PHYTOSOCIOLOGICAL ANALYSIS OF PIONEER WOODS ON ABANDONED MEADOWS IN THE BREGINJSKI KOT (WESTERN SLOVENIA)

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Abstract
Applying the standard Central-European phytosociological method we studied the floristic composition of pioneer stands of hazel (*Corylus avellana*) and European ash (*Fraxinus excelsior*) on abandoned meadows and pastures in the Breginjski kot region in the westernmost part of Slovenia (southwestern foothills of the Julian Alps). It was determined that most of the researched stands had developed on potential natural sites of the submontane beech forests from the alliance *Aremonio-Fagion* (Ht. 1938) Borhidi in Török, Podani & Borhidi 1989. They can be treated as a progressive successional stage *Corylus avellana-Fraxinus excelsior* or as a secondary forest community which we classified into the, for now only provisionally described, new association *Ornithogalo pyrenaici-Fraxinetum excelsioris* nom. prov.

Izvleček
Po standardni srednjeevropski fitocenološki metodi smo preučili floristično sestavo pionirskih sestojev leske in velikega jesena na opuščenih senožetih in pašnikih v Breginjskem kotu v skrajno zahodnem delu Slovenije (jugozahodno prigorje Julijskih Alp). Ugotovili smo, da so se ti sestoji večinoma razvili na potencialno naravnih rastiščih submontanskih bukovih gozdov iz zveze *Aremonio-Fagion* (Ht. 1938) Borhidi in Török, Podani & Borhidi 1989. Obravnavamo jih lahko kot progresivni sukcesijski stadij *Corylus avellana-Fraxinus excelsior* ali kot drugotno gozdno združbo, ki jo uvrščamo v za zdaj le provizorno opisano novo asociacijo *Ornithogalo pyrenaici-Fraxinetum excelsioris* nom. prov.

Key words: natural reforestation, pioneer forests of European ash, phytosociology, *Aremonio-Fagion*, western Slovenia.
Ključne besede: zaraščanje senožeti, pionirski gozdovi velikega jesena, fitocenologija, *Aremonio-Fagion*, zahodna Slovenija.

1. INTRODUCTION

Rapid decrease of agricultural areas, their spontaneous reforestation and a consecutive rise in their woodiness has been characteristic of the mountainous parts of western Slovenia and neighbouring Friuli-Venezia Giulia (in northeastern Italy) for the last fifty years. Foresters have been paying a lot of attention to these phenomena which were presented in several articles (i.e. Mlekuž 1991, Kenda & al. 1999), and even more often in university theses and unpublished studies. Spontaneous reforestation of abandoned farmland and forest succession in the foothills of the Italian part of the Julian Alps (Taipana) were thoroughly studied by Salbitano (1988), whose findings were later referred to also by Del Favero & al. (1998). Rarer are phytosociological analyses of the vegetation on abandoned meadows and pastures in this area (e. g. Poldini 1989, Poldini & Vidali 1996, Lasen & Urbinati 1995, Guidi & al. 1995). One of such analyses was conducted in the Breginjski kot, where the process of spontaneous reforestation, similarly as in some neighbouring areas on both sides of the Sloveni-

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an/Italian border (the Torre – Ter and Natisone – Nadiža Vallies, Kanalski Kolovrat with the Idrija Valley, the northern Goriška Brda) has been very fast due to favourable climatic and soil conditions.

2. METHODS

Pioneer stands were researched applying the standard Central-European phytosociological method (Braun-Blanquet 1964). Most of the relevés were made in the spring of 2001, and some as early as in 1997 and 1998, when we studied the sites of the species *Pseudostellaria europaea*. Only secondary stands on abandoned farming areas were included in the research. The predominant meadows were the so called 'strewings', which were multi-purpose. Apart from livestock fodder the local farmers used to obtain strewing and wood for stoking there. On such multi-purpose meadows farmers promoted mostly black alder (*Alnus glutinosa*). According to some sources, it was even planted in some places (Mlekuž 1991). Today, pioneer forests of European ash (*Fraxinus excelsior*), black alder and sycamore maple (*Acer pseudoplatanus*) grow there. Pastures prevailed on steeper slopes. After pasture had been abandoned there they were overgrown mostly by hazel (*Corylus avellana*). Such a large proportion of hazel is possibly the consequence of somewhat shallower soils and different usage in the past (pasture).

The relevés were stored in the TURBOVEG database (Hennekens & Schaminée 2001). Combined cover-abundance (alpha-numerical) values were transformed with numerical values (1–9) according to van der Maarel (1979). The table was then arranged applying the hierarchical classification (MISSQ – minimization of the increase of error sum of squares). We employed the SYN-TAX 2000 (Podani 2001) program package. We used the dissimilarity coefficient "1 - similarity ratio" (see Podani 1994). The listed species were classified into phytosociological groups (according to their affinity with certain communities from the syntaxonomical system). These groups were formed on our own criteria, but with consideration of other authors. We determined only the most frequent mosses, which were, regardless of their eventual diagnostic value, treated separately. Hierarchical classification (MISSQ – minimization of the increase of error sum of squares) was used also when comparing the floristic composition of researched pioneer stands with the floristic composition of communities on similar sites in the neighbouring areas in Slovenia, Italy and Austria. We refer to Trpin & Vreš (1995) for the names of vascular plants, and to Frahm & Frey (1992) for the names of mosses.

3. ENVIRONMENTAL CHARACTERISTICS OF THE STUDY AREA

The Breginjski kot is the westernmost part of Slovenia (Figure 1). According to M. Wraber (1969) it is classified into the Alpine phytogeographical region and according to Zupančič & al. (1989) into the sub-Mediterranean-pre-Alpine district of the pre-Alpine subsector of the Southeastern Alpine sector of the Illyrian floral province. The study area has a humid climate. The mean annual precipitation in the period between 1931–1969 was 2725 mm (Pučnik 1980: 308) and slightly smaller in the period between 1961–1990, i.e. 2593 mm (B. Zupančič 1995). No data is available on the temperature regime in the Breginjski kot. However, temperatures can be inferred from the data collected in the two nearby weather stations in Montemaggiore (Matajur) and Vedronza (Njivice), both in Italy. The average annual temperature at Montemaggiore (954 m) was 9,2 °C and 10,1 °C at Vedronza (320 m) (M. Wraber 1965). These temperatures lead us to the conclusion that the Mediterranean influence is stronger than the Alpine (Lovrenčak & Plut 1978). Geological composition of the Breginjski kot is variegated. In the upper montane and sub-Alpine belt the Triassic and Jurassic limestone and dolomite prevail. Lower regions in the submontane and lower montane belt (where the settlements are), consist above all of Cretaceous flysch and glacier moraine. Alongside the Nadiža river there are alluvial gravel terraces (see also Buser 1986, 1987).

The researched pioneer stands were located on gentle slopes in the submontane and the lower montane belt (400–800 m.a.s.l.), mostly on flysch and marl bedrock. Some of the relevés were made on moraine mixed with lake chalk, and one on a steeper slope where layers of flysch alternate with limestone breccia. Deep brown soil (a mosaic of eutric and dystric brown soils – Eutric and Dystric Cambisols) prevails in the researched area. Somewhat more shallow is the soil on glacier moraines. This soil contains lake chalk (up to 30 % of clay minerals) and is therefore moist enough to allow growth of similar stands to those that grow on eutric or dystric flysch soils.

