

CALCAREOUS OPEN SEDGE SWARDS AND STONY GRASSLANDS (*SESLERIETALIA CAERULEAE*) ON THE NORTHERN EDGE OF THE TRNOVSKI GOZD PLATEAU (THE DINARIC MOUNTAINS, WESTERN SLOVENIA)

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Abstract

Applying the standard Central-European phytosociological method we studied the open sedge swards and stony grasslands on the northern edge of the Trnovski gozd plateau in western Slovenia. Based on extensive comparisons with similar communities in the Southeastern Alps and in the northern part of the Dinaric mountains we classified the studied communities into the order *Seslerietalia caeruleae* Br.-Bl. in Br.-Bl. & Jenny 1926. They are differentiated from similar communities in the Southeastern Alps by certain northern-Illyrian endemics (above all by *Primula carniolica* and *Hladnikia pastinacifolia*) and by some of the southern or southeastern-Alpine-Illyrian species (e.g. *Phyteuma scheuchzeri* subsp. *columnae*, *Astrantia carniolica* and *Aquilegia bertolonii*). This article describes these communities as the following new syntaxa: *Primulo carniolicae-Seslerietum calcariae*, *Primulo carniolicae-Caricetum firmae*, *Caricetum mucronatae* var. geogr. *Primula carniolica* and *Caricetum ferrugineae* var. *Astrantia carniolica*.

Key words: *Caricion firmae*, *Caricion austroalpinae*, *Caricion ferrugineae*, phytogeography, phytosociology, syntaxonomy, the Trnovski gozd plateau, Slovenia

Izveček

Po standardni srednjeevropski fitocenološki metodi smo preučili blazinasto rastje in kamnita travišča na severnem robu Trnovskega gozda v zahodni Sloveniji. Na podlagi obsežnih primerjav s podobnimi združbami v Jugovzhodnih Alpah in v severnem delu Dinarskega gorstva preučene združbe uvrščamo v red *Seslerietalia caeruleae* Br.-Bl. in Br.-Bl. & Jenny 1926. Od podobnih združb v Jugovzhodnih Alpah jih razlikujejo nekateri severnoilirski endemiti (predvsem *Primula carniolica* in *Hladnikia pastinacifolia*) in nekatere južno- oz. jugovzhodnoalpsko-ilirske vrste (npr. *Phyteuma scheuchzeri* subsp. *columnae*, *Astrantia carniolica* in *Aquilegia bertolonii*) in jih opisujemo kot naslednje nove sintaksone: *Primulo carniolicae-Seslerietum calcariae*, *Primulo carniolicae-Caricetum firmae*, *Caricetum mucronatae* var. geogr. *Primula carniolica* in *Caricetum ferrugineae* var. *Astrantia carniolica*.

Ključne besede: *Caricion firmae*, *Caricion austroalpinae*, *Caricion ferrugineae*, fitogeografija, fitocenologija, sintaksonomija, Trnovski gozd, Slovenija

1. INTRODUCTION

The Trnovski gozd plateau is a vast high karst plateau in the northwesternmost part of the Dinaric mountains. Habič (1968) and Janež & al. (1997) among others, contributed a detailed geomorphological description of the plateau, whose largest part is covered with expansive forests and which has

a rich, several centuries long tradition of planned forest management (comp. for example Mikuletič 1953, 1985, Kozorog & al. 1998, Žigon 2003). The forest and scrub vegetation of this region was investigated by M. Wraber (1953, 1952, 1962), Piskernik (1954, 1973, 1991), Martinčič (1977), Marinček & al. (1977), Čampa (1978), Puncer (1979), Urbančič & al. (1979), Zupančič (1980, 1999), Hočevár & al.

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(1995), Marinček (1996, 1998), Dakskobler (1998, 1999, 2003 a), Dakskobler & al. (2000), Urbančič & Dakskobler (2003), Surina (2001, 2002), P. Košir (2004, 2005), Zupančič & al. (2005) and others.

There are fewer publications on non-forest vegetation. Petrophilous vegetation and stony grasslands on the southern edge of the Trnovski gozd plateau were studied by Poldini (1978), Kaligarič (1997) and Kaligarič & Poldini (1997). Some data on the vegetation and typical communities of the northern edge of the Trnovski gozd plateau were contributed already by Martinčič (1958, 1961), and some of the chasmophytic communities and stony grassland communities were described in more detail several years ago (Dakskobler 1998).

General synoptic descriptions of flora and vegetation of the Trnovski gozd plateau were contributed by T. Wraber (1959, 1990 a), T. Wraber & Zupančič (1999), Velikonja (2001) and Dakskobler (2004).

The reasearches conducted on the vegetation of the northern edge of the Trnovski gozd plateau so far (Dakskobler 1998, 1999) were supplemented with relevés of calcareous open sedge swards and stony grasslands found on smaller surfaces on rocky

edges and rock walls of Stanov rob, Poldanovec and Zeleni rob, as well as on Sončni rob above Hudo polje, in Gamsarica above the spring of the Belca and under Hudournik on the northern edge of the Vojsko plateau above the valleys of Hotenja and Kanomlja (Figures 1 a and 1 b).

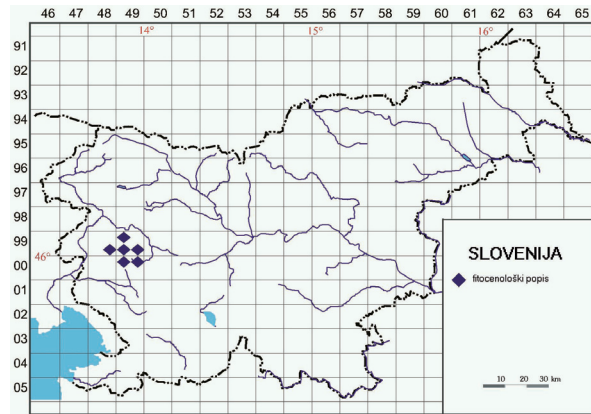


Figure 1 a: Localities of the researched stony grasslands on the map of Slovenia

Slika 1 a: Nahajališča popisanih kamnitih travišč na karti Slovenije

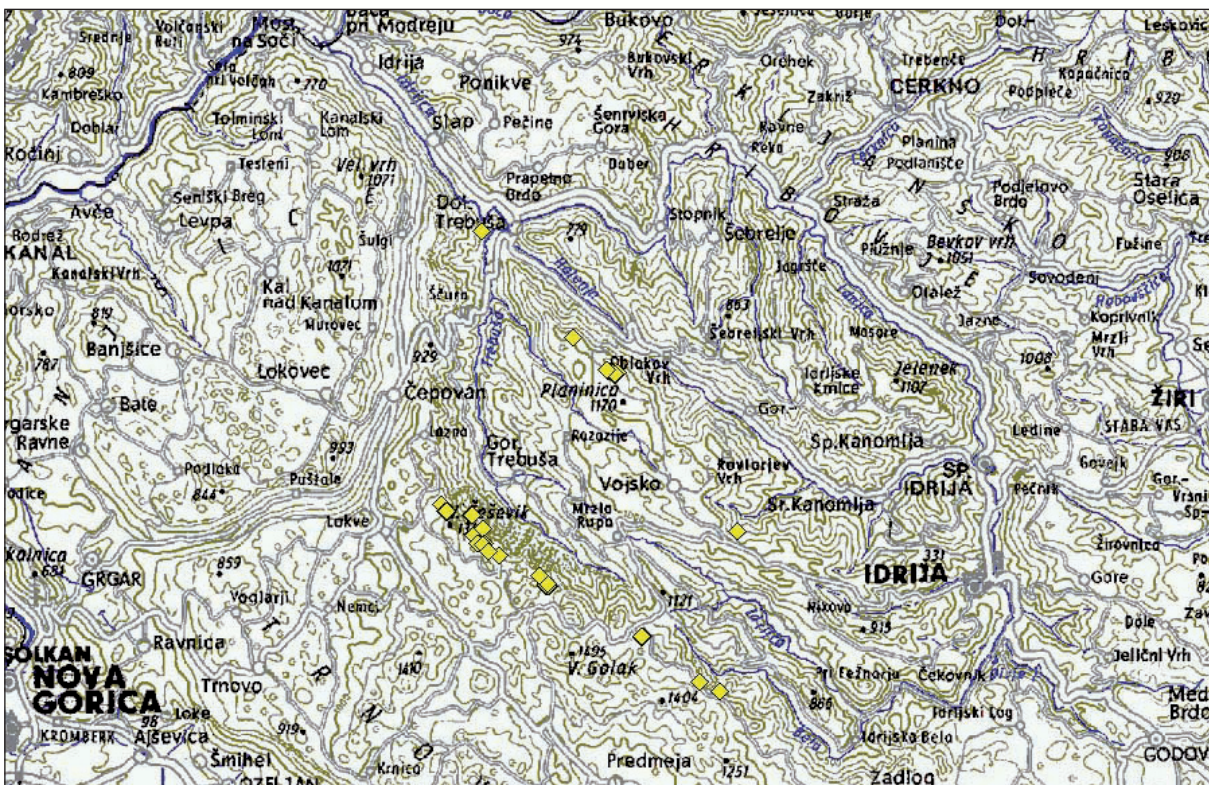


Figure 1 b: Localities of the researched stony grasslands (Source: Map of Slovenia 1: 250 000, GURS)

Slika 1 b: Nahajališča popisanih kamnitih travišč (Vir: Pregledni zemljevid Slovenije 1: 250 000, GURS)

2. METHODS

Between 1996 and 2004 we made 52 relevés of stony grasslands and sedge swards in the rock walls on the northern edge of the Trnovski gozd plateau applying the standard Central-European phytosociological method (Braun-Blanquet 1964). The collected relevés were entered into the FloVegSi database (Fauna, Flora, Vegetation and Paleovegetation of Slovenia) of Jovan Hadži Institute of Biology SRC SASA (T. Seliškar & al. 2003) and analysed with methods of hierarchical classification and the ordination method of principal coordinates analysis (PCoA). We employed the SYN-TAX 2000 (Podani 2001) program package. Combined cover-abundance values were transformed into the ordinal scale following van der Maarel (1979). In our comparisons we tested the following methods of hierarchical clustering: “complete linkage (farthest neighbour) method – FNC”, “(Unweighted) average linkage method – UPGMA”, “(Weighted) average linkage method – WPGMA”, as well as “Incremental sum of squares – MISSQ” method and ordination method of principal coordinates analysis (PCoA). We used the dissimilarity coefficient “1- similarity ratio”. Podani (2005) questions the correctness of applying these methods when processing ordinal data (such as the combined cover-abundance values transformed with van der Maarel's scale from 1 to 9) and proposes instead Ordinal Clustering (OrdCIAn) and Non-metric Multidimensional Scaling (NMDS) for such data. We therefore tested these two methods as well and the results turned out to be very similar. The results of numerical methods were combined with the classic arrangement based on diagnostic species. Some of the determined communities were compared with similar communities in the Southeastern Alps and in the Dinaric mountains. The results of this extensive comparison (Surina & Dakskobler 2005, Surina & T. Wraber 2005, see also Surina 2005 a) were the starting point for our description of new syntaxa. When calculating the proportions of diagnostic species we used as weight (ponder) not only frequency, but also the cover index (Ic) – Lausi & al. (1982: 124).

The nomenclature follows the Mala flora Slovenije (Martinčič & al. 1999) for vascular plants, Frahm & Frey (1992) and Martinčič (2003) for mosses, and Wirth (1995) for lichens. We determined only the most common taxa of mosses and lichens, some only up to the rank of genus. With the names of syntaxa we follow the following authors:

Grabherr & al. (1993), Robič & Accetto (2001), Theurillat in Aeschmann & al. (2004 b), Surina & al. (2004) and Surina & Dakskobler (2005).

