purpurascens</i>	.	.	.	13	.	.
	<i>Daphne blagayana</i>	.	.	.	.	30	20
	<i>Aremonia agrimonoides</i>	.	.	.	.	30	.
FS	<i>Fagetalia sylvaticae</i>						
	<i>Fagus sylvatica</i>	35	53	.	.	.	.
	<i>Galium laevigatum</i> (incl. <i>G. sylvaticum</i> , <i>G. schultesii</i>)	23	11	38	40	.	40
	<i>Prenanthes purpurea</i>	23	32	13	.	.	.
	<i>Lilium martagon</i>	12	.	13	13	.	.
	<i>Acer pseudoplatanus</i>	4	5	.	13	.	.
	<i>Laburnum alpinum</i>	4	5	.	.	.	.
	<i>Neottia nidus-avis</i>	4	.	13	.	.	.
	<i>Dryopteris filix-mas</i>	4	.	13	.	.	.

Successive number (Zaporedna številka)	1	2	3	4	5	6
<i>Viola reichenbachiana</i>	.	37	50	60	.	60
<i>Polygonatum multiflorum</i>	.	16	.	27	.	.
<i>Prunus avium</i>	.	5	.	47	10	.
<i>Senecio fuchsii</i> (incl. <i>S. nemorensis</i>)	.	5	13	.	.	.
<i>Euphorbia dulcis</i>	.	.	38	60	.	.
<i>Symphytum tuberosum</i>	.	.	38	53	.	100
<i>Campanula trachelium</i>	.	.	38	20	.	.
<i>Heracleum sphondylium</i>	.	.	13	13	.	.
<i>Aruncus dioicus</i>	.	.	13	.	.	.
<i>Brachypodium sylvaticum</i>	.	.	.	20	.	.
<i>Epipactis helleborine</i>	.	.	.	13	.	.
QF Quercio-Fagetea						
<i>Platanthera bifolia</i>	50	16	.	13	.	.
<i>Pyrus pyraeaster</i>	19	5	13	27	.	60
<i>Anemone nemorosa</i>	8	42	38	33	.	80
<i>Cephalanthera longifolia</i>	8	.	.	13	.	.
<i>Hedera helix</i>	8	5	88	40	.	.
<i>Rosa arvensis</i>	8	21	.	33	.	.
<i>Platanthera chlorantha</i>	4	.	.	.	.	.
<i>Festuca heterophylla</i>	.	63	.	67	.	.
<i>Cruciata glabra</i>	.	16	50	.	50	100
<i>Clematis vitalba</i>	.	5	13	13	.	.
<i>Acer campestre</i>	.	.	25	20	.	.
<i>Crataegus laevigata</i>	.	.	13	47	.	.
<i>Ulmus minor</i>	.	.	.	20	.	.
<i>Listera ovata</i>	.	.	.	20	.	.
<i>Dactylorhiza fuchsii</i>	.	.	.	13	.	.
<i>Spiraea chamaedryfolia</i> (<i>S. ulmifolia</i>)	.	.	.	.	30	.
<i>Viola riviniana</i>	.	.	.	.	30	.
EP Erico-Pinetea s. lat.						
<i>Molinia caerulea</i> subsp. <i>arundinacea</i>	100	26	38	33	.	.
<i>Scleropodium purum</i>	15	5	.	.	30	.
<i>Amelanchier ovalis</i>	12	.	.	.	.	.
<i>Pinus sylvestris</i>	12	5	.	.	.	.
<i>Pinus nigra</i>	4	.	38	.	.	40
<i>Peucedanum austriacum</i>	.	16	.	.	.	.
<i>Polygala chamaebuxus</i>	.	5	.	.	.	.
<i>Calamagrostis varia</i>	.	.	.	13	10	.
<i>Scabiosa cinerea</i> (<i>S. leucophylla</i>)	.	.	.	.	50	20
<i>Potentilla malyana</i>	.	.	.	.	50	.
<i>Festuca amethystina</i>	.	.	.	.	50	.
<i>Cytisus austriacus</i> subsp. <i>heuffelii</i>	.	.	.	.	30	.
<i>Cerastium moesiacum</i>	.	.	.	.	30	.
<i>Genista januensis</i>	.	.	.	.	30	.
<i>Cardamine plumieri</i>	.	.	.	.	30	.
<i>Viola beckiana</i>	.	.	.	.	10	20
<i>Euphorbia montenegrina</i>	.	.	.	.	.	60
<i>Alyssum murale</i>	.	.	.	.	.	20
<i>Rhamnus saxatilis</i>	.	.	.	.	.	20
<i>Sesleria latifolia</i>	.	.	.	.	.	20
VP Vaccinio-Piceetea						
<i>Calamagrostis arundinacea</i>	96	58	50	27	.	.
<i>Hypnum cupressiforme</i>	88	95	.	20	.	.
<i>Vaccinium myrtillus</i>	54	42	.	.	50	20
<i>Hieracium murorum</i>	50	79	.	27	.	.
<i>Thuidium tamariscinum</i>	38	21	.	20	.	.
<i>Polytrichum formosum</i> (<i>Polytrichastrum formosum</i>)	35	84	50	.	.	.
<i>Atrichum undulatum</i>	31	47	.	.	.	.
<i>Pleurozium schreberi</i>	23	47	.	.	.	.
<i>Solidago virgaurea</i>	19	74	50	47	.	.
<i>Leucobryum glaucum</i>	15	79	38	.	.	.
<i>Rhytidadelphus triquetrus</i>	8	.	.	.	.	.
<i>Aposeris foetida</i>	4	5	.	.	.	.