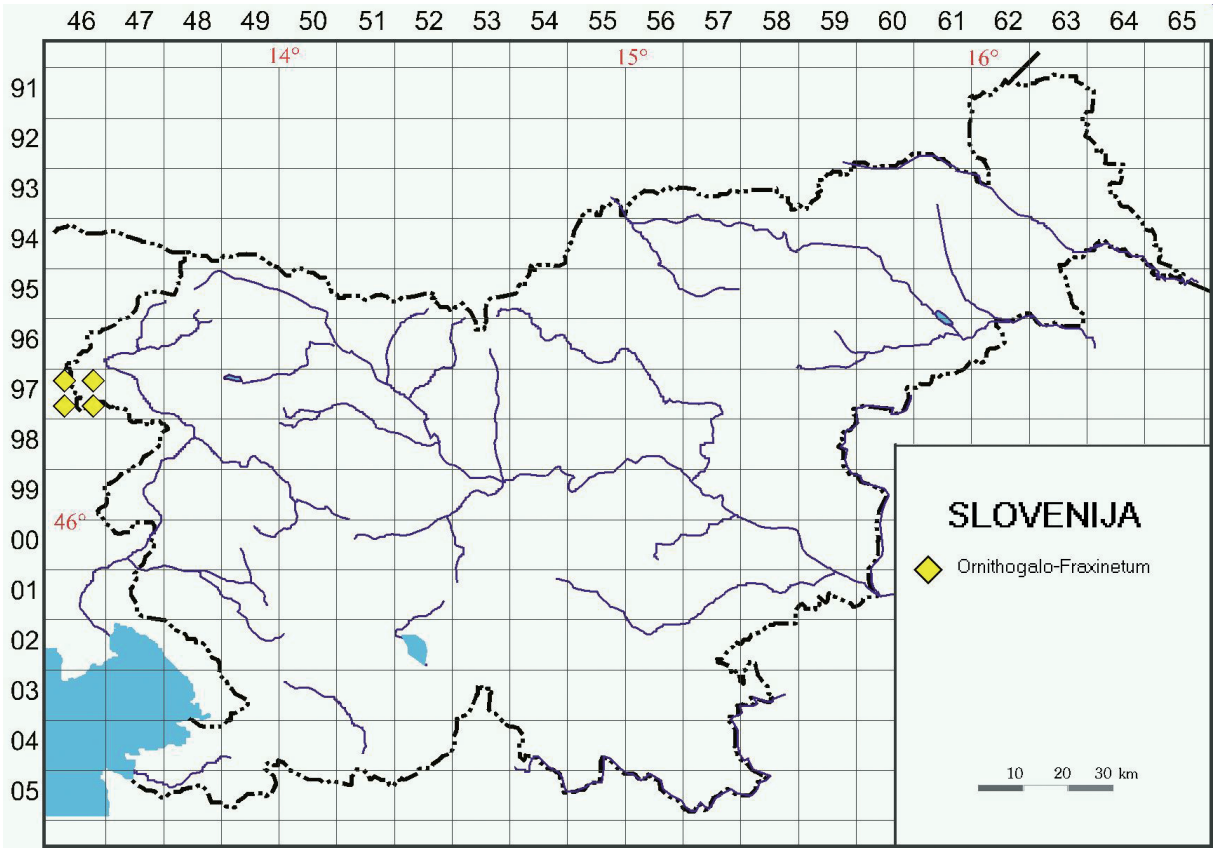

Figure 1: Localities of the researched pioneer stands of *Corylus avellana* and *Fraxinus excelsior* on the map of Slovenia
Slika 1: Nahajališča popisanih pionirskih sestojev leske in velikega jesena na karti Slovenije

4. RESULTS AND DISCUSSION

4.1 Potential natural vegetation in the Breginjski kot

Based on previous phytosociological research in the Breginjski kot area we conclude that its potential natural vegetation is above all beech forest. In the part where the geological bedrock is Cretaceous flysch or moraine, which in places consists of a considerable proportion of chalk, we have so far classified them into two associations: on smaller areas on more acid (dystric) soils into a moderate acidophilous association *Castaneo-Fagetum sylvaticae* (Marinček & Zupančič 1979) Marinček & Zupančič 1995 var. geogr. *Anemone trifolia* Dakskobler (1996) 2004, and in the larger region into a neutrophilous submontane Illyrian community (*Fagetum submontanum* sensu Marinček 1987). We propose to classify this beech community into a special (so far undescribed) geographical variant of the pre-Alpine-sub-Mediterranean submontane association *Ornithogalo pyrenaici-Fagetum* Marinček & al. 1990 (stands of this association have so far been found mostly in the lower Bača Valley, in the Central Soča Valley, in the Idrija Valley and in the northern part of the Goriška Brda region – compare Marinček & al. 1990, Dakskobler 1996, 2005). We estimate that the pioneer stands in our study grow mostly on the potentially natural sites of the latter association. In smaller areas on wetter sites (such as are those at springs and along forest streams) we found also the sites of primary communities of European ash, sycamore maple and grey alder. These communities, already mentioned in expert reports by M. Wraber (1965) and Marinček & al. (1980), have been studied in recent years (Dakskobler 2006, mscr.). At least in part they could be classified into the association *Veratro nigri-Fraxinetum excelsioris* Dakskobler 2006 mscr.

4.2 Floristic and phytosociological composition of the pioneer stands in the Breginjski kot

Phytosociological table (Table 2) consists of 19 relevés and shows the structure and composition of the pioneer stands. The predominant species in the tree layer are European ash (*Fraxinus excelsior*), sycamore maple (*Acer pseudoplatanus*), black alder (*Alnus glutinosa*) and hazel (*Corylus avellana*). Some stands consist of two tree layers, while others are more homogeneous (one-layered).

Two-layered stands were found mostly on former meadows, where individual trees of European ash, sycamore maple and black alder grew when the meadows were still mowed. Especially some sycamore maple and European ash trees have the diameter at breast height of about 50 cm. Such trees are fool of branches, smooth (branchloss) only in the lower part (up to about 4 m in height) and usually only about 20 metres high. Under the open canopy of these dominant trees there is an abundant shrub layer. Some of these dominant trees are of coppice origin, their growth is clustered (there are 4–5 slightly bent stems growing out of the rootstock).

The stands on former pastures are more homogeneous. Hazel bushes and pole stands of European ash prevail here (the prevalence of these tree species is associated with a high value of lake chalk and favorable moisture conditions).

Beech (*Fagus sylvatica*) is very rare in the tree layer, but was found in the shrub layer in most (80 %) of the sample plots. Apart from the above mentioned tree species, other species, such as *Daphne mezereum*, *Acer campestre*, *Crataegus monogyna*, *Sambucus nigra* etc. grow individually in the shrub layer and usually with only a small cover-abundance value (+ or 1). The herb layer is abundant in all stands, especially in the spring when it almost completely covers the ground. *Anemone nemorosa* is the most common dominant species in this layer. It usually covers more than half of the sample plot surface. *Asperula taurina*, *Leucojum vernum* and *Pseudostellaria europea* are also abundant in places. *Oxalis acetosella* and *Maianthemum bifolium* indicate a slight acidity of the soil. In the researched stands prevail species diagnostic of beech forests (order *Fagetalia sylvatice*), among which are many of those which we classify as character or differential species of the Illyrian alliances *Aremonio-Fagion* and *Erythronio-Carpinion* (see also Table 1, column B).