3. ECOLOGICAL CHARACTERIZATION OF THE RESEARCH AREA

On its northeastern edge, the Trnovski gozd plateau falls extremely steeply into the Trebuša valley. The collective name for the rocky and precipice slopes of Stanov rob (1191 m), Poldanovec (1299 m) and Zeleni rob, which are all cut with numerous gorges, is Govci (also known as Golci, and the rockiest part under Poldanovec and Zeleni rob as Trebuška stena). The geological bedrock is Triassic dolomite (Buser 1965, 1973 a, b, 1986, 1987). The soil is shallow, extremely skeletal (Lithosols, rendzina, colluvial-delluvial soil in gullies) and subject to erosion. The northeastern part of the Trnovski gozd plateau has a relatively cold and very humid mountain climate. The nearest meteorological observatory on Vojsko (1070 m a.s.l.) reported the mean annual temperature of 6.2 °C in the period between 1961–1990 (the mean temperature of the coldest month, at that time January, was –2.8 °C, and the mean temperature of the warmest month, July, was 15.3 °C – according to Mekinda-Majaron 1995: 129). The mean annual precipitation in the same period (1961–1990) on Vojsko was 2450 mm. Precipitation is relatively evenly distributed throughout the year with autumn months being the wettest, whereas the lowest amount of precipitation is usually recorded in the second half of winter, in early spring and in summer (B. Zupančič 1995: 339). The snow stays in deep gorges under Poldanovec and Zeleni rob long into the spring. In this part of the Trnovski gozd plateau, sleet is a very common weather phenomenon, occasionally also whirlwinds. Northern winds are very powerful on ridges and exposed edges. Also common are forest fires, which usually affect dry and exposed jags and ridges, at least partly overgrown with dwarf pine (*Pinus mugo*) and (or) natural Austrian pine (*Pinus nigra*) stands.

On account of its northern exposure and the vicinity of the Julian Alps, the flora and vegetation of Govci is more or less Alpine (Martinčič 1958, Dakskobler 1998, 2004). While steep slopes, ledges and gullies are overgrown with a beech forest with Hairy Alpenrose (*Rhododendro hirsuti-Fagetum* Accetto ex

Dakskobler 1998), jags and precipice rock walls are covered with south-Alpine Austrian black pine forest (*Fraxino orni-Pinetum nigrae* Martin-Bosse 1967). Higher up in the rock walls under Poldanovec and Zeleni rob black pine is gradually being substituted with Alpine dwarf pine stands – *Rhododendro hirsuti-Pinetum prostratae* Zöttl 1951 nom. inv. var. geogr. *Anemone trifolia* Poldini, Oriolo & Francescato 2004 [*Rhodothamno-Rhododendretum hirsuti* (Aichinger 1933) Br.-Bl. & Sissingh in Br.-Bl. & al. 1939 var. geogr. *Paederota lutea* Zupančič & Žagar in Zupančič, Wraber & Žagar 2004, *Rhodothamno-Pinetum mugo* Zupančič & Žagar 1980 mscr.]. The more or less extensive rock walls are overgrown with chasmophytic communities. So far, they have been classified into the following associations: *Phyteumato-Potentilletum caulescentis* Poldini 1978, *Primulo carniolicae-Potentilletum caulescentis* Dakskobler (1998) 2000 and *Potentillo clusianae-Campanuletum zoysii* Aichinger 1933 var. geogr. *Primula carniolica* Dakskobler 1998. In recent years we found and recorded also a community of wet rock crevices in these rock walls, for the time being only provisionally classified as *Primulo carniolicae-Paederotetum luteae* nom. prov.

Sedge swards, which are rather similar to chasmophytic communities regarding their entire species composition and are in places also syndynamically directly connected to them, grow on smaller surfaces (exposed and windy ridges, edges of rock walls, ledges). The dominant species of these small surface communities are sedges (*Carex firma*, *C. mucronata*, on stony grasslands in wet gullies *C. ferruginea*) and the taxon *Sesleria caerulea* subsp. *calcaria*. The sedge sward in Govci (on Poldanovec and on Zeleni rob) was first mentioned by Martinčič (1958: 15–20), who described it as the association *Caricetum firmae* and was also the first to give its species composition (but without a phytosociological table). Apart from that, Martinčič (1958: 19) mentions also a community with the dominant species *Carex ferruginea* for this region, above all in the gullies under Poldanovec.

Similar sedge swards to those in Govci (with dominant *Carex firma* or *C. mucronata*) were catalogued also on the dolomite peak of Sončni rob (1255 m) above Hudo polje and on precipice shady slopes and rock walls under Putrih (1124 m) and Ciganski vrh (1336 m) above the spring of the Belca (Gamsarica). The rock walls here are not overgrown with black and (or) dwarf pine stands, but mainly by beech and hop hornbeam stands [*Rhododendro hirsuti-Fagetum*, *Rhododendro hirsuti-Ostryetum* Franz (1991) 2002 nom. prov.].

In comparison with Govci, the rock walls of Houdournik (1148 m) on the northern edge of the Vojško plateau are even closer to the southern Julian Alps, but rather similar to Govci regarding their flora and vegetation. The steep shady slopes are overgrown with beech and (or) hop hornbeam stands with Hairy Alpenrose (*Rhododendro hirsuti-Fagetum*, *Rhododendro hirsuti-Ostryetum*). Smaller surfaces on the summit ridge are covered also with Alpine dwarf pine stands (*Pinetum mugo* s. lat.) and individual larch trees (*Larix decidua*). Chasmophytic communities (*Primulo carniolicae-Potentilletum caulescentis* and others) grow in rock walls, whereas the ledges and edges are covered with small surface sedge swards with *Carex firma* and (or) *C. mucronata*, and on very small surfaces even with *Dryas octopetala* – Terpin (1994: 59).

4. RESULTS AND DISCUSSION

The hierarchical classification of 52 relevés of sedge swards and stony grasslands obtained with the (Unweighted) average linkage method – UPGMA is shown in Figure 2. Comparisons with other methods gave very similar results. At least five distinctive clusters can be seen in the dendrogram, while the other relevés are very different and cannot be treated as independent groups. The relevés were arranged according to these results and the clusters obtained can be assigned to the following communities: The first and the largest cluster (22 relevés) comprises the stands dominated by *Carex firma* and can be characterized as a *Carex firma* community in the wider sense (*Caricetum firmae* s. lat.). Based on the comparisons conducted in another article (Surina & Dakskobler 2005: 400) we determined that regarding their floristic composition these stands are more similar to the *Carex firma* community in the Southeastern Alps (*Gentiano terglouensis-Caricetum firmae* T. Wraber 1970) than to the similar community in the northern part of the Dinaric mountains – *Edraiantho graminifolii-Caricetum firmae* Horvat (1930) 1934. Because of their floristic characteristics (*Primula carniolica*, *Hladnikia pastinacifolia*, *Aquilegia bertolonii*, *Astrantia carniolica*, *Phyteuma scheuchzeri* subsp. *columnae*, in one relevé also *Edraianthus graminifolius*) and their thriving in the transitional phytogeographical region between the Dinaric mountains and the Julian Alps, these stands can be treated as a new geographical variant (= vicariant, geographical race – see Moravec 1994) of the association *Gen-*



the new association are syndynamically closely connected with chasmophytic communities, especially with the stands of the syntaxon *Potentillo clusianae-Campanuletum zoysii* var. geogr. *Primula carniolica*.

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community is characterized as an association with the provisional name *Pino nigrae-Seslerietum calcariae* nom. prov.

The relevés of the third cluster were classified into the association *Primulo carniolicae-Seslerietum calcariae* ass. nova. Those are stony grasslands dominated by *Sesleria caerulea* subsp. *calcaria* = *S. albicans* and some of the chasmophytic species (*Primula carniolica*, *Valeriana saxatilis*, *Paederota lutea*). Dakskobler (2003 b) published a phytosociological table with five relevés which were at that time classified into the syntaxon with the provisional name *Primulo carniolicae-Seslerietum albicantis* Dakskobler 2003 nom. prov. When comparing these five relevés with relevés 26–29 in Table 1 we realized we were dealing with a similar community. We therefore made a new phytosociological table and excluded one of the relevés published a few years ago (as it differed from the rest), so we can now typify the new association. The nomenclature type (*holotypus*) is relevé No. 3 in Table 2. The differential species of the association are the taxa *Primula carniolica*, *Primula x venusta*, *Valeriana saxatilis* and *Paederota lutea*. The stands of the association *Primulo carniolicae-Seslerietum calcariae* are syndynamically connected with the stands of the association *Primulo carniolicae-Potentilletum caulescentis*, and further succession goes in the direction of the communities of the class *Erico-Pinetea*. In the submontane and the lower montane belt, those are most often the scrub communities from the association *Rhododendro hirsuti-Ostryetum*, and the stands of the associations *Fraxino orni-Pinetum nigrae* and *Pinetum mugo* s. lat. in the montane and the altimontane belt.

The stands of the fourth cluster (five relevés) are assigned to a new variant *Caricetum ferrugineae* Lüdi 1921 var. *Astrantia carniolica* var. nova. These are stony wet grasslands recorded in gullies under Zeleni rob and in Gamsarica, but Martinčič (1958: 19) mentions them also in the gorges under Poldanovec. These stands were compared to our relevés of the association *Caricetum ferrugineae* s. lat. from the Julian Alps (mostly from the Tolmin-Bohinj ridge, although some of the relevés were made also in the Bovec region; we have not included the quite specific relevés of the successional stage *Saxifrago aizoidis-Caricetum ferrugineae* Dakskobler 1996 on the erosion area under the peak of Črni vrh, on the northern slopes of Porezen). With all of the methods of hierarchical classification, as well as with the ordination method of principal coordinates analysis, these relevés, together with another two relevés from the southern Julian Alps

(made on wet rubbly ledges under Okroglica near the Suha pasture in Bohinj) grouped separately from the other relevés (Figure 3). We believe this is a special form of the association *Caricetum ferrugineae* s. lat., syndynamically connected to scree communities. Apart from the species of subalpine grasslands (*Carex ferruginea*, *Sesleria caerulea* subsp. *calcaria*, *Aster bellidiastrum*, *Laserpitium peucedanoides* and *Betonica alopecurus*), the species such as *Astrantia carniolica*, *Adenostyles glabra* and *Calamagrostis varia*, together with some of the species of wet springs, also occur frequently and (or) abundantly. The problems regarding the syntaxonomy and phytogeography of the *Carex ferruginea* communities in the Slovenian Alps still remain vague. Surina (2005 a: 118) cannot agree with the statement of Buffa and Sburlino (2001: 196) who claim that these stands belong to the association *Hyperico grisebachii-Caricetum ferrugineae* Horvat ex Wraber 1971. He classified such stands in the Krn mountains into the association *Caricetum ferrugineae* Lüdi 1921 and described two new variants. Our classification follows his criteria, but thorough comparison of *Carex ferruginea* communities in the Julian Alps and in the Dinaric mountains is required. Differential species of the new variant are *Calamagrostis varia* and *Astrantia carniolica*. The latter is a southeast-Alpine-Illyrian species of stony and wet sites in the montane and subalpine belt. It grows in stony forests (e.g. in the stands of the associations *Anemone trifoliae-Fagetum* Tregubov 1962, *Homogyno sylvestris-Fagetum* Marinček & al. 1993 and *Rhododendro hirsuti-Fagetum*), in subalpine scree communities, in dolomite springs (e.g. together with *Pinguicula alpina*, *Schoenus nigricans* and *Primula carniolica*) and in wet rock crevices (see also T. Wraber 1990 b: 62). In Slovenia, the communities where this species grows outside the forest remain only poorly researched. Local differential species of the new variant are also *Primula carniolica*, *Hladnikia pastinacifolia* and *Aquilegia bertolonii*. The first two are Slovenian endemics and the third a south-European montane species distributed in the Southwestern Alps, the northern Apennines, in a part of the Slovenian Alps and on the northern edge of the Dinaric mountains (Aeschmann & al. 2004 a: 188). All three species chorologically define the newly described syntaxon as a community of the Southeastern Alps and the northern part of the Dinaric mountains. The nomenclature type (*holotypus*) of the variant *Caricetum ferrugineae* var. *Astrantia carniolica* var. nova is relevé No. 4 in Table 3.