Successive number (Zaporedna številka)	1	2	3	4	5	6
<i>Picea abies</i>	4	37	.	.	.	.
<i>Dicranum scoparium</i>	4	11	25	.	.	.
<i>Maianthemum bifolium</i>	.	11	.	.	.	.
<i>Gentiana asclepiadea</i>	.	11	13	.	.	.
<i>Veronica urticifolia</i>	.	5	.	.	.	.
<i>Luzula multiflora</i> agg.	.	.	38	.	.	.
<i>Laserpitium krapfii</i> (<i>L. marginatum</i>)	.	.	.	.	50	80
<i>Rosa pendulina</i>	.	.	.	.	30	.
<i>Melampyrum sylvaticum</i>	.	.	.	.	30	.
SCC Sambuco-Salicion capreae						
<i>Sorbus aucuparia</i>	4	11	.	.	.	.
<i>Fragaria vesca</i>	.	42	25	67	.	40
RP Rhamno-Prunetea						
<i>Crataegus monogyna</i>	15	16	75	80	.	.
<i>Viburnum opulus</i>	.	11	.	.	.	.
<i>Rubus bifrons</i>	.	5	.	27	.	.
<i>Cornus sanguinea</i>	.	.	38	60	.	.
<i>Prunus spinosa</i>	.	.	38	40	.	.
<i>Euonymus europaea</i>	.	.	25	13	.	.
<i>Viburnum lantana</i>	.	.	13	.	.	.
<i>Rubus tomentosus</i>	.	.	.	13	.	.
<i>Rhamnus catharticus</i>	.	.	.	7	10	.
<i>Rosa spinosissima</i>	.	.	.	.	10	.
TG Trifolio-Geranietea						
<i>Vincetoxicum hirundinaria</i>	8	.	38	73	.	.
<i>Anthericum ramosum</i>	4	11	.	53	.	.
<i>Silene nutans</i>	4	.	50	.	.	.
<i>Thesium bavarum</i>	4	.	.	.	.	.
<i>Silene italica</i>	.	42	.	.	.	.
<i>Hypericum perforatum</i>	.	16	.	.	.	.
<i>Calamintha brauneana</i>	.	11	.	.	.	.
<i>Clinopodium vulgare</i>	.	5	38	.	.	.
<i>Ligustrum vulgare</i>	.	5	13	73	.	.
<i>Melampyrum nemorosum</i>	.	5	.	13	.	.
<i>Trifolium medium</i>	.	5	.	.	.	.
<i>Trifolium rubens</i>	.	.	13	47	.	.
<i>Viola hirta</i>	.	.	25	20	.	.
<i>Euphorbia angulata</i>	.	.	13	.	.	.
<i>Lilium bulbiferum</i>	.	.	13	.	.	.
<i>Limodorum abortivum</i>	.	.	13	.	.	.
<i>Peucedanum cervaria</i>	.	.	.	20	.	.
<i>Vicia sylvatica</i>	.	.	.	13	.	.
<i>Libanotis sibirica</i> subsp. <i>montana</i>	.	.	.	13	.	.
<i>Thalictrum minus</i>	.	.	.	7	.	.
FB Festuco-Brometea						
<i>Dianthus hyssopifolius</i> (<i>D. monspessulanus</i>)	31	26	38	.	.	.
<i>Hypochoeris maculata</i>	4	.	38	20	.	.
<i>Inula hirta</i>	4	.	.	.	.	.
<i>Peucedanum oreoselinum</i>	4	.	25	20	30	80
<i>Thymus serpyllium</i> agg. (incl. <i>Thymus</i> sp.)	.	26	.	.	70	80
<i>Prunella grandiflora</i>	.	11	.	.	.	.
<i>Trifolium montanum</i>	.	11	.	.	.	.
<i>Dorycnium gremanicum</i>	.	5	.	.	50	.
<i>Genista sericea</i>	.	5	.	.	.	.
<i>Pimpinella saxifraga</i>	.	5	13	.	.	.
<i>Cirsium acaule</i>	.	5	.	.	.	.
<i>Dianthus carthusianorum</i>	.	5	.	.	.	.
<i>Globularia elongata</i>	.	5	.	.	.	.
<i>Koeleria</i> sp. (<i>lobata</i> , <i>macrantha</i>)	.	5	.	.	30	.
<i>Brachypodium pinnatum</i> agg.	.	.	63	40	30	.
<i>Carex humilis</i>	.	.	13	40	.	.
<i>Filipendula vulgaris</i>	.	.	50	27	.	.
<i>Teucrium chamaedrys</i>	.	.	13	7	.	.