4.3 Syntaxonomical characteristic of the pioneer stands in the Breginjski kot

To support the synsystematic classification we made a synoptic table into which we ranged, apart from the stands studied (No. 7), also submontane beech forests *Ornithogalo pyrenaici-Fagetum* Marinček & al. 1990 (Dakskobler 1996, Phyt. Table 1 – No. 5) and *Hacquetio-Fagetum* Košir 1962 var. geogr. *Anemone trifolia* Košir 1979 subvar. geogr. *Luzula nivea* Poldini & Nardini 1993 (Poldini & Nardini 1993, Table 2, pp. 238–240 – No. 6), two variants of the association *Hacquetio-Fraxinetum excelsioris* Marinček in Wallnöfer, Mucina & Grass 1993 – one from the Central Soča Valley (Dakskobler 1999, Phyt. Table 3, column 2 – No. 1) and one from the Friuli-Venezia Giulia (Poldini & Nardini 1993, Tab. 1, pp. 229–232 – No. 2), European ash and sycamore maple forests from the northeastern Italy (Lasen & Urbinati 1995, Veg. Table 1, pp. 57–54, group H – No. 3), as well as the association *Stellario bulbosae-Fraxinetum* (Kutschera 1951) Oberd. 1953 (Kutschera 1951, pp. 100–103 – No. 4). Due to its extensiveness we do not enclose the synoptic table, but it is available at the authors of the article. The syntaxa in this table were compared using the MISSQ (minimization of the increase of error sum of squares) method of hierachical classification. We used the dissimilarity coefficient "1-similarity ratio" (with consideration of the frequency of the species in the compared syntaxa) – dendrogram in Figure2, and also the complement of the Jaccard's coefficient (we considered only the presence or absence of the species in the compared syntaxa) – dendrogram in Figure 3. According to the first comparison (Fig. 2), the studied pioneer stands (No. 7) unite together with the stands of the association *Stellario bulbosae-Fraxinetum* from Carinthia (southern Austria) – No. 4. In the second comparison, however, (Fig. 3) they unite with the stands of the association *Ornithogalo pyrenaici-Fagetum* (No. 5) and with a specific form of the association *Hacquetio-Fraxinetum* (No. 1). The possibility to classify the studied stands into the association *Stellario bulbosae-Fraxinetum* (as suggested in the dendrogram in Figure 2) was rejected after the following consideration: The stands in the Breginjski kot are still young. They grow on mesophilous sites, so their similarity to the stands of the association *Stellario bulbosae-Fraxinetum* is understandable, as the edifiers of the stage resemble the dominant tree

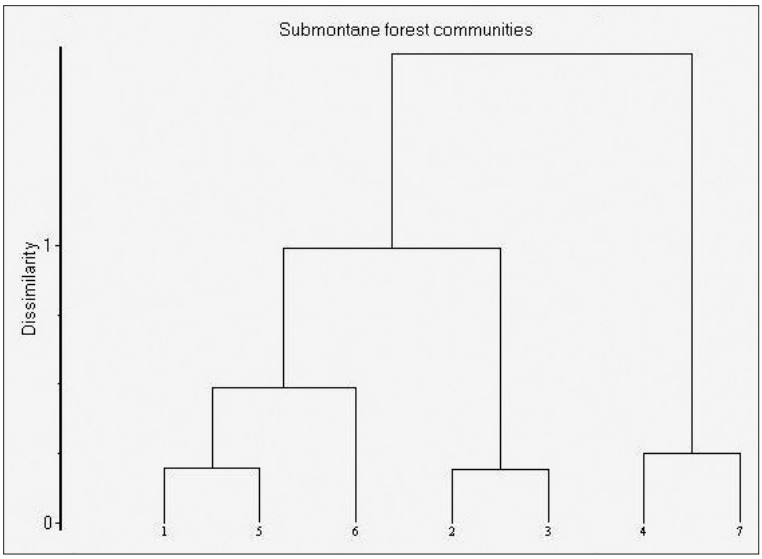

Figure 2: Dendrogram of some submontane forest communities from the western Slovenia, northeastern Italy and southern Austria (MISSQ – similarity ratio).

Slika 2: Dendrogram nekaterih podgorskih gozdnih združb zahodne Slovenije, severovzhodne Italije in južne Avstrije (MISSQ – similarity ratio)

Legend to Figures 2 and 3 (Legenda k slikam 2 in 3):
1 *Hacquetio-Fraxinetum excelsioris* Marinček in Wallnöfer, Mucina & Grass 1993 var. geogr. *Anemone trifolia* Poldini & Nardini 1993 forma *Ruscus aculeatus* Dakskobler 1999, Dakskobler (1999, Phyt. Tab. 3, column 2); 2 *Hacquetio-Fraxinetum* Marinček in Wallnöfer, Mucina & Grass 1993 var. geogr. *Anemone trifolia* Poldini & Nardini 1993, Poldini & Nardini (1993, pp. 229–232); 3 Maple-ash woods – Lasen & Urbinati (1995, Veg.Tab. 1, pp. 47–54); 4 *Stellario bulbosae-Fraxinetum* (Kutschera 1951) Oberd. 1953 (= *Alneto-Fraxinetum stellarietosum bulbosae* Kutschera 1951), Kutschera (1951, pp. 100–103); 5 *Ornithogalo pyrenaici-Fagetum* Marinček, Papež, Dakskobler & Zupančič 1990 – Dakskobler (1996, Phyt. Tab. 1); 6 *Hacquetio epipactido-Fagetum* Košir 1962 var. geogr. *Anemone trifolia* Košir 1979 subvar. geogr. *Luzula nivea*, Poldini & Nardini 1993 Poldini & Nardini (1993, pp. 238–240); 7 *Ornithogalo pyrenaici-Fraxinetum excelsioris* nom. prov., hoc loco, Table 2.

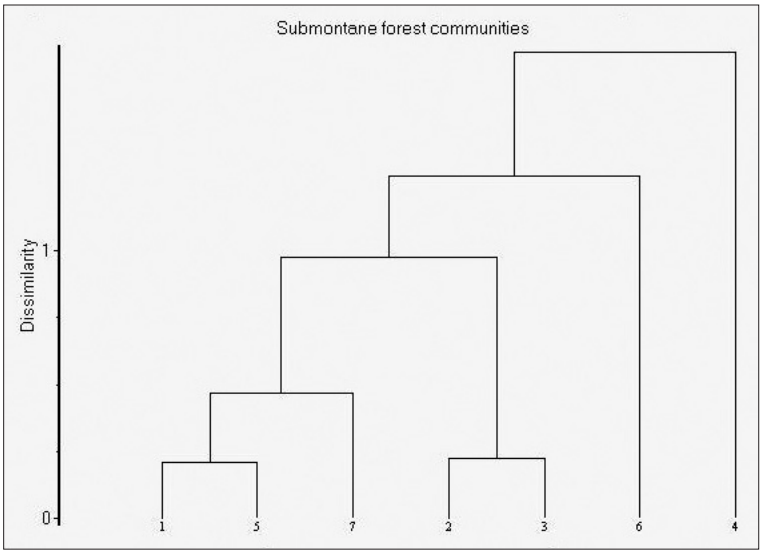

Figure 3: Dendrogram of some submontane forest communities from the western Slovenia, northeastern Italy and southern Austria (MISSQ – Jaccard)

Slika 3: Dendrogram nekaterih submontanskih gozdnih združb zahodne Slovenije, severovzhodne Italije in južne Avstrije (MISSQ – Jaccard)

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species of the previously mentioned community. Wällnöffer, Mucina & Grass (1993: 97–98) classify this association into the alliance *Alnion incanae* Pawlowski in Pawlowski & Wallisch 1928 (syn. *Alno-Ulmion*), i.e. into hygrophilous and mesohygrophilous forest communities. Such classification is justified also by the analysis of the (phyto)sociological groups where the proportion of diagnostic species for this alliance is 14 %. This proportion in our stands is only about 5 % (Tab. 1). Compared to the stands of the association *Stellario bulbosae-Fraxinetum*, there is a substantially larger proportion of diagnostic species of the alliances *Aremonio-Fagion* and *Erythronio-Carpinion* in the studied pioneer woods. Less wet sites of the studied stands (compared to the sites of the associaton *Stellario bulbosae-Fraxinetum*) are indicated also with a larger proportion of diagnostic species of the order *Quercetalia pubescentis* and a smaller proportion of diagnostic species of the order *Quercetalia roboris-petraeae*.