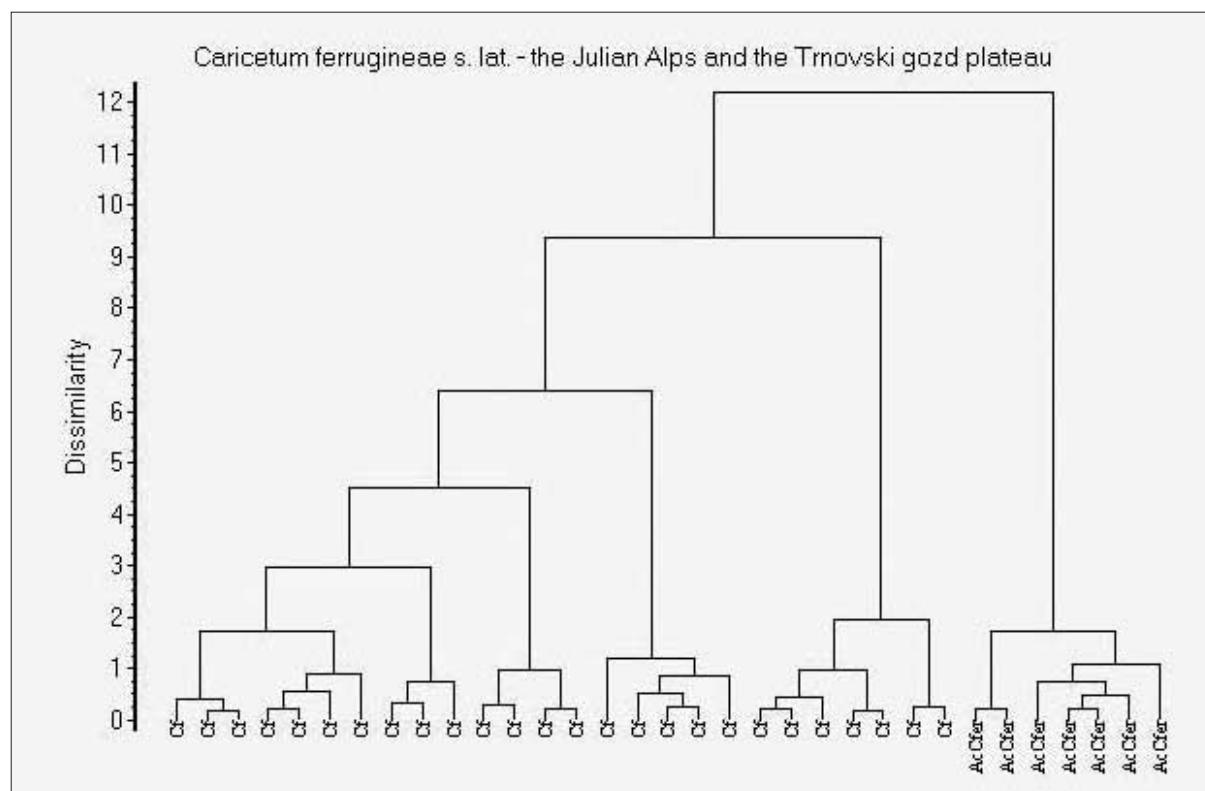


Figure 3: Dendrogram of the relevés of the macroassociation *Caricetum ferrugineae* s. lat from the Julian Alps and the Trnovski gozd plateau (MISSQ, similarity ratio): Cf – *Caricetum ferrugineae* s. lat., AcCfer – *Caricetum ferrugineae* var. *Astrantia carniolica*

Slika 3: Dendrogram sestojev makroasociacije *Caricetum ferrugineae* s. lat. – Julijske Alpe in Trnovski gozd (MISSQ, similarity ratio): Cf – *Caricetum ferrugineae* s. lat., AcCfer – *Caricetum ferrugineae* var. *Astrantia carniolica*

In the ten relevés of the fifth cluster, *Carex mucronata* is a more or less dominant species. Regarding their floristic composition and the site conditions in which they grow (dry, rocky, windy ridges), these stands can be classified into the association *Caricetum mucronatae* s. lat. The subalpine-alpine stands with dominant *Carex mucronata* in the Southeastern Limestone Alps are phytosociologically still only poorly documented (Surina 2004: 87, Surina 2005 a). Similarly, there are no unified views on their synsystematic classification (Grabherr & al. 1993: 410–411, Surina & T. Wraber 2005: 105–106). According to the comparisons made so far (Surina & Dakskobler 2005, Surina & Wraber 2005) we found that the studied *Carex mucronata* stands from the Trnovski gozd plateau are floristically more similar to the stands of this species from the Julian Alps, which are currently classified into the association *Caricetum mucronatae* (Br.-Bl. in Br.-Bl. & Jenny 1926) Tomaser 1977 (Surina 2004, 2005 a), than to the *Carex mucronata* stands on Mt. Snežnik; Surina

& T. Wraber (2005) classified the latter stands into the association *Scabioso silenifoliae-Caricetum mucronatae* Surina & T. Wraber 2005. Our community is differentiated from both the compared communities by a group of geographically restricted species (*Primula carniolica*, *Hladnikia pastinacifolia*, *Phyteuma scheuchzerii* subsp. *columnae* and *Aquilegia bertolonii*).

By comparing ten of the relevés from the Trnovski gozd plateau with five relevés from the Julian Alps, two of which were already published by Surina (2004, 2005 a) in his doctoral thesis (Table 4 and Figures 4 and 5), we determined that the stands from the Trnovski gozd plateau are relatively well differentiated from the stands from the Julian Alps. Synsystematically, these differences can be treated as two geographical variants of the same association (*Caricetum mucronatae* s. lat.), so we classify the *Carex mucronata* stands on the Trnovski gozd plateau into the new geographical variant (vicariant, race) *Caricetum mucronatae* (Br.-Bl. in Br.-Bl. & Jenny 1926) Tomaser 1977 var.

geogr. *Primula carniolica* var. geogr. nova. Although the Code of phytosociological nomenclature (Weber & al. 2000) does not consider geographical variants (and therefore does not allow the correct typification of the syntax of this rank), we selected its nomenclature type (*holotypus*) – relevé No. 2 in Table 4. The differential species of the new geo-

graphical variant are *Primula carniolica*, *Hladnikia pastinacifolia*, *Phyteuma scheuchzerii* subsp. *columnae* and *Edraianthus graminifolius*. These stands are syndynamically connected mainly with chasmophytic communities (*Primulo carniolicae-Potentilletum caulescentis*), partly also with the stands of the association *Primulo carniolicae-Caricetum firmae*.

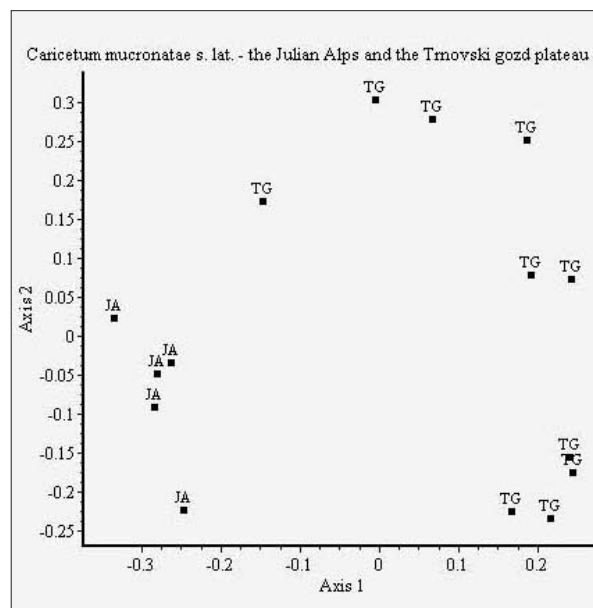
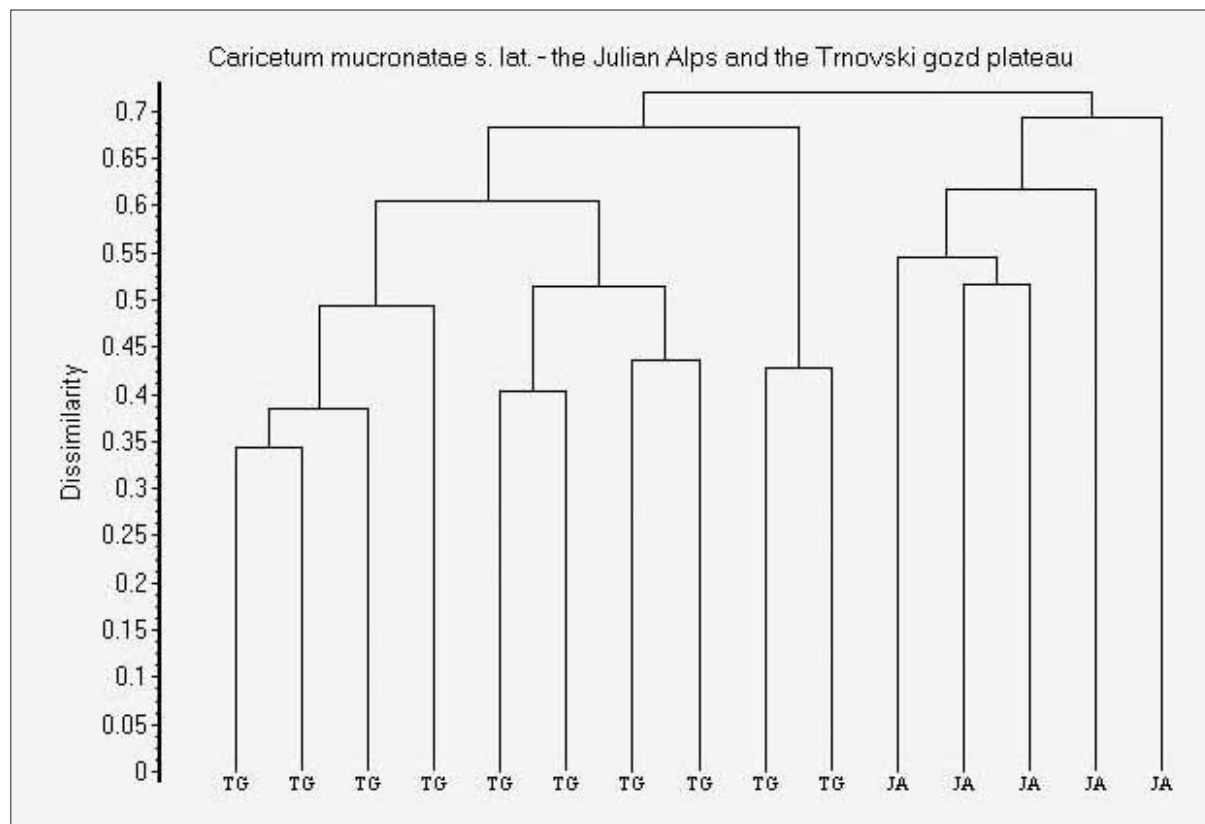


Figure 4: Dendrogram of the *Carex mucronata* swards from the Julian Alps (JA) and the northern edge of the Trnovski gozd plateau (TG) – UPGMA, similarity ratio

Slika 4: Dendrogram sestojev z dominantno vrsto *Carex mucronata* iz Julijskih Alp (JA) in severnega roba Trnovskega gozda (TG) – UPGMA, similarity ratio

Figure 5: Two-dimensional scatter-diagram of the *Carex mucronata* swards from the Julian Alps (JA) and the northern edge of the Trnovski gozd plateau (TG) – PCoA, similarity ratio

Slika 5: Dvovrsežni ordinacijski diagram sestojev z dominantno vrsto *Carex mucronata* iz Julijskih Alp (JA) in severnega roba Trnovskega gozda (TG) – PCoA, similarity ratio

The *Genisto holopetalae*-*Caricetum mucronatae* Horvat 1956 (Poldini 1978: 311–313, T. Wraber 1990 a: 200–202, Kaligarič 1997: 63) is a thermophilous community dominating stony grasslands on the southern edge of the Trnovski gozd plateau. Regarding the number of species, this community is considerably richer and is classified into the alliance *Satureion subspicatae* Horvat 1962 and into class *Festuco-Brometea* Br.-Bl. & Tüxen 1943.