Successive number (Zaporedna številka)	1	2	3	4	5	6
<i>Allium carinatum</i> subsp. <i>pulchellum</i>	.	.	13	.	50	.
<i>Bromus erectus</i> agg.	.	.	13	.	10	20
<i>Cirsium pannonicum</i>	.	.	13	.	.	.
<i>Asphodelus albus</i>	.	.	.	13	.	.
<i>Euphorbia cyparissias</i>	.	.	.	13	.	.
<i>Centaurea triumfetti</i>	30	20
<i>Teucrium montanum</i>	30	.
<i>Galium verum</i>	10	.
<i>Gallium lucidum</i>	80
MA Molinio-Arrhenetheretea, Molinietales caeruleae						
MO <i>Laserpitium prutenicum</i>	8	.	.	.	.	.
<i>Veronica chamaedrys</i>	.	37	50	33	30	.
<i>Anthoxanthum odoratum</i>	.	21	.	.	.	.
<i>Achillea millefolium</i>	.	16	.	.	.	.
<i>Leontodon hispidus</i>	.	11	.	.	.	.
<i>Ajuga reptans</i>	.	5	.	27	.	.
<i>Centaurea jacea</i>	.	5	.	.	.	.
<i>Vicia sepium</i>	.	5	.	.	.	.
<i>Leucanthemum vulgare</i>	.	.	.	53	.	.
<i>Dactylis glomerata</i>	.	.	25	33	.	.
<i>Vicia cracca</i>	.	.	13	13	30	80
MO <i>Succisa pratensis</i>	.	.	25	.	.	.
<i>Galium mollugo</i>	.	.	.	20	.	.
MO <i>Inula salicina</i>	.	.	.	7	.	.
<i>Poa pratensis</i>	70	.
<i>Centaurea stenolepis</i>	30	.
<i>Lathyrus pratensis</i>	30	80
<i>Carex caryophylla</i>	30	.
<i>Centaurea nigrescens</i> (inc. subsp. <i>smolinensis</i>)	10	20