Table 1: Phytosociological groups (relative frequencies, pondered) in the compared associations:
A: *Stellario bulbosae-Fraxinetum* (Kutchera 1951) Oberd. 1953 (Kutchera 1951); B: *Ornithogalo pyrenaici-Fraxinetum excelsioris* nom. prov., hoc loco

Tabela 1: Fitocenološke skupine (relativne frekvence, ponderirano) v primerjanih asociacijah:
A: *Stellario bulbosae-Fraxinetum* (Kutchera 1951) Oberd. 1953 (Kutchera 1951); B: *Ornithogalo pyrenaici-Fraxinetum excelsioris* nom. prov., ta članek

Sign for the syntaxa (Oznaka sintakosnov)	A	B
Aremonio-Fagion	0	4
Polysticho setiferi-Acerenion	0	2
Tilio-Acerion s. lat.	11	11
Erythronio-Carpinion	3	5
Alnion incanae	14	5
Fagetalia sylvaticae	34	35
Rhamno-Prunetea	4	4
Quercetalia pubescentis	0	1
Quercetalia roboris-petraeae	3	1
Querco-Fagetea	8	14
Vaccinio-Piceetea	11	7
Erico-Pinetea	0	1
Trifolio-Geranietea	0	1
Adenostyletalia s.lat.	2	2
Other species (Druge vrste)	11	7
Total (Skupaj)	100	100

We estimate that the obviously stadial vegetation cannot be classified into the ecologically relatively well characterized intrazonal forest community. As a stage in progressive successional sere it could be named after the dominant species of the tree and shrub layer – stage *Corylus avellana-Fraxinus excelsior*. The described stands could be classified into a widely conceived vegetational unit, phytocoenon (in the sense in which this concept was interpreted by Westhoff & van der Maarel 1973: 624–626 and used for example for the names of some prenemoral, shrub communities in Friuli-Venezia Giulia by Poldini & Vidali 1996), in which case we propose the name phytocoenon with the species *Fraxinus excelsior* and *Anemone nemorosa*. Considering that the pioneer stands already have a more or less formed tree layer, we can treat them also as a secondary (transitional) forest community, for which we propose the name *Ornithogalo pyrenaici-Fraxinetum excelsioris* nom. prov. (the name is provisional also because similar pioneer forest stands in other flysch areas in western Slovenia – most of them are in the Central Soča Valley – still have to be studied). With this name we suggest that these pioneer stands overgrow mostly potential natural sites of beech forests which could be classified into a special geographical variant (or form ?) of the association *Ornithogalo-Fagetum* Marinček & al. 1990. The, for now only provisionally described, new association is, according to Marinček & al. (1993), classified into the alliance *Aremonio-Fagion* (Ht. 1938) Borhidi in Török, Podani & Borhidi 1989. Its diagnostic species are the character and differential species of the association *Ornithogalo pyrenaici-Fagetum*: *Crocus napolitanus* (= *C. vernus* subsp. *vernus*), *Ornithogalum pyrenaicum* and *Fagus sylvatica* (these show the succession into the zonal submontane beech forests of the sub-Mediterranean-pre-Alpine part of the Illyrian floral province) as well as the species which best characterize the physiognomy, ecology and also the phytogeographical position of the community: *Fraxinus excelsior*, *Corylus avellana*, *Anemone nemorosa*, *Leucojum vernum*, *Asperula taurina* and *Pseudostellaria europaea*.

4.4 Division into lower synsystematic units

With hierarchical classification we subdivided 19 relevés into two groups which we define as variants. The stands of the variant with *Alnus glutinosa* grow on deep brown soil on flysch ground. They grow on gentle to relatively steep slopes on the ridge be-

tween the villages of Breginj and Logje and on the northern slopes of Mt. Mija between the village of Podbela and the Pradol gorge. The differential species of this variant are *Alnus glutinosa*, *Athyrium filix-femina, Aruncus dioicus* and *Phegopteris connectilis*. In comparison with the stands of the second variant, sycamore maple (*Acer pseudoplatanus*) is more abundant in the stands of this variant. Within this variant we discern the acidophilic subunit, subvariant with the moss species *Atrichum undulatum* (its differential species are also *Polytrichum formosum* and *Dryopteris dilatata*). The stands of this subvariant grow on somewhat acidic (dystric) soils. The species composition is poorer (on average 36 species per relevé). Potential natural vegetation on sites of the subvariant with the *Atrichum undulatum* is supposedly a moderately acidophilic beech forest (*Castaneo-Fagetum sylvaticae*).

The stands of the variant with *Omphalodes verna* (its differential species are also *Carex sylvatica, Galanthus nivalis, Anemone trifolia, Allium ursinum* and *Alnus incana*) usually grow on gentle slopes on mixed flysch-limestone bedrock, partly on moraine material with still enough moisture in the soil (because of the lake chalk). These stands, usually dominated by European ash, are most common on glacier moraine under the village of Robidišče. They are well characterized also by grey alder (*Alnus incana*), which has not been detected in the stands of the second variant. It will probably gradually disappear during the succession. It is more vital in the younger stands along the intertwining streams in this area. Tree species *Carpinus betulus* and *Acer campestre* are more common in the stands of this variant than in the stands of the previously described variant. Neutrophilous submontane beech forest (*Fagetum submontanum* sensu Marinček 1987, probably a specific subunit of the association *Ornithogalo pyrenaici-Fagetum* Marinček & al. 1990) is a supposedly potential natural vegetation on the sites of this variant.

5. CONCLUSIONS

A phytosociological research of pioneer woods of hazel and European ash on abandoned meadows and pastures was conducted in the Breginjski kot in western Slovenia. We made an analytic table with 19 relevés and compared the established floristic composition with the floristic composition of the stands of several syntaxa which grow on similar sites in the neighbouring regions in Slovenia, Italy and Austria. According to the analyses and comparisons we made (Tab. 1, Fig. 2 and 3), we can treat the studied stands as a stage of *Corylus avellana* and *Fraxinus excelsior* in a progressive successional sere on potentially natural sites of the pre-Alpine-Illyrian submontane beech forests. Due to its relative persistance, this stage could be treated also as a widely conceived vegetation unit, a phytocoenon with the species *Fraxinus excelsior* and *Anemone nemorosa*, or even as a secondary forest community. In this case we propose to classify it as a new association *Ornithogalo pyrenaici-Fraxinetum excelsioris* nom. prov. With this name we wanted to suggest a supposed development of the studied pioneer stands into a beech forest from a special (so far undescribed) geographical subunit of the association *Ornithogalo pyrenaici-Fagetum* Marinček & al. 1990. Diagnostic species of the association *Ornithogalo-Fraxinetum excelsioris* nom. prov. are *Crocus napolitanus* (= *C. vernus* subsp. *vernus*), *Ornithogalum pyrenaicum*, *Fagus sylvatica*, *Fraxinus excelsior*, *Corylus avellana*, *Anemone nemorosa*, *Leucojum vernum*, *Asperula taurina* and *Pseudostellaria europaea*. They characterize it syndynamically, physiognomically, ecologically and phytogeographically.