Relevés No. 45 to 52 have not been classified into any of these syntaxa. These relevés stood out considerably in all our comparisons conducted so far and do not even resemble each other much. Relevés No. 45–49 are nevertheless most similar to the stands of the syntaxa *Caricetum mucronatae* var. geogr. *Primula carniolica* and *Phyteumato-Potentilletum caulescentis*. While relevé No. 52 could be classified into a special form of the association *Primulo carniolicae-Seslerietum calcariae*, relevés 50 and 51 are floristically already very similar to the stony moun-

tain grasslands from the alliance *Satureion subspicatae*, which is the community classified by Kaligarič (1997) and Kaligarič & Poldini (1997) as a phytocoenon with *Primula auricula*. The relevés made near Stanov rob could be treated as an independent association (*Saturejo liburnicae-Seslerietum calcariae* nom. prov.) that would still be classified into the class *Elyno-Seslerietea*. On the southern hillsides of the Trnovski gozd plateau already grows the taxon *Sesleria juncifolia* subsp. *kalnikensis* (Strgar 1990) and the phytocoenon with *Primula auricula* could in this case be typified as the association *Primulo auriculae-Seslerietum kalnikensis*.

In the synthetic table (Table 5) we gave a unified presentation of all the five determined syntaxa and mutually compared them with the principal coordinates analysis ordination method (Figures 6 and 7). The first axis (x) in the ordination diagram (Figure 6) shows the dry soil or thermophilicity gradient. The stands of the association *Primulo*

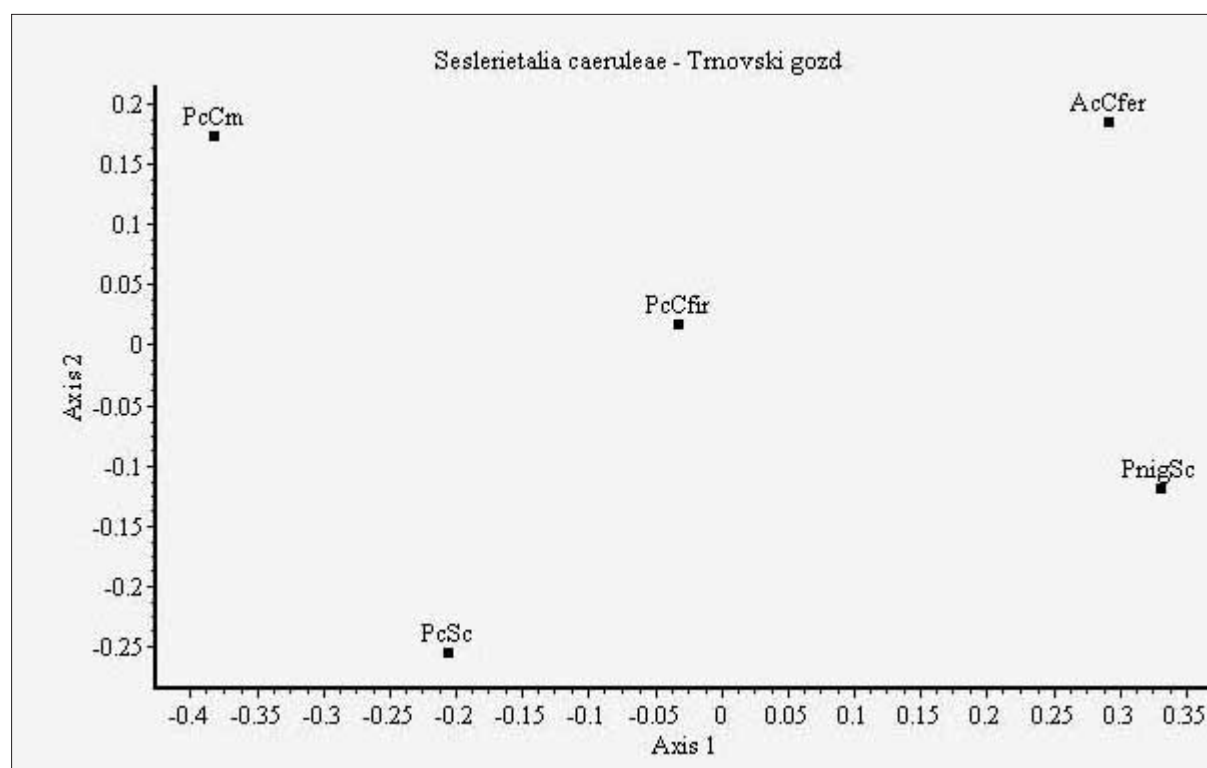


Figure 6: Two-dimensional scatter-diagram of the sedge swards and stony grassland communities on the northern edge of the Trnovski gozd plateau – PCoA, similarity ratio (PcCfir – *Primulo carniolicae*-*Caricetum firmae*, PnigSc – *Pino nigrae*-*Seslerietum calcariae*, PcSc – *Primulo carniolicae*-*Seslerietum calcariae*, AcCfer – *Caricetum ferrugineae* var. *Astrantia carniolica*, PcCm – *Caricetum mucronatae* var. geogr. *Primula carniolica*)

Slika 6: Dvorazsežni ordinacijski diagram združb blazinastega rastja in kamnitih travnišč na severnem roba Trnovskega gozda – PCoA, similariteta (PcCfir – *Primulo carniolicae*-*Caricetum firmae*, PnigSc – *Pino nigrae*-*Seslerietum calcariae*, PcSc – *Primulo carniolicae*-*Seslerietum calcariae*, AcCfer – *Caricetum ferrugineae* var. *Astrantia carniolica*, PcCm – *Caricetum mucronatae* var. geogr. *Primula carniolica*)

carniolicae-*Caricetum mucronatae* grow on the driest sites, and the stands of the variant *Caricetum ferrugineae* var. *Astrantia carniolica*, as well as those of the stage *Pino nigrae*-*Seslerietum calcariae* nom. prov., on the relatively wettest (and coldest) sites. The stands of the association *Primulo carniolicae*-*Caricetum firmae* are central (between both extremes) within this gradient. When comparing single relevés (Figure 7), the first axis still shows the dry soil gradient,

while the second axis (y) might indicate the soil development gradient (initial, raw soil of *Primulo carniolicae*-*Caricetum firmae* and *Caricetum mucronatae*, and colluvial-delluvial soil of *Caricetum ferrugineae*).

We also analysed composition according to the groups of diagnostic species and took frequency (Fr.) and cover index (Ic) as weight (ponder) – Table 6. Three of the communities described are proportionally (regardless of weight) dominated by

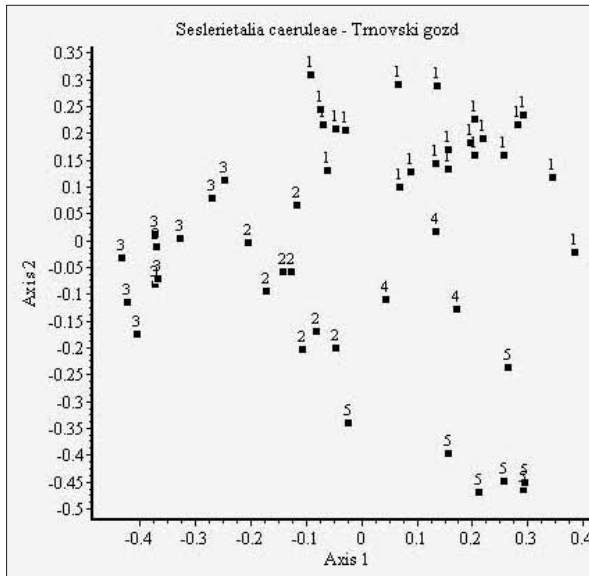


Figure 7: Two-dimensional scatter-diagram of the sedge swards and stony grassland communities on the northern edge of the Trnovski gozd plateau – PCoA, similarity ratio (1 – *Primulo carniolicae*-*Caricetum firmae*, 2 – *Primulo carniolicae*-*Seslerietum calcariae*, 3 – *Caricetum mucronatae* var. geogr. *Primula carniolica*, 4 – *Pino nigrae*-*Seslerietum calcariae*, 5 – *Caricetum ferrugineae* var. *Astrantia carniolica*)

Slika 7: Dvorazsežni ordinacijski diagram združb blazinastega rastja in kamnitih travnišč na severnem robu Trnovskega gozda – PCoA, similarity ratio (1 – *Primulo carniolicae*-*Caricetum firmae*, 2 – *Primulo carniolicae*-*Seslerietum calcariae*, 3 – *Caricetum mucronatae* var. geogr. *Primula carniolica*, 4 – *Pino nigrae*-*Seslerietum calcariae*, 5 – *Caricetum ferrugineae* var. *Astrantia carniolica*)

Table 6: Phytosociological groups in the communities of the order *Seslerietalia caeruleae* on the northern edge of the Trnovski gozd plateau (relative frequencies, pondered with frequency – Fr. and cover index – Ic)

Tabela 6: Fitocenološke skupine v združbah iz reda *Seslerietalia caeruleae* na severnem robu Trnovskega gozda (relativne frekvence, ponderirano s frekvencami – Fr. in koeficientom pokrovnosti – Ic)

Successive number (Zaporedna številka)	1 22		2 4		3 10		4 3		5 5	
Number of relevés (Število popisov)										
Sign of syntaxa (Oznaka sintaksonov)	PcCfir		PcSc		PcCm		PnigSc		AcCfer	
	Fr.	Ic	Fr.	Ic	Fr.	Ic	Fr.	Ic	Fr.	Ic
<i>Elyno-Seslerietea</i>	24	33	21	22	30	39	19	23	20	28
<i>Asplenietea trichomanis</i>	20	19	22	22	19	15	8	8	9	7
<i>Thlaspietea rotundifolii</i>	13	11	4	3	7	7	10	9	16	15
<i>Festuco-Brometea</i>	2	2	3	2	12	11	1	1	5	5
<i>Scheuchzerio-Caricetea fuscae</i>	7	6	3	2	1	1	7	7	8	8
<i>Mulgedio-Aconitetea</i>	4	3	7	7	4	3	5	6	7	6
<i>Erico-Pinetea</i>	15	14	19	23	19	17	21	21	15	16
<i>Vaccinio-Piceetea</i>	1	1	5	3	0	0	7	6	3	3
<i>Fagetalia sylvaticae</i>	2	1	1	1	1	1	10	9	12	8
<i>Quercetalia pubescentis</i>	0	0	1	1	0	0	3	2	1	1
<i>Quercio-Fagetea</i>	0	0	0	0	0	0	1	1	1	1
Other species (Druge vrste)	0	1	0	0	1	1	2	2	0	0
Mosses and lichens (Mahovi in lišaji)	11	9	14	15	6	6	6	5	4	4
Total (Skupaj)	100	100	100	100	100	100	100	100	100	100

the species of the class *Elyno-Seslerietea*, the stage *Pino nigrae-Seslerietum calcariae* is dominated by the species of the class *Erico-Pinetea*, whereas in the association *Primulo carniolicae-Seslerietum calcariae* the species of the classes *Asplenietea trichomanis*, *Erico-Pinetea* and *Elyno-Seslerietea* are represented with relatively equal proportions. It is an explicitly transitional community or a succession stage in the series from chasmophytic communities towards basophilous scrub communities.