Successive number (Zaporedna številka)	1	2	3	4	5	6
<i>Lotus corniculatus</i>	.	.	.	.	.	20
AT Asplenieta trichomanis						
<i>Polypodium vulgare</i>	15	5	25	20	.	.
<i>Asplenium adiantum-nigrum</i>	8	.	.	.	10	.
<i>Sedum maximum</i>	4	.	13	.	.	.
<i>Asplenium trichomanes</i>	4	.	.	.	.	.
O Other species (Druge vrste)						
<i>Juniperus communis</i>	85	89	75	60	.	.
<i>Robinia pseudoacacia</i>	4	.	25	27	.	.
<i>Thlaspi kovatsii</i> (<i>T. avalanum</i>)	.	.	.	.	10	.
<i>Carduus carduelis</i>	.	.	.	.	.	60
ML Other mosses and lichens (Drugi mahovi in lišaji)						
<i>Cladonia</i> sp.	27	16	.	13	.	.
<i>Eurhynchium striatum</i>	23	.	.	33	.	.
<i>Bryum capillare</i>	19	.	.	.	.	.
<i>Mnium</i> sp.	15	.	.	.	.	.
<i>Isoetecium alopecuroides</i>	12	5	.	.	.	.
<i>Plagiothecium</i> sp.	8	.	.	.	.	.
<i>Tortella tortuosa</i>	8	.	.	.	.	.
<i>Rhodobryum roseum</i>	4	.	.	.	.	.
<i>Bryum</i> sp.	4	.	.	.	.	.
<i>Ctenidium molluscum</i>	4	.	.	13	.	.
<i>Fissidens taxifolius</i>	4	.	.	13	.	.
<i>Neckera crispa</i>	4	.	.	.	.	.
<i>Thuidium abietinum</i>	4	.	.	.	.	.
<i>Thuidium delicatulum</i>	.	11	.	.	.	.
<i>Cladonia rangiferina</i>	.	11	.	.	.	.
<i>Homlotheicum lutescens</i>	.	5	.	.	.	.

1 *Chamaecytisus hirsuti-Quercetum petraeae* ass. nov., this article

2 *Melampyro vulgati-Quercetum petraeae* Puncer & Zupančič 1979 var. geogr. *Fraxinus ornus* (Puncer & Zupančič) Zupančič 1994 (Puncer in Zupančič, 1979)

3 *Seslerio autumnalis-Quercetum petraeae* Poldini (1964) 1982 *avenelletesum flexuosae* Poldini 1982 (Poldini, 1982)

4 *Seslerio autumnalis-Quercetum petraeae* Poldini (1964) 1982 (Zupančič, 1999)

5 *Erico-Quercetum petraeae* Krause et Ludwig ex Horvat 1959 (Ritter-Studnička, 1970)

6 *Erico-Quercetum petraeae* Krause et Ludwig ex Horvat 1959 (Krause and Ludwig, 1957)

CO *Carpinion orientalis*, EC *Erythronio-Carpinion*, CU *Calluno-Ulicetea*, MO *Molinietales caeruleae*

Table 4: Groups of diagnostic species in the stands of the associations *Seslerio autumnalis-Fagetum*, *Chamaecytisus-Quercetum petraeae* and *Melampyro vulgati-Quercetum petraeae* (relative frequencies)

Successive number (Zaporedna številka)	1	2	3
Sign for syntaxa (Oznaka sintaksonov)	SF	CQ	MQ
Number of relevés (Število popisov)	10	26	19
Quercetalia pubescenti-petraeae	18	21	8,6
Quercetalia roboris, Calluno-Ulicetea	8	27	36
Fagetalia sylvaticae, Aremonio-Fagion	34	3,7	6,6
Quercu-Fagetea	12	7	6,5
Erico-Pinetea	0,7	11	1,8
Vaccinio-Piceetea	14	19	23

Preglednica 4: Skupine diagnostičnih vrst v sestojih asociacij *Seslerio autumnalis-Fagetum*, *Chamaecytisus-Quercetum petraeae* in *Melampyro vulgati-Quercetum petraeae* (relativne frekvence)

Successive number (Zaporedna številka)	1	2	3
Rhamno-Prunetea, Sambuco-Salicion capreae	1,5	0,7	2,5
Trifolio-Geranieta	2,2	0,7	3,4
Festuco-Brometea	0	2	4,5
Asplenieta trichomanis	2,4	1,1	0,1
Molinio-Arrhenetheretea	0	0	2,9
Other species (Druge vrste)	1	3	2,6
Other mosses (Drugi mahovi)	7,3	4,6	1,4
Skupaj (Total)	100	100	100