6. POVZETEK

Fitocenološka analiza pionirskih gozdov na opuščenih senožetih v Breginjskem kotu (zahodna Slovenija)

V Breginjskem kotu v zahodni Sloveniji (slika 1) smo fitocenološko raziskali pionirske gozdove leske in velikega jesena na opuščenih senožetih in pašnikih. Izdelali smo analitsko tabelo z 19 popisi in ugotovljeno floristično sestavo primerjali s floristično sestavo po rastiščih podobnih sintaksonov iz sosednjih območij Slovenije, Italije in Avstrije. Na podlagi opravljenih analiz in primerjav (tabela 1, sliki 2 in 3) preučene sestoje vrednotimo kot stadij leske (*Corylus avellana*) in velikega jesena (*Fraxinus excelsior*) v progresivnem sukcesijskem nizu na potencialno naravnih rastiščih predalpsko-ilirskega submontanskega bukovega gozda. Ta stadij zaradi njegove relativne dolgotrajnosti lahko obravnavamo tudi kot sinsistematsko neopredeljeni fitocenon z vrstama *Fraxinus excelsior* in *Anemone nemorosa* ali kot drugotno (prehodno) gozdno združbo. Ta je sindinamsko povezana s sestoji asociacije *Ornithogalo pyrenaici-Fagetum* Marinček & al. 1990, zato jo sinsistematsko uvrščamo v za zdaj le provizorno opisano novo

asociacijo *Ornithogalo pyrenaici-Fraxinetum excelsioris* nom. prov. Njene diagnostične vrste so *Crocus napolitanus* (= *C. vernus* subsp. *vernus*), *Ornithogalum pyrenaicum*, *Fagus sylvatica, Fraxinus excelsior, Corylus avellana, Anemone nemorosa, Leucojum vernum, Asperula taurina* in *Pseudostellaria europaea*. Te vrste novo asociacijo označujejo sindinamsko, fiziognomsko, ekološko in fitogeografsko.

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9. APPENDIX

Table 2. – Localities of relevés and sporadic species: 1. Strmca above Breginj (9746/3), *Peucedanum oreoselinum* (r); 2. Veliki breg, above the road Breginj – Logje (9746/4); 3. Logje, under Skakalca (9746/4), *Malus sylvestris* (r), *Plagiothecium sp.* (+); 4. Veliki breg (9746/4), *Brachytecium velutinum* (+); 5. Veliki breg (9746/4), *Quercus robur* (+); 6. Mija, above Podrečenca (9746/4); 7. Mija, above Podrečenca (9746/4), *Matteucia struthiopteris* (+), *Colchicum autumnale* (+); 8. Logje, under Sleme (9746/4), *Tilia plathyphyllos* (r), *Humulus lupulus* (+); 9. Veliki breg (9746/4), *Prenanthes purpurea* (r), *Moehringia trinervia* (r), *Gentiana asclepiadea* (+), *Aconitum angustifolium* (+), *Doronicum austriacum* (+), *Tephroseris pseudocrispa* (+), *Asplenium trichomanes* (r), *Dactylorhiza maculata* (r); 10. Berjač above Podbela (9746/4); 11. Kal above Breginj (9746/1), *Lilium martagon* (+), *Iris graminea* (+), *Galeopsis pubescens* (+), *Rubus idaeus* (+); 12. Privek above Sedlo (9746/2), *Campanula trachelium* (+), *Arabis turrita* (+), *Rhamnus cathartica* (r); 13. Ladina above Breginj (9746/1), *Circea lutetiana* (+), *Chrysosplenium alternifolium* (+), *Gagea lutea* (+); 14. Logje, near the road to Nadiža (9746/4), *Carex pilosa* (+), *Anomodon viticulosus* (+), *Homalothecium sericeum* (+), *Neckera crispa* (+); 15. Gošče under Robidišče (9746/4), *Prunus spinosa* (+), *Frangula alnus* (r), *Equisetum telmateia* (+), *Hepatica nobilis* (+), *Polypodium vulgare* (+); 16. Gošče under Robidišče (9746/4), *Lathyrus vernus* (+), *Polystichum braunii* (r), *Anthriscus sylvestris* (+), *Climacium dendroides* (+); 17. Gošče under Robidišče (9746/4), *Neottia nidus-avis* (r), *Ligustrum vulgare* (+), *Viburnum lantana* (+), *Pyrus pyraster* (+), *Ranunculus cassubicus* (r); 18. Gošče under Robidišče (9746/4), *Galium laevigatum* (+), *Equisetum hyemale* (+); 19. Foothills of Mija near »Napoleonov most« (9746/4), *Phyllitis scolopendrium* (+).

Table 2: Pioneer woods (*Ornithogalo pyrenaici-Fraxinetum excelsioris* nom. prov.) on abandoned meadows in the Breginjski kot (western Slovenia)
Tabela 2: Pionirski gozdovi (*Ornithogalo pyrenaici-Fraxinetum excelsioris* nom. prov.) na opuščenih senožetih v Breginjskem kotu (zahodna Slovenija)