A significant proportion of the species of basophilous pine forests in all the syntaxa described is due to the fact that sedge swards and stony grasslands occur on small areas and extrazonally even in the forest belt, especially in the communities of the class *Erico-Pinetea* (*Fraxino orni-Pinetum nigrae*, *Pinetum mugo* s. lat.). A diagnostically rather high proportion of the species of the class *Festuco-Brometea* and comparatively the lowest (negligible) proportion of the species of the class *Scheuchzerio-Caricetea fuscae* point to very dry sites with the stands of the syntaxon *Caricetum mucronatae* var. geogr. *Primula carniolica*. The stands of the syntaxon *Caricetum ferrugineae* var. *Astrantia carniolica* grow mostly in rubbly gullies, often in the vicinity of beech stands (*Rhododendro hirsuti-Fagetum*), which is why they have a relatively high proportion of the species of the class *Thlaspietea rotundifolii* and order *Fagetalia sylvaticae*.

5. CONCLUSIONS

The Trnovski gozd plateau is an explicitly transitional area between the Julian Alps and the Dinaric mountains. This is reflected also in its dominating vegetation – forest communities (Surina 2002, 2003). Regarding their floristic composition, the sedge swards and stony grasslands in the montane-altimontane belt on its northern edge (Govci, Gamsarica, Hudournik) are most similar to the sedge swards and subalpine-alpine grasslands in the Southeastern Alps, classified into the order *Seslerietalia caeruleae* (Surina & Dakskobler 2005, Surina & Wraber 2005). Only a few species characteristic for similar communities in the other parts of the Dinaric mountains, classified into the order *Seslerietalia juncifoliae* (e.g. *Edraianthus graminifolius* on Poldanovec), grow there. On the other hand,

the studied communities are characterized by some of the northern-Illyrian endemics (above all by *Primula carniolica* and *Hladnikia pastinacifolia*) and some southern- or southeastern-Alpine-Illyrian species (e.g. *Phyteuma scheuchzeri* subsp. *columnae*, *Astrantia carniolica* and *Aquilegia bertolonii*), which (apart from a partial exception of *Aquilegia bertolonii*) for the most part cannot be found in either southern-Alpine or in other northern-Dinaric communities. On account of the abundant growth of these endemics (e.g. *Primula carniolica*), the studied sedge swards and stony grasslands are treated as special communities. Their classification into higher syntaxonomical units is as follows:

Elyno-Seslerietea Br.-Bl. 1948

Seslerietalia caeruleae Br.-Bl. in Br.-Bl. & Jenny 1926

Caricion firmae Gams 1936

Primulo carniolicae-Caricetum firmae ass. nova

Caricetum mucronatae (Br.-Bl. in Br.-Bl. & Jenny 1926) Tomaser 1977 var. geogr.

Primula carniolica var. geogr. nova

Caricion austroalpinae Sutter 1962

Primulo carniolicae-Seslerietum calcariae ass. nova

Caricion ferrugineae G. & J. Br.-Bl. 1931

Caricetum ferrugineae Lüdi 1921 var. *Astrantia carniolica* var. nova

We find that the stands of the newly described syntaxa usually thrive on very small surfaces and are syndynamically connected to chasmophytic communities (*Potentillo clusianae-Campanuletum zoyii* var. geogr. *Primula carniolica*, *Primulo carniolicae-Potentilletum caulescentis*) with which they also have a quite similar floristic composition. In favourable conditions these stony grasslands become overgrown above all with scrub and forest communities of the class *Erico-Pinetea* (*Rhododendro hirsuti-Pinetum prostratae*, *Rhododendro hirsuti-Ostryetum*, *Fraxino orni-Pinetum nigrae*). Human interventions on the sites of these communities are negligible. Their role as a biotope, however, is considerable, as they are the sites hosting the species which are important on the European scale as well (*Primula carniolica*, *Hladnikia pastinacifolia*, *Aquilegia bertolonii* – Čušin & al. 2004).

6. POVZETEK

Kamnita subalpinska travišča (*Seslerietalia caeruleae*) na severnem robu Trnovskega gozda (Dinarsko gorstvo, zahodna Slovenija)

V letih 1996–2004 smo na severnem robu Trnovskega gozda: Govci nad dolino Trebuše (pod Stanovim robom, Poldanovcem in Zelenim robom), Sončni rob nad Hudim poljem, Gamsarica nad povirjem Belce, Hudournik na robu Vojskarske planote (sliki 1 a in 1 b) po standardni srednjeevropski metodi (Brun-Blanquet 1964) naredili 52 fitocenoloških popisov kamnitih travšč in blazinastega rastja v ostenjih. Zbrane popise smo vnesli v bazo podatkov FloVegSi (Favna, flora, vegetacija in paleovegetacija Slovenije) Biološkega inštituta Jovana Hadžija ZRC SAZU (T. Seliškar & al. 2003) in jih med seboj primerjali z metodami hierarhične klasifikacije in z ordinacijsko metodo glavnih koordinat (PCoA). Uporabljali smo programski paket SYN-TAX 2000 (Podani 2001). Kombinirane ocene zastiranja in pogostnosti smo pretvorili z vrstilno pretvorbo, ki jo je predlagal van der Maarel (1979). Rezultate numeričnih metod smo kombinirali s klasično ureditvijo na podlagi diagnostičnih vrst. Nekatere ugotovljene združbe smo primerjali s podobnimi v Jugovzhodnih Alpah in v Dinarskem gorstvu. Rezultati te obsežne primerjave (Surina & Dakskobler 2005, Surina & T. Wraber 2005, glej tudi Surina 2005 b) so bili izhodišče za naš opis novih sintaksonov. Pri izračunih deležev diagnostičnih vrst smo kot utež (ponder) poleg frekvence uporabili tudi indeks pokrovnosti – a cover index (Ic) – Lausi & al. (1982: 124). Nomenklaturni vir za imena praprotnic in semenjk je Mala flora Slovenije (Martinčič & al. 1999). Nomenklaturni vir za imena mahov so Frahm & Frey (1992) ter Martinčič (2003), za imena lišajev pa Wirth (1995). Pri mahovih in lišajih smo določili le najpogostejše taksonove, nekatere le do ranga rodu. Pri imenih sintaksonov se ravnamo po avtorjih Grabherr & al. (1993), Robič & Accetto (2001), Theurillat v Aeschimann & al. (2004 b), Surina & al. (2004) in Surina & Dakskobler (2005).

V urejeni fitocenološki tabeli (tabela 1, slika 2) smo določili pet sintaksonov. V prvem in največjem šopu (22 popisov) so sestoji z dominantnim čvrstim šašem (*Carex firma*). Na podlagi primerjav, ki smo jih opravili na drugem mestu (Surina & Dakskobler 2005: 400), smo ugotovili, da so ti sestoji po svoji floristični sestavi bolj podobni združbi čvrstega šaša v Jugovzhodnih Alpah (*Gentiano terglouensis-Caricetum firmae* T. Wraber 1970) kot združbi

v severnem delu Dinarskega gorstva – *Edraiantho graminifolii-Caricetum firmae* Horvat (1930) 1934. Zaradi florističnih posebnosti (*Primula carniolica*, *Hladnikia pastinacifolia*, *Aquilegia bertolonii*, *Astrantia carniolica*, *Phyteuma scheuchzeri* subsp. *columnae*, v enem popisu tudi *Edraianthus graminifolius*) in uspevanja v prehodnem fitogeografskem območju med Dinarskim gorstvom in Julijskimi Alpami bi jih torej lahko vrednotili kot novo geografsko varianto asociacije *Gentiano terglouensis-Caricetum firmae* ali celo kot novo asociacijo *Primulo carniolicae-Caricetum firmae* ass. nova. Odločitev je težavna, ker v preučenih sestojih nismo našli nobene od značilnic asociacije *Gentiano-Caricetum firmae*. *Gentiana froelichii*, *G. terglouensis*, *Phyteuma sieberi*, *Primula wulfeniana* in *Sesleria sphaerocephala* (Grabherr & al. 1993: 409), vrste *Primula carniolica*, *Aquilegia bertolonii*, *Astrantia carniolica* in *Hladnikia pastinacifolia* pa tudi ne morejo biti značilnice nove asociacije, temveč so le njene razlikovalnice. Ob upoštevanju ekoloških posebnosti (uspevanje še v montanskem pasu, na nadmorski višini od 550 do 1300 m) smo se odločili za drugo možnost in kot nomenklaturni tip (*holotypus*) nove asociacije izbrali popis št. 11 v tabeli 1. Sindinamsko so sestoji nove asociacije tesno povezani z združbami skalnih razpok, še posebej s sestoji sintaksona *Potentillo clusianae-Campanuletum zoysii* var. geogr. *Primula carniolica*.

V drugem šopu, le trije popisi, so sestoji, ki smo jih obravnavali že v naši razpravi pred leti (Dakskobler 1998) kot sukcesijski stadij *Sesleria albicans-Pinus nigra*. To je progresivna razvojna stopnja, v kateri poleg vrst skalnih razpok in subalpskih travšč že kar obilno uspevajo tudi vrste bazofilnih borovih gozdov (*Rhododendron hirsutum*, *Rhodothamnus chamaecistus*, *Pinus nigra*), pa tudi vrsti *Salix glabra* in *S. appendiculata* ter posamični poganjki bukve, črne-ga gabra in malega jesena. Ob ugodnih razmerah takšna kamnita travišča prerase črno borovje ali ruševje. To prehodno združbo v tem članku označujemo kot asociacijo s provizornim imenom *Pino nigrae-Seslerietum calcariae* nom. prov.