	Relevé number (Številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			
	Altitude in m (Nadmorska višina v m)		600	590	480	610	600	570	560	560	580	420	880	720	580	390	400	420	390	400	300			
	Aspect (Lega)		SE	NW	NE	W	NW	N	W	NW	NE	NE	W	SW	SW	W	N	N	SE	NW	N			
	Slope in degrees (Nagib v stopinjah)		5	5	20	10	10	25	10	10	15	15	5	5	5	25	5	5	5	5	5			
	Cover in % (Zastiranje v %)																							
	Upper tree layer (Zgornja drevesna plast)	E3b	40	80	100	90	70	70	30	20	60	40	60	30	20	90	70	70	30	80	80			
	Lower tree layer (Spodnja drevesna plast)	E3a	40	20		10	10	30	70	80	20	20	20	70	80		30	30	70	30				
	Shrub layer (Grmovna plast)	E2	10	10	5	20	30	20	10	10	30	60	40	30	30	10	20	20	30	30	20			
	Herb layer (Zeliščna plast)	E1	90	90	90	95	90	80	80	95	70	60	70	70	90	60	80	90	70	80	90			
	Moss layer (Mahovna plast)	E0	10	10	5	5	5	5	5	5	5	15	5	10	5	5	30	10	5	20	5			
	Relevé area (Velikost popisne ploskve)	m2	400	400	400	400	400	400	400	400	400	400	400	300	200	200	400	400	400	400	100			
	Number of species (Število vrst)		42	34	39	34	33	38	44	36	73	45	48	43	54	49	60	60	57	60	48			
																							Pr.	Fr.
	Character species of the ass. *Ornithogalo-Fagetum*																							
	Značilne vrste asoc. *Ornithogalo-Fagetum*																							
EC	*Crocus napolitanus*	E1	2	2	1	2	2	1	2	1	1	1	1	+	1	.	1	1	1	1	1		18	95
EC	*Ornithogalum pyrenaicum*	E1	.	.	.	.	.	+	1	.	+	+	.	.	.	.	.	.	+	.	.		5	26
F	*Fagus sylvatica*	E3b	r	.	.	.	.	.	.	.	+	.	r	.	.	.	r	r	r	.	.	6	7	37
F	*Fagus sylvatica*	E3a	.	.	.	.	.	.	.	.	.	.	+	.	r	.	.	.	.	.	.	2		
F	*Fagus sylvatica*	E2b	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	+	.	+	.	4	15	79
F	*Fagus sylvatica*	E2a	+	+	+	+	+	.	+	.	.	+	+	.	+	.	1	1	+	1	1	14		
F	*Fagus sylvatica*	E1	+	+	+	.	+	+	+	.	.	.	.	.	.	+	+	+	.	.	+		10	53
	Differential species of pioneer stage																							
	Razlikovalne vrste pionirskega stadija																							
QF	*Anemone nemorosa*	E1	5	5	5	5	5	4	3	5	3	2	3	2	1	+	3	4	+	1	1		19	100
F	*Fraxinus excelsior*	E3b	1	2	1	3	2	2	1	1	3	2	1	1	+	1	2	4	+	4	.	18	18	95
F	*Fraxinus excelsior*	E3a	1	+	.	1	.	.	+	+	+	+	+	2	1	.	+	1	.	1	.	13		
F	*Fraxinus excelsior*	E2b	+	.	.	1	.	+	+	+	+	.	.	1	+	.	.	.	.	.	+	9	12	63
F	*Fraxinus excelsior*	E2a	.	.	.	+	.	1	.	1	1	+	+	+	+	.	.	.	1	.	.	9		
F	*Fraxinus excelsior*	E1	1	1	+	+	.	1	+	+	.	.	.	.	.	+	+	1	.	.	1		11	58
QF	*Corylus avellana*	E3	2	2	5	.	1	2	4	5	.	.	.	.	.	5	2	2	4	1	4		13	68
QF	*Corylus avellana*	E2b	2	1	+	.	2	1	+	.	2	3	2	1	3	.	+	1	.	3	+	15	17	89
QF	*Corylus avellana*	E2a	+	+	.	.	+	.	.	+	1	1	+	+	1	.	.	+	+	.	.	11		
QF	*Corylus avellana*	E1	+	+	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.		4	21
F	*Leucojum vernum*	E1	.	1	2	.	1	1	.	2	2	1	.	.	1	.	1	2	2	2	1		13	68
AF	*Asperula taurina*	E1	.	.	.	.	.	.	+	.	+	2	.	.	2	.	1	+	+	1	1		9	47
EC	*Pseudostellaria europaea*	E1	.	2	.	.	.	.	.	.	1	1	+	.	4	.	.	1	.	1	2		8	42

	Relevé number (Številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		Pr.	Fr.
	Differential species of variants and subvariants																							
	Razlikovalne vrste variant in subvariant																							
A	*Athyrium filix-femina*	E1	+	+	1	1	1	1	.	1	1	1	+	1	1	.	.	.	.	+	+		14	74
AI	*Alnus glutinosa*	E3b	.	2	.	1	2	2	2	.	1	1	2	1	.	.	.	.	.	.	.	9	12	63
AI	*Alnus glutinosa*	E3a	+	.	.	.	.	+	+	+	+	+	+	2	+	.	.	.	.	.	.	9		
F	*Aruncus dioicus*	E1	.	+	+	1	+	1	1	1	1	+	+	r	.	.	.	.	.	.	.		11	58
VP	*Phegopteris connectilis*	E1	+	+	+	+	.	+	.	+	+	+	.	.	.	.	.	.	.	.	.		8	42
ML	*Atrichum undulatum*	E0	+	+	+	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.		5	26
VP	*Dryopteris dilatata*	E1	+	+	+	+	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.		5	26
ML	*Polytrichum formosum*	E0	+	+	+	.	+	.	.	.	.	.	.	.	.	.	.	+	.	.	.		5	26
AF	*Omphalodes verna*	E1	.	.	.	.	.	.	.	.	1	.	.	.	.	1	1	1	+	2	1		7	37
F	*Carex sylvatica*	E1	.	.	.	.	.	.	.	.	.	.	+	.	.	+	+	+	+	+	+		7	37
EC	*Galanthus nivalis*	E1	.	.	.	.	.	.	.	.	.	.	.	+	.	1	+	.	+	+	1		6	32
QF	*Rosa arvensis*	E2	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	r	+	.		5	26
AI	*Alnus incana*	E3b	.	.	+	.	.	.	.	.	.	.	.	.	.	r	+	1	.	.	.	4	5	26
AI	*Alnus incana*	E3a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	1	+	.	4		
AI	*Alnus incana*	E2a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	.	.		3	16
AF	*Anemone trifolia*	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	2	+	.	+	.	+		4	21
F	*Allium ursinum*	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	.	+	2		4	21
AF	***Aremonio-Fagion* (Ht. 1938) Borhidi in Török, Podani & Borhidi 1989**																							
	Stellaria montana	E1	.	.	+	.	.	+	1	.	.	.	2	.	2	.	.	.	.	+	1		7	37
	Lamium orvala	E1	.	.	.	.	.	.	1	.	+	.	+	1	.	.	.	r	1	.	.		6	32
	Euphorbia carniolica	E1	.	.	.	.	.	+	+	.	1	r	+	.	.	.	.	.	.	.	.		5	26
	Cyclamen purpurascens	E1	.	.	.	.	.	.	.	.	.	+	.	.	.	1	+	.	.	+	.		4	21
	Isopyrum thalictroides	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.		2	11
	Dentaria enneaphyllos	E1	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	1		2	11
	Cardamine trifolia	E1	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.		2	11
	Knautia drymeia	E1	.	.	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.		2	11
	Epimedium alpinum	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.		1	5
EC	***Erythronio-Carpinion betuli* (Ht. 1938) Marinček in Wallnöfer, Mucina & Grass 1993**																							
	Primula vulgaris	E1	+	.	.	.	.	+	1	.	+	1	+	+	.	1	1	+	1	+	.		12	63
	Helleborus odorus	E1	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+	.	.		2	11
F	***Fagetalia sylvaticae* Pawl. 1928**																							
	Polygonatum multiflorum	E1	+	1	1	1	1	+	+	1	+	+	+	+	+	+	+	+	.	+	+		18	95
	Acer pseudoplatanus	E3b	+	2	+	3	2	2	1	+	+	+	+	.	.	.	+	.	.	r	.	13	13	68
	Acer pseudoplatanus	E3a	.	+	.	1	.	+	+	+	+	.	+	.	.	.	.	.	.	.	.	7		
	Acer pseudoplatanus	E2b	.	+	.	2	1	+	.	+	1	.	+	.	+	.	.	.	.	.	+	9	17	89
	Acer pseudoplatanus	E2a	+	+	.	1	.	1	+	.	1	+	1	r	+	+	1	1	.	1	1	15		79

Relevé number (Številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		Pr.	Fr.
Acer pseudoplatanus	E1	1	1	+	1	1	1	1	+	.	.	.	.	.	.	+	1	.	.	1		11	58
Paris quadrifolia	E1	.	+	+	.	+	+	+	1	+	+	+	.	+	.	+	+	+	+	+		15	79
Asarum europaeum	E1	+	+	+	.	.	.	+	+	+	+	.	+	.	1	1	+	1	1	+		14	74
Symphytum tuberosum	E1	+	+	+	.	.	1	1	1	1	1	+	+	+	.	+	+	.	.	.		13	68
Salvia glutinosa	E1	+	.	.	.	.	+	+	+	+	+	1	+	+	.	+	.	+	+	.		12	63
Senecio ovatus	E1	+	.	+	.	.	+	+	+	1	.	2	1	+	.	.	.	+	+	.		11	58
Sambucus nigra	E3a	.	.	1	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.		2	11
Sambucus nigra	E2b	.	.	1	+	.	.	+	1	.	.	+	1	1	.	.	.	.	.	.	7	10	53
Sambucus nigra	E2a	.	+	.	.	.	+	1	.	.	.	+	.	1	.	.	.	.	.	+	6		
Sambucus nigra	E1	.	+	.	.	.	+	+	.	.	.	.	.	.	+	.	.	.	.	.		4	21
Daphne mezereum	E2b	.	r	+	r	.	+	.	.	+	.	+	.	.	.	+	+	+	+	.		10	53
Dryopteris filix-mas	E1	.	.	.	+	.	+	+	+	+	+	+	+	.	.	+	.	.	.	+		10	53
Galeobdolon flavidum	E1	.	1	+	.	.	.	.	+	1	+	.	.	.	+	+	+	+	+	.		10	53
Pulmonaria officinalis	E1	+	.	.	.	.	.	.	.	.	+	.	.	+	+	+	1	+	+	+		9	47
Arum maculatum	E1	.	.	+	.	.	.	+	1	.	.	.	.	+	+	.	+	1	+	+		9	47
Prunus avium	E3b	+	.	.	.	.	+	.	.	r	+	1	+	.	.	.	.	.	.	.	6	8	42
Prunus avium	E3a	.	.	.	r	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2		
Prunus avium	E2b	.	.	.	.	r	.	.	.	r	.	.	r	+	.	.	.	+	r	.	6	9	47
Prunus avium	E2a	+	.	.	.	.	.	+	.	.	.	.	.	.	.	+	.	.	.	.	3		
Prunus avium	E1	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		1	5
Carpinus betulus	E3b	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	.	.	.	.	2	6	32
Carpinus betulus	E3a	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	+	+	+	.	4		
Carpinus betulus	E2b	.	.	.	.	.	.	.	.	.	.	.	.	1	+	.	.	+	+	.	4	8	42
Carpinus betulus	E2a	.	.	+	.	.	.	.	.	+	.	.	.	+	.	+	+	.	.	.	5		
Carpinus betulus	E1	+	.	.	.	.	.	.	.	.	.	.	.	.	+	1	+	.	.	.		4	21
Mercurialis perennis	E1	.	.	.	.	.	.	+	.	1	+	+	.	.	+	.	+	.	+	+		8	42
Scrophularia nodosa	E1	.	.	.	r	+	+	.	+	.	.	r	+	r	.	.	.	.	.	.		7	37
Melica nutans	E1	.	.	.	.	.	.	.	.	+	+	.	.	.	+	+	+	+	.	.		6	32
Viola reichenbachiana	E1	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	+	+	+	+		6	32
Tilia cordata	E3b	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.		1	5
Tilia cordata	E2b	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	1	5	26
Tilia cordata	E2a	.	.	+	.	.	.	.	.	.	+	.	.	.	.	.	.	r	+	.	4		
Adoxa moschatellina	E1	.	.	.	.	.	.	.	.	r	.	1	.	+	.	.	.	+	.	+		5	26
Petasites albus	E1	.	.	.	.	.	+	+	+	.	.	.	.	.	.	.	.	.	+	.		4	21
Actaea spicata	E1	.	.	.	.	.	.	.	+	r	.	.	.	+	.	.	.	.	.	+		4	21
Brachypodium sylvaticum	E1	.	.	.	.	.	.	.	.	.	.	.	+	+	.	+	+	.	.	.		4	21
Ulmus glabra	E3b	.	.	.	.	.	.	.	.	.	.	.	.	r	.	.	.	+	+	.		3	16
Ulmus glabra	E2a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+		1	5
Mycelis muralis	E1	.	.	.	.	.	.	.	.	+	.	+	+	.	.	.	.	.	.	.		3	16
Sanicula europaea	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	+	.		3	16
Euphorbia amygdaloides	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	.		2	11

	Relevé number (Številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		Pr.	Fr.
	Corydalis cava	E1	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	1		2	11
	Dentaria bulbifera	E1	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+		2	11
	Geranium robertianum	E1	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.		2	11
QP	***Quercetalia pubescentis* Klika 1933**																							
	Convallaria majalis	E1	+	.	.	+	1	.	1	+	+	.	+	.	.	.	.	+	.	.	.		8	42
	Fraxinus ornus	E3b	.	.	.	.	.	+	.	.	.	.	.	.	.	r	.	.	.	.	.	2	2	11
	Fraxinus ornus	E3a	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	1	1	
	Sorbus aria	E3b	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	1	2	11
	Sorbus aria	E3a	.	.	.	r	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	2		
RP	***Rhamno-Prunetea* Rivas Goday & Borja Carbonell ex Tüxen 1962**																							
	Crataegus monogyna	E3a	.	.	+	.	.	.	.	.	.	.	.	.	.	+	1	+	.	.	.	4	4	21
	Crataegus monogyna	E2b	.	.	+	+	.	.	.	+	+	.	.	.	.	+	+	+	+	r	.	9	13	68
	Crataegus monogyna	E2a	+	+	.	+	.	.	.	+	+	.	.	+	+	+	+	+	+	+	.	12		
	Crataegus monogyna	E1	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.		1	5
	Euonymus europaeus	E2	.	.	.	.	.	.	.	+	.	+	.	.	.	+	+	.	+	.	+		6	32
	Viburnum opulus	E2	.	.	.	.	.	.	.	+	.	.	.	.	.	.	+	+	.	.	r		4	21
	Cornus sanguinea	E2	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	+	.		2	11
	Clematis vitalba	E3a	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.		1	5
	Clematis vitalba	E2b	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.		1	5
	Clematis vitalba	E1	.	.	.	.	.	.	.	+	.	.	.	.	.	r	.	.	.	.	.		2	12
	Berberis vulgaris	E2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	r	.	r	.	.		2	11
QR	***Quercetalia roboris-petraeae* Tx. (1931) 1937**																							
	Pteridium aquilinum	E1	.	+	.	.	r	+	.	.	+	.	+	+	.	.	.	.	.	.	.		6	32
	Festuca heterophylla	E1	.	+	.	+	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.		4	21
	Castanea sativa	E3b	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	2	11
	Castanea sativa	E3a	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	
AI	***Alnion incanae* Pawlowski in Pawlowski & Wallisch 1928**																							
	Dryopteris carthusiana	E1	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	+	.		3	16
	Stellaria neglecta	E1	.	.	.	.	.	.	+	+	.	.	.	.	+	.	.	.	.	.	.		3	16
	Cardamine impatiens	E1	.	.	.	.	.	.	.	+	.	.	.	+	+	.	.	.	.	.	.		3	16
	Glechoma hederacea	E1	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+	.	.	.	.		2	11
	Angelica sylvestris	E1	.	.	.	.	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.		2	11
	Equisetum arvense	E1	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	.	+	.	.		2	11
	Urtica dioica	E1	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.		2	11
	Cirsium oleraceum	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.		2	11
QF	***Querco-Fagetea* Br.-Bl. & Vlieg. 1937**																							
	Aegopodium podagraria	E1	.	+	+	.	.	+	+	1	2	1	1	+	+	+	.	+	.	+	+		14	74
	Acer campestre	E3b	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	r	r	.	.	4	5	26
	Acer campestre	E3a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1		
	Acer campestre	E2b	.	.	.	+	.	.	.	.	.	.	.	.	+	+	+	.	.	.	.	4	8	42
	Acer campestre	E2a	.	.	.	.	.	.	.	.	.	+	.	.	.	+	.	.	+	+	+	5	5	