Popise tretjega šopa smo uvrstili v asociacijo *Primulo carniolicae-Seslerietum calcariae* ass. nova. To so kamnita travišča z dominantno modriko (*Sesleria caerulea* subsp. *calcaria* = *S. albicans*) in nekaterimi vrstami skalnih razpok (*Primula carniolica*, *Valeriana saxatilis*, *Paederota lutea*). Pred nekaj leti (Dakskobler 2003 b) smo že objavili fitocenološko tabelo s petimi popisi, ki smo jih takrat uvrstili v provizorni sintakson *Primulo carniolicae-Seslerietum albicantis* Dakskobler 2003 nom. prov. Pri primerjavi teh petih popisov s popisi 26–29 v tabeli 1 smo ugotovili,

da gre za podobno združbo. Sestavili smo novo fitocenološko tabelo, en pred leti objavljen popis smo izločili (ker je od ostalih nekoliko drugačen), tako novo asociacijo zdaj lahko tudi tipiziramo. Nomenklaturni tip (*holotypus*) je fitocenološki popis št. 3 v tabeli 2. Razlikovalnice asociacije so taksoni *Primula carniolica*, *Primula x venusta*, *Valeriana saxatilis* in *Paderota lutea*. Sestoji asociacije *Primulo carniolicae-Seslerietum calcariae* so sindinamsko povezani s sestoji asociacije *Primulo carniolicae-Potentilletum caulescentis*, nadaljnja sukcesija pa poteka v smeri združb razreda *Erico-Pinetea*. V submontanskem in spodnjem montanskem pasu so to največkrat grmišča iz asociacije *Rhododendro hirsuti-Ostryetum*, v montanskem in altimontanskem pasu pa sestoji asociacij *Fraxino orni-Pinetum nigrae* in *Pinetum mugo* s. lat.

Sestoji četrtega šopa (pet popisov) uvrščamo v varianto *Caricetum ferrugineae* var. *Astrantia carniolica* var. nova. To so kamnita vlažna travišča, ki smo jih popisali v žlebovih pod Zelenim robom in v Gamsarici, Martinčič (1958: 19) pa jih omenja tudi v grapah pod Poldanovcem. Te sestoji smo primerjali z našimi popisi asociacije *Caricetum ferrugineae* Lūdi 1921 s. lat. iz Julijskih Alp (predvsem iz Tolminsko-Bohinjskega grebena, nekaj popisov smo naredili tudi na Bovškem) in pri vseh uporabljenih metodah hierarhične klasifikacije in prav tako pri ordinacijski metodi glavnih koordinat so se ti popisi, skupaj še z dvema popisoma iz južnih Julijskih Alp – naredili smo ju na vlažnih gručnatih polcih pod Okroglico pri pl. Suha v Bohinju – razvrščali ločeno od ostalih popisov (slika 3). Menimo, da je to posebna oblika asociacije *Caricetum ferrugineae* s. lat., ki je sindinamsko povezana z združbami melišč. V tej združbi se poleg vrst subalpinskih travšč (*Carex ferruginea*, *Sesleria caerulea* subsp. *calcaria*, *Aster bellidiastrum*, *Laserpitium peucedanoides* in *Betonica alopecurus*) pogosto in (ali) obilno pojavljajo predvsem vrste *Astrantia carniolica*, *Adenostyles glabra* in *Calamagrostis varia* ter nekatere vrste vlažnih povirij. Razlikovalnici nove variante sta vrsti *Calamagrostis varia* in *Astrantia carniolica*, lokalno tudi vrste *Primula carniolica*, *Hladnikia pastinacifolia* in *Aquilegia bertolonii*.

V desetih popisih petega šopa je bolj ali manj dominantna vrsta *Carex mucronata*. Te sestoji po floristični sestavi in po rastiščnih razmerah, v katerih uspevajo (suhi, skalnati, vetrovni grebeni), lahko uvrstimo v asociacijo *Caricetum mucronatae* s. lat. Subalpinsko-alpinski sestoji z dominantno vrsto *Carex mucronata* so v Jugovzhodnih Apneniških Alpah fitocenološko še slabo dokumentirani (Surina 2004: 87, Surina 2005 a), prav tako pogledi na nji-

hovo sinsistematsko vrednotenje niso enotni (Grabherr & al. 1993: 410–411, Surina & T. Wraber 2005: 105–106). Po doslej opravljenih primerjavah (Surina & Dakskobler 2005, Surina & Wraber 2005) smo ugotovili, da se preučeni sestoji z dominantno vrsto *Carex mucronata* iz Trnovskega gozda floristično bolj podobni sestojem te vrste iz Julijskih Alp, ki jih začasno uvrščamo v asociacijo *Caricetum mucronatae* (Br.-Bl. in Br.-Bl. & Jenny 1926) Tomaser 1977 (Surina 2004, 2005 a), kot pa sestojem ostnatega šaša na Snežniku – Surina & T. Wraber (2005) sta te sestoji uvrstila v asociacijo *Scabioso silenifoliae-Caricetum mucronatae* Surina & T. Wraber 2005. Od obeh primerjanih združb pa našo združbo razlikuje skupina razlikovalnic (*Primula carniolica*, *Hladnikia pastinacifolia*, *Phyteuma scheuchzerii* subsp. *columnae* in *Aquilegia bertolonii*). S primerjavo desetih popisov iz Trnovskega gozda in petih popisov iz Julijskih Alp, dva od njih je v doktorski nalogi objavil že Surina (2004, 2005 a) – tabela 4 in sliki 4 in 5, smo ugotovili, da se sestoji iz Trnovskega gozda floristično razmeroma dobro ločijo od sestojev iz Julijskih Alp. Sinsistematsko te razlike lahko vrednotimo kot dve geografski varianti iste asociacije (*Caricetum mucronatae* s. lat.), zato smo preučene sestoji uvrstili v novo geografsko varianto *Caricetum mucronatae* (Br.-Bl. in Br.-Bl. & Jenny 1926) Tomaser 1977 var. geogr. *Primula carniolica* var. geogr. nova. Njen nomenklaturni tip (*holotypus*) je fitocenološki popis št. 2 v tabeli 4, njene razlikovalnice pa taksoni *Primula carniolica*, *Hladnikia pastinacifolia*, *Phyteuma scheuchzerii* subsp. *columnae* in *Edraianthus graminifolius*. Sindinamsko so ti sestoji povezani predvsem z združbami skalnih razpok (*Primulo carniolicae-Potentilletum caulescentis*), deloma tudi s sestoji asociacije *Primulo carniolicae-Caricetum firmiae*.

Popisov št. 45–52 za zdaj nismo uvrstili v nobeno asociacijo. Ti popisi so pri naših doslej opravljenih primerjavah precej odstopali in si tudi med seboj niso preveč podobni. Popisi št. 45–49 so kljub temu še najbolj podobni sestojem sintaksonov *Caricetum mucronatae* var. geogr. *Primula carniolica* in *Phyteumato-Potentilletum caulescentis*. Popis št. 52 bi lahko uvrstili v posebno obliko asociacije *Primulo carniolicae-Seslerietum calcariae*, popisa 50 in 51 pa sta floristično že precej podobna kamnitim gorskim travščem iz zveze *Satureion subspicatae*, to je združbi, ki sta jo Kaligarič (1997) in Kaligarič & Poldini (1997) označila kot fitocenon z vrsto *Primula auricula*. Mor-da bi popisa, ki smo ju naredili pri Stanovem robu, lahko obravnavali kot samostojno asociacijo (*Saturejo liburnicae-Seslerietum calcariae* nom. prov.), ki bi jo še vedno uvrstili v razred *Elyno-Seslerietea*.

V sintezni tabeli (tabela 5) smo strnjeno prikazali vseh pet ugotovljenih sintaksonov in jih med seboj primerjali z ordinacijsko metodo glavnih koordinat (sliki 6 in 7). V ordinacijskem diagramu (slika 6) prva os (x) kaže gradient sušnosti oz. toploljubnosti. Na najbolj suhih rastiščih uspevajo sestoji sintaksona *Caricetum mucronatae* var. geogr. *Primula carniolica*, na relativno najbolj vlažnih (in hladnih) rastiščih pa sestoji variante *Caricetum ferrugineae* var. *Astrantia carniolica* in sestoji stadija *Pino nigrae-Seslerietum calcariae*. V tem gradientu so sestoji asociacije *Primulo carniolicae-Caricetum firmae* središčni (vmes med obema skrajnostma). Če primerjamo posamezne popise (slika 7), prva os še vedno kaže gradient sušnosti oz. toploljubnosti, medtem ko druga os (y) morda nakazuje gradient razvitosti tal (inicialna, surova tla združb *Primulo carniolicae-Caricetum firmae* in *Caricetum mucronatae* in koluvialno-deluvialna tla združbe *Caricetum ferrugineae*).

Analizirali smo tudi sestavo po skupinah diagnostičnih vrst in kot ponder upoštevali frekvenco (Fr.) in indeks pokrovnosti (Ic) – tabela 6. V treh opisanih združbah po deležu (ne glede na ponder) prevladujejo vrste razreda *Elyno-Seslerietea*, v stadiju *Pino nigrae-Seslerietum calcariae* vrste razreda *Erico-Pinetea*, v asociaciji *Primulo carniolicae-Seslerietum calcariae* pa so z razmeroma enakovrednimi deleži zastopane vrste razredov *Asplenietea trichomanis*, *Erico-Pinetea* in *Elyno-Seslerietea*. To je izrazito prehodna združba oz. sukcesijska stopnja v nizu od združb skalnih razpok proti bazofilnim grmiščem.

Ugotavljamo, da sestoji novo opisanih sintaksonov navadno uspevajo na zelo majhnih površinah (zato so v primerjavi s podobnimi jugovzhodnoalpskimi združbami floristično precej obubožani) in so sindinamsko povezani z združbami skalnih razpok, s katerimi imajo tudi precej podobno floristično sestavo. Človekovi posegi na rastiščih teh združb so zanemarljivi, njihova biotopska vloga pa je velika, saj so to rastišča v evropskem merilu pomembnih vrst (*Primula carniolica*, *Hladnikia pastinacifolia*, *Aquilegia bertolonii* – Čušin & al. (2004)).

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10. APPENDIX

Table 1: Sedge swards and stony grassland communities from the order *Seslerietalia caeruleae* on the northern edge of the Trnovski gozd plateau**Tabela 1:** Združbe blazinastega rastja in kamnitih travnišč iz reda *Seslerietalia caeruleae* na severnem robu Trnovskega gozda

	I																						II			II				
Number of relevé (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	27	28	29	
Altitude in m (Nadmorska v. v m)	1000	990	1180	1150		1150	1270	1250	1280	1270	1150	1190	1140	1120	1220	580	550	1150	1160	1090	1140	840	960	970	700	1240	1130	610	1130	
Aspect (Lega)	N	NE	W	N	NE	NW	SW	NW	NE	NE	NNW	NW	NE	NW	N	NE	NE	NE	E	NW	NW	NE	N	NE	NE	N	N	N	N	
Slope in degrees (Nagib v stopinjah)	80	80	80	85	50	50	70	70	70	70	70	80	45	80	70	70	45	25	50	60	80	80	30	45	45	45	50	70	80	
Parent material (Matična podlaga)	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
Soil (Tla)	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	
Stoniness in % (Kamnitost v %)	50	70	80	70	20	30	20	30	5	50	50	70	10	60	20	30	20	50	40	60	70	50	20	40	30	10	10	10	50	
Cover in % (Zastiranje v %):																														
Shrub layer (Grmovna plast)	E2																10					5	30	30	30	5		2		
Herb layer (Zeliščna plast)	E1	50	30	20	30	80	70	80	70	100	50	50	30	90	40	80	70	50	60	60	25	40	70	70	80	90	100	80	40	
Moss layer (Mahovna plast)	E0		70		2											5	5				20	5	5	10	5	20		20		
Relevé area (Velikost popis. ploskve)	m2	10	4	10	8	2	4	2	10	2	4	6	6	2	5	4	4	5	10	5	5	10	4	20	20	20	2	5	5	10
Number of species (Število vrst)		20	20	17	17	29	18	17	29	16	21	37	18	20	23	20	27	30	27	28	19	20	20	42	44	43	32	20	25	20
Date of taking relevé (Datum popisa)		5.19.2004	20.8.2003	27.8.2004	26.8.2003	20.8.2003	26.8.2003	27.8.2004	27.8.2004	27.8.2004	27.8.2004	20.8.2003	20.8.2003	22.8.2003	27.8.2004	13.8.2003	26.8.2003	26.8.2003	27.8.2004	27.8.2004	20.7.2004	27.8.2004	5.7.2001	31.7.1997	31.7.1997	31.7.1997	13.8.2003	20.7.2004	28.9.2004	20.7.2004
Locality (Nahajališče)		Poldanovec	Poldanovec	Zeleni rob	Stanov rob	Stanov rob	Stanov rob	Zeleni rob	Zeleni rob	Zeleni rob	Zeleni rob	Poldanovec	Poldanovec	Stanov rob	Zeleni rob	Sončni rob	Govčnik	Govčnik	Zeleni rob	Zeleni rob	Hudournik	Zeleni rob	Gamsarica	Poldanovec	Poldanovec	Poldanovec	Sončni rob	Hudournik	Klavžarica	Hudournik
Quadrant (Kvadrant)		9949/3	9949/3	9949/3	9948/4	9948/4	9948/4	9949/3	9949/3	9949/3	9949/3	9949/3	9949/3	9948/4	9949/3	0049/1	9948/4	9948/4	9949/3	9949/3	9949/1	9949/3	0049/2	9949/3	9949/3	9949/3	0049/1	9949/1	9949/4	9949/1
Differential species of the syntaxa																														
Razlikovalne vrste sintaksonov																														
AT <i>Primula carniolica</i>	E1	1	+	r	1	+	+	r	+	.	+	1	+	1	+	1	+	+	.	1	+	+	1	r	+	.	+	3	1	1
TR <i>Astrantia carniolica</i>	E1	+	r	+	1	.	.	r	.	.	.	.	+	1	+	+	1	1	1	1	+	+	+	1	+	.	.	.	.	
TR <i>Aquilegia bertolonii</i>	E1	.	.	.	+	1	+	+	r	.	.	1	.	+	+	.	1	+	.	.	.	+	+	+	.	+	.	.	.	
TR <i>Hladnikia pastinacifolia</i>	E1	.	.	.	.	.	1	1	+	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Caricion firmae																														
Carex firma	E1	2	2	1	1	3	4	2	3	3	3	3	2	4	3	4	3	3	3	3	3	2	1	1	1	1	+	.	.	
Dryas octopetala	E1	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	
Saxifraga caesia	E1	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1	r	.	.	.	
Helianthemum alpestre	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Gentiana nivalis	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	r	.	
Caricion austroalpiniae																														
Laserpitium peucedanoides	E1	.	.	.	.	+	+	1	1	.	.	+	.	.	+	+	.	+	+	+	+	.	+	+	+	+	+	1	+	.
Asperula aristata	E1	.	.	.	.	+	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	.	+
Ranunculus hybridus	E1	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.
Caricion ferrugineae																														
Carex ferruginea	E1	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+	.	.	.	+	.	.
Seslerion juncifoliae																														
Edraianthus graminifolius	E1	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
ES Elyno-Seslerietea																														
Sesleria caerulea subsp. calcaria	E1	3	+	+	1	3	3	3	3	4	1	2	1	2	1	1	3	3	1	1	2	+	2	3	2	3	3	2	4	3
Carex mucronata	E1	.	+	.	.	1	.	1	1	.	1	+	.	.	.	1	+	+	.	.	+	.	+	.	.	.	+	1	+	.

ABBREVIATIONS – OKRAJŠAVE

Parent material (Geološka podlaga)

A – limestone – apnenec

D – dolomite – dolomit

DA – dolomite limestone – dolomitni apnenec

Soil types (Talni tipi)

Li – Lithosols – litosol

IV					V																																
30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52															
840	1260	1120	1150	1210	1280	1270	1275	1270	1220	1240	1120	1110	1115	1105	1280	800	1285	1240	1165	1165	1140	890															
N	NE	N	NW	E	NE	NE	S	S	SE	NE	NE	E	NNE	SW	N	W	NE	E	E	SE	E	NE															
45	45	35	20	40	60	45	15	40	45	70	70	45	60	20	30	40	45	80	85	45	45	20															
D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D															
Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	R															
60	20	30	10	10	40	60	30	20	30	50	70	50	50	60	10	60	30	70	60	30	30	10															
10	20																							5	2												
60	80	70	100	100	60	40	70	80	70	50	40	60	70	70	90	70	70	20	35	70	80	90															
20				10		10	5								5	10	5					40															
4	10	10	10	10	2	4	4	10	4	4	5	5	10	5	4	20	2	1	8	10	10	10															
27	26	21	22	25	23	21	20	20	24	14	20	21	21	27	32	28	20	13	21	29	33	28															
7.5.2001	8.27.2004	8.27.2004	8.27.2004	8.27.2004	8.20.2003	8.20.2003	8.27.2004	8.27.2004	8.13.2003	8.13.2003	7.20.2004	7.20.2004	7.20.2004	7.20.2004	8.27.2004	7.5.2001	8.20.2003	8.13.2003	8.26.2003	8.26.2003	8.26.2003	7.20.2004															
Gamsarica	Zeleni rob	Zeleni rob	Zeleni rob	Zeleni rob	Poldanovec	Poldanovec	Zeleni rob8a	Zeleni rob10	Sončni rob	Sončni rob	Hudournik	Hudournik	Hudournik	Hudournik	Zeleni rob	Gamsarica	Poldanovec	Sončni rob	Stanov rob	Stanov rob	Stanov rob	Hudournik															
0049/2	9949/3	9949/3	9949/3	9949/3	9949/3	9949/3	9949/3	9949/3	0049/1	0049/1	9949/1	9949/1	9949/1	9949/1	9949/3	0049/2	9949/3	0049/1	9948/4	9948/4	9948/4	9949/1															
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1	+	2	3	4	3	2	3	4	3	2	1	2	2	2	3	3	2	+	1	3	3	3															
.	.	.	.	.	1	2	3	3	3	2	2	3	2	3	+	1	2	1	1	1	.	.															

I			II			III			IV			V			Pr(Total)
Pr.	Fr.	lc	Pr.	Fr.	lc	Pr.	Fr.	lc	Pr.	Fr.	lc	Pr.	Fr.	lc	
20	91	23	2	67	11	4	100	42	1	20	4	5	50	12	33
16	73	18	2	67	19	0	0	0	5	100	42	0	0	0	24
11	50	12	2	67	15	1	25	6	1	20	4	1	10	2	16
5	23	7	0	0	0	0	0	0	1	20	2	4	40	17	10
22	100	68	3	100	33	1	25	6	1	20	4	3	30	7	31
1	5	2	2	67	15	0	0	0	0	0	0	2	20	9	6
1	5	2	3	100	22	0	0	0	0	0	0	0	0	0	4
0	0	0	0	0	0	0	0	0	0	0	0	2	20	7	2
0	0	0	0	0	0	1	25	3	0	0	0	0	0	0	1
12	55	13	3	100	22	3	75	19	4	80	20	3	30	8	25
3	14	3	1	33	7	2	50	11	0	0	0	7	70	20	16
1	5	2	1	33	4	0	0	0	0	0	0	0	0	0	2
3	14	3	1	33	7	1	25	6	5	100	53	0	0	0	10
1	5	1	0	0	0	0	0	0	0	0	0	2	20	4	3
22	100	53	3	100	70	4	100	75	5	100	56	10	100	63	52
11	50	14	0	0	0	4	100	25	0	0	0	10	100	64	31

		I																					II			II					
Number of relevé (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	27	28	29	
	<i>Aster bellidiastrum</i>	E1	+	+	+	+	1	.	.	+	.	.	+	+	+	1	+	1	1	+	1	1	1	+	+	+	+	.	.	.	.
	<i>Gentiana clusii</i>	E1	.	.	.	.	+	+	r	+	+	+	1	.	+	+	+	.	1	.	+	.	.	+	.	.	+	.	.	.	.
	<i>Hieracium villosum</i>	E1	.	.	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+	.	+	.	+	.	.	.	+
	<i>Betonica alopecuros</i>	E1	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.
	<i>Thymus alpigenus</i>	E1	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.
	<i>Anthyllis vulneraria</i> subsp. <i>alpestris</i>	E1	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Senecio abrotanifolius</i>	E1	.	.	.	.	+	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.
	<i>Carduus crassifolius</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Juncus monanthos</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	+	.	.	.	.	.	.
	<i>Leontopodium alpinum</i>	E1	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Achillea clavenae</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Phyteuma orbiculare</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Arabis ciliata</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Campanula scheuchzeri</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.
	<i>Polygala alpestris</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Silene alpestris</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.
AT	<i>Asplenietea trichomanis</i>																														
	<i>Valeriana saxatilis</i>	E1	+	2	2	1	1	2	1	2	1	1	+	+	+	1	1	1	1	+	1	1	1	1	1	1	1	1	1	1	1
	<i>Paederota lutea</i>	E1	+	1	1	1	.	+	+	+	.	.	+	.	.	1	+	.	+	+	+	+	+	1	+	+	.	1	1	+	+
	<i>Phyteuma scheuchzeri</i> subsp. <i>columnae</i>	E1	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	+	+	+
	<i>Primula auricula</i>	E1	.	.	.	.	.	.	r	.	+	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.
	<i>Potentilla caulescens</i>	E1	+	r	.	r	.	.	.	.	.	.	+	.	.	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	+
	<i>Campanula cochleariifolia</i>	E1	+	1	.	1	.	.	1	.	.	.	.	.	.	.	.	.	.	+	+	.	+	.	.	+	.	.	.	.	.
	<i>Saxifraga crustata</i>	E1	1	.	.	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	.
	<i>Asplenium ruta-muraria</i>	E1	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	r	+	.
	<i>Saxifraga squarrosa</i>	E1	.	r	.	.	.	.	.	.	r	r	1	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.
	<i>Bupleurum petraeum</i>	E1	.	.	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Asplenium viride</i>	E1	.	.	+	+	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.
	<i>Kernera saxatilis</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.
	<i>Potentilla clusiana</i>	E1	.	.	r	.	.	.	.	.	.	+	.	2	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.
	<i>Athamanta turbith</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Carex brachystachys</i>	E1	.	.	+	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Daphne alpina</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Dianthus sylvestris</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Festuca stenantha</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Rhamnus pumilus</i>	E1	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Seseli gouanii</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Campanula justiniana</i>	E1	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Primula x venusta</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.
	<i>Sedum album</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Silene hayekiana</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
TR	<i>Thlaspietea rotundifolii</i>																														
	<i>Campanula cespitosa</i>	E1	.	.	.	.	+	.	.	+	+	+	+	+	+	.	+	+	.	.	+	+	.	.	.	+	+	.	.	+	.
	<i>Soldanella minima</i>	E1	+	+	r	.	.	.	.	.	.	.	.	+	.	.	.	.	.	2	+	1	+	.	+	+	.	.	.	.	.
	<i>Hieracium bifidum</i>	E1	.	.	.	.	.	.	.	r	.	r	.	+	+	.	+	.	.	.	.	.	.	r	.	.	.	+	+	.	.
	<i>Adenostyles glabra</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	1	+	.	.	.	.	+	.	.	.	.	.	.
	<i>Hieracium porrifolium</i>	E1	.	.	.	.	+	.	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	+	.	.	.	.
	<i>Gymnocarpium robertianum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	.	.
	<i>Festuca nitida</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Biscutella laevigata</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Cystopteris montana</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