	Relevé number (Številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		Pr.	Fr.
	Acer campestre	E1	.	.	.	.	.	.	+	+	.	.	.	.	.	+	+	+	.	.	+		6	32
	Carex digitata	E1	.	.	.	.	.	.	.	.	+	+	.	+	.	+	.	+	+	+	+		8	42
	Vinca minor	E1	.	.	.	.	.	.	.	.	1	+	.	.	+	2	+	+	.	.	+		7	37
	Cerastium sylvaticum	E1	+	.	.	.	.	.	+	.	+	1	.	.	+	.	+	.	.	+	.		7	37
	Viola riviniana	E1	+	.	.	.	.	.	.	.	r	+	+	.	.	.	.	.	.	.	.		4	21
	Lathraea squamaria	E1	.	.	.	.	.	.	.	.	r	.	.	.	+	.	.	+	.	.	+		4	21
	Ranunculus ficaria	E1	.	.	1	.	.	.	1	.	.	.	.	.	2	.	.	.	.	.	+		4	21
	Hedera helix	E2	.	.	.	.	.	.	.	.	.	.	.	.	r	+	+	.	.	.	.		3	16
	Anemone ranunculoides	E1	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	1	.	.	1		3	16
	Cruciata glabra	E1	+	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+	.	.		3	16
	Carex montana	E1	r	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		2	11
	Lonicera xylosteum	E2	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+		2	11
VP	***Vaccinio-Piceetea* Br.-Bl. 1939 emend. Zupančič 1976**																							
	Oxalis acetosella	E1	+	+	+	.	+	+	.	+	r	+	.	+	+	+	+	1	+	1	1		16	84
	Maianthemum bifolium	E1	+	1	1	+	+	+	.	+	+	+	+	+	.	.	+	+	.	.	+		14	74
	Luzula pilosa	E1	+	+	+	+	+	+	.	.	+	.	.	.	+	.	.	.	.	+	+		10	53
	Calamagrostis arundinacea	E1	+	.	.	+	+	+	.	.	+	.	1	.	.	.	.	.	.	.	.		6	32
	Picea abies	E2b	r	.	.	.	.	r	r	.	.	.	.	.	.	.	.	.	.	.	.	3	5	26
	Picea abies	E2a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	2		
	Picea abies	E1	.	r	r	.	.	.	.	.	.	.	.	.	.	.	r	.	.	.	.		3	16
	Aposeris foetida	E1	.	.	.	.	.	.	.	.	+	1	.	.	.	.	+	.	.	2	.		4	21
	Luzula luzuloides	E1	.	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.		2	12
A	***Adenostyletalia* G. &. J. Br.-Bl. 1931**																							
	Aconitum lycoctonum	E1	+	.	.	.	.	.	+	.	+	.	1	.	.	.	.	.	.	.	.		4	21
	Milium effusum	E1	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	1	1	.		4	21
	Silene dioica	E1	+	.	.	.	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.		3	16
	Thalictrum aquilegiifolium	E1	.	.	.	.	+	.	.	.	+	.	+	.	.	.	.	.	.	.	.		3	16
	Veratrum album	E1	.	.	.	.	.	1	+	.	.	.	.	.	.	.	.	.	.	.	.		2	12
EP	***Erico-Pinetea* I. Horvat 1959**																							
	Carex alba	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	1	+	.		3	16
	Aquilegia vulgaris agg.	E1	r	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.		2	11
TG	***Trifolio-Geranietea* Th. Müller 1961**																							
	Vincetoxicum hirundinaria	E!	+	.	.	+	r	.	.	.	.	.	.	+	.	.	.	.	.	.	.		4	21
	Lilium carniolicum	E1	.	.	.	.	.	+	r	.	.	.	.	.	.	.	.	.	.	.	.		2	12
O	**Other species (Druge vrste)**																							
	Rubus fruticosus agg.	E2	+	+	.	1	1	1	.	.	1	+	1	2	+	1	+	+	.	+	1		15	79
	Listera ovata	E1	.	.	.	.	+	.	.	+	.	.	.	.	.	+	+	+	+	+	.		7	37
	Deschampsia cespitosa	E1	+	+	.	.	.	.	+	.	+	.	.	+	+	.	.	.	.	+	.		7	37
	Sorbus aucuparia	E3b	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	2	11
	Sorbus aucuparia	E3a	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	1		
	Sorbus aucuparia	E2b	.	.	.	+	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	5	26

	Relevé number (Številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		Pr.	Fr.
	Sorbus aucuparia	E2a	.	.	.	1	.	.	r	.	r	.	+	.	.	.	.	.	.	.	.	4		
	Sorbus aucuparia	E1	.	.	.	+	+	.	.	.	+	.	+	.	.	.	.	.	.	r	.		5	26
	Fragaria vesca	E1	+	+	.	+	.	.	.	.	+	.	.	+	.	.	.	.	+	.	.		6	32
	Galeopsis speciosa	E1	.	.	.	.	.	.	r	.	.	.	+	.	+	.	.	.	+	+	.		5	26
	Cardaminopsis halleri	E1	.	+	.	r	1	.	.	.	+	+	.	.	.	.	.	.	.	.	.		5	26
	Geum urbanum	E1	.	.	.	.	.	.	+	.	.	.	.	1	1	.	.	.	+	.	r		5	26
	Allium sp.	E1	+	.	.	.	.	.	.	.	+	+	.	.	+	.	.	.	.	.	.		4	21
	Juglans regia	E3b	r	.	.	.	.	.	.	.	r	.	.	.	1	.	.	.	.	.	.		3	16
	Salix caprea	E3b	.	.	.	.	.	.	r	+	.	.	.	.	.	.	.	r	.	.	.		3	16
	Heracleum sphondylium	E1	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+	.	.		2	11
	Galeopsis tetrahit	E1	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.		2	11
M	**Mosses (Mahovi)**																							
	Mnium sp.	E0	+	+	.	+	.	.	.	.	.	.	.	.	.	.	+	1	.	.	.		5	26
	Thuidium tamariscinum	E0	+	.	.	+	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.		4	21
	Plagiomnium undulatum	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	+	1	.		4	21
	Plagiothecium denticulatum	E0	+	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.		3	16
	Brachythecium rutabulum	E0	.	.	+	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	.		3	16
	Isothecium alopecuroides	E0	.	.	+	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.		2	11
	Anomodon attenuatus	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	.		2	11
	Ctenidium molluscum	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	+	.	.	.		2	11
	Eurhynchium striatum	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	1	.	.	.		2	11