IV					V																											Pr(Total)						
30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	I			II			III				IV			V		
+	2	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	18	82	22	3	100	22	0	0	0	4	80	24	0	0	0	25
+	.	.	.	.	+	.	1	.	+	+	.	.	.	.	+	.	.	.	.	.	.	.	13	59	14	0	0	0	1	25	6	1	20	4	4	40	10	20
.	.	.	.	.	.	+	.	+	.	+	+	+	+	+	.	.	.	.	r	.	.	.	4	18	4	1	33	7	1	25	6	0	0	0	6	60	13	13
+	.	.	+	2	.	.	.	1	+	.	.	.	.	.	.	.	.	.	.	+	.	1	2	9	2	1	33	7	1	25	6	3	60	20	2	20	6	11
.	.	.	.	.	.	.	1	+	+	+	.	.	.	.	+	1	.	.	.	.	.	1	5	1	0	0	0	1	25	6	0	0	0	4	40	10	8	
.	.	.	.	.	.	.	.	.	+	.	+	.	1	1	.	.	.	.	.	.	.	.	1	5	1	0	0	0	0	0	0	0	0	0	4	40	11	5
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	2	9	2	1	33	7	0	0	0	0	0	0	0	0	0	4
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Number of relevé (Številka popisa)		I																					II			II				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
FB	Festuco-Brometea																													
	<i>Globularia cordifolia</i>	E1	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Linum catharticum</i>	E1	.	.	.	.	1	.	.	+	.	+	+	.	.	.	.	.	+	+	+	.	.	+	.	+	.	.	.	.
	<i>Lotus corniculatus</i> s. lat.	E1	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.
	<i>Buphthalmum salicifolium</i>	E1	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.
	<i>Teucrium montanum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Carex humilis</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Viola hirta</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Ajuga genevensis</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Coronilla vaginalis</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Galium lucidum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Helianthemum ovatum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Hippocrepis comosa</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Polygonatum odoratum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Satureja subspicata</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Stachys subcrenata</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Carex flacca</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Carlina acaulis</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Centaurea bracteata</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Centaurea triumfettii</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Cuscuta epithymum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Dianthus monspessulanus</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Pimpinella saxifraga</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Trifolium montanum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
SC	Scheuchzerio-Caricetea fuscae																													
	<i>Pinguicula alpina</i>	E1	1	.	+	.	.	.	.	.	.	.	+	+	1	+	1	1	1	+	1	1	.	+	1	+	.	+	r	.
	<i>Tofieldia calyculata</i>	E1	+	.	.	.	.	+	.	.	.	.	+	+	+	+	.	1	1	1	1	+	+	+	1	+	1	.	.	+
	<i>Parnassia palustris</i>	E1	.	.	.	.	.	.	.	.	.	.	.	+	+	+	r	1	1	1	1	.	.	.	1	+	+	.	.	.
MA	Mulgedio-Aconitetea																													
	<i>Salix glabra</i>	E2a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	1	.	.	.	+
	<i>Salix glabra</i>	E1	+	.	.	.	+	+	.	.	.	+	.	+	.	+	r	+	1	1	.	.	+	+	.	+	.	+	2	.
	<i>Viola biflora</i>	E1	.	r	+	+	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	+	.	r	.	.	.
	<i>Salix appendiculata</i>	E2a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	.	.	+
	<i>Salix appendiculata</i>	E1	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+	2	.
	<i>Salix waldsteiniana</i>	E1	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.									

		I																					II			II				
Number of relevé (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	27	28	29
	<i>Amelanchier ovalis</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Genista radiata</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Pinus mugo</i>	E2a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	+
	<i>Pinus mugo</i>	E1	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Carex alba</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.
	<i>Cotoneaster integerrimus</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.
	<i>Epipactis atrorubens</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Cirsium erisithales</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.
	<i>Genista januensis</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Juniperus alpina</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Leontodon incanus</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Pyrola rotundifolia</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.
VP	Vaccinio-Piceetea																													
	<i>Picea abies</i>	E2a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.
	<i>Picea abies</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	r	r	.	.	.	.	+	.	+	.	.	r	r
	<i>Homogyne sylvestris</i>	E1	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+	.	+	.	+	.
	<i>Clematis alpina</i>	E1	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.
	<i>Hieracium murorum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	r	.	.	.
	<i>Rosa pendulina</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.
	<i>Aposeris foetida</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Gentiana asclepiadea</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.
	<i>Solidago virgaurea</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Vaccinium myrtillus</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Polystichum lonchitis</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
FS	Fagetalia sylvaticae																													
	<i>Acer pseudoplatanus</i>	E2a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.
	<i>Acer pseudoplatanus</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	.	.	.	r	+	+	.	.	.
	<i>Cyclamen purpurascens</i>	E1	.	.	.	.	+	.	r	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	.	.
	<i>Fagus sylvatica</i>	E2a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.
	<i>Fagus sylvatica</i>	E1	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	.	.	.
	<i>Laburnum alpinum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	+	.	.	.
	<i>Helleborus niger</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.
	<i>Omphalodes verna</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Daphne mezereum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Knautia drymeia</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.								

IV					V																										I			II			III			IV			V			Pr(Total)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

		I																						II			II				
Number of relevé (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	27	28	29	
O	Other species (Druge vrste)																														
	<i>Molinia caerulea</i> subsp. <i>arundinacea</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	2	.	.	.	.	.	.	.	+	1	.	.	.	.
	<i>Juniperus communis</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Dactylorhiza maculata</i> agg.	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Festuca rubra</i> agg.	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Festuca</i> sp.	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Potentilla erecta</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	r	.	.	.	.
	<i>Salix caprea</i>	E2a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Salix caprea</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Sorbus aucuparia</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	Mosses and lichens (Mahovi in lišaji)																														
ML	<i>Tortella tortuosa</i>	E0	.	.	.	.	.	+	.	+	.	+	+	.	.	.	.	.	.	+	+	+	.	+	+	+	.	.	+	+	
	<i>Neckera crispa</i>	E0	.	.	.	+	+	+	.	+	.	.	+	+	.	.	.	+	.	.	+	.	.	.	.	+	.	+	+	2	1
	<i>Orthothecium rufescens</i>	E0	.	+	+	+	.	.	.	1	.	.	.	+	.	+	+	+	.	+	+	.	1	+	.	+	.	.	.	.	.
	<i>Ctenidium molluscum</i>	E0	.	.	.	.	.	+	.	.	.	.	+	.	+	.	+	.	+	.	+	.	+	.	.	.	1	.	1	1	.
	<i>Fissidens dubius</i>	E0	.	.	.	+	.	.	.	+	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	+	+	.	+	.	.
	<i>Tortella</i> sp.	E0	+	1	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Marchantia polymorpha</i>	E0	.	.	.	.	.	.	.	+	.	.	.	.	.	+	.	+	.	+	+	+	+	.	.	.	.	.	.	.	.
	<i>Schistidium apocarpum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
	<i>Rhytidiadelphus triquetrus</i>	E0	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	1	.	.	.
	<i>Dicranum</i> sp.	E0	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Grimmia pulvinata</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Homalothecium</i> sp.	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Hylocomium splendens</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.
	<i>Solorina saccata</i>	E0	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Campylium stellatum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Dicranum scoparium</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.
	<i>Scleropodium purum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Cladonia</i> sp.	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

I *Primulo carniolicae*-*Caricetum firmae*II *Pino nigrae*-*Seslerietum calcariae* nom. prov.III *Primulo carniolicae*-*Seslerietum calcariae*IV *Caricetum ferrugineae* var. *Astrantia carniolica*V *Caricetum mucronatae* var. geogr. *Primula carniolica*

IV					V																											Pr(Total)							
30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	I			II			III				IV			V			
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	2	9	4	2	67	19	0	0	0	0	0	0	0	0	0	5	
.	.	.	.	.	.	.	.	.	.	.	.	.	r	+	.	.	.	.	.	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	2	20	3	2
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0	0	1	33	4	0	0	0	0	0	0	0	0	0	0	1
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	r	.	.	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	.	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
.	.	+	+	.	.	+	.	.	1	1	+	.	1	.	.	+	.	.	+	+	+	.	7	32	7	3	100	22	2	50	11	2	40	9	5	50	14	23	
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	8	36	8	1	33	7	4	100	33	0	0	0	0	0	0	14	
.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	12	55	13	1	33	7	0	0	0	1	20	7	0	0	0	14	
.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	7	32	7	0	0	0	3	75	25	1	20	4	0	0	0	12	
.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	4	18	4	2	67	15	1	25	6	0	0	0	1	10	2	9	
.	.	.	.	.	+	.	.	.	.	+	.	.	.	.	+	.	1	.	.	.	.	.	4	18	5	0	0	0	0	0	0	0	0	0	2	20	4	8	
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	7	32	7	0	0	0	0	0	0	0	0	0	0	0	0	7	
.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	+	.	+	+	.	+	.	0	0	0	0	0	0	1	25	6	0	0	0	2	20	4	7	
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	1	5	1	1	33	7	1	25	8	0	0	0	0	0	0	4	
.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	1	5	1	0	0	0	0	0	0	0	0	0	1	10	3	3	
.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	+	.	.	.	.	0	0	0	0	0	0	0	0	0	0	0	1	10	3	2		
.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	+	.	.	.	.	.	0	0	0	0	0	0	0	0	0	0	0	1	10	3	2		
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	0	0	0	0	0	0	1	25	14	0	0	0	0	0	0	2	
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	9	3	0	0	0	0	0	0	0	0	0	0	0	0	0	2
.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0	0	0	0	0	0	0	0	1	20	4	0	0	0	1	
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0	0	0	0	0	1	25	6	0	0	0	0	0	0	1	
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	

Table 2: The association *Primulo carniolicae-Seslerietum calcariae* ass. nova on the northern edge of the Dinaric mountains of Slovenia**Tabela 2:** Asociacija *Primulo carniolicae-Seslerietum calcariae* ass. nova na severnem robu Dinarskega gorstva v Slovenije

Number of relevé (Številka popisa)		1	2	3	4	5	6	7	8				
Altitude in m (Nadmorska višina v m)		1240	1130	610	1130	210	225	210	670				
Aspect (Lega)		N	N	N	N	N	N	N	NW				
Slope in degrees (Nagib v stopinjah)		45	50	70	80	50	40	45	40				
Parent material (Matična podlaga)		D	D	D	D	D	D	D	D				
Soil (Tla)		Li	Li	Li	Li	Li	Li	Li	Li				
Stoniness in % (Kamnitost v %)		10	10	10	50	30	20	20	10				
Cover in % (Zastiranje v %):													
Shrub layer (Grmovna plas)		E2a	5		2		5	10					
Herb layer (Zeliščna plast)		E1	90	100	80	40	60	80	80				
Moss layer (Mahovna plast)		E0	20		20		20	10	10				
Relevé area (Velikost popisne ploskve)		m2	2	5	5	10	4	4	10	5			
Number of species (Število vrst)			32	20	25	20	15	21	28	22			
			13.8.2003	20.7.2004	28.9.2004	20.7.2004	22.4.2002	22.4.2002	22.4.2002	30.5.2003			
Date of taking relevé (Datum popisa)													
			Sončni rob	Hudournik	Klavžarica	Hudournik	Prvejk	Prvejk	Prvejk	Skopica			
Locality (Nahajališče)													
			0049/1	9949/1	9949/4	9949/1	9949/1	9948/2	9948/2	9948/2			
Quadrant (Kvadrant)													
Differential species of the association											Pr.	Fr.	Ic
Razlikovalne vrste asociacije													
AT	<i>Primula carniolica</i>	E1	+	3	1	1	1	1	1	1	8	100	33
AT	<i>Valeriana saxatilis</i>	E1	2	2	1	1	+	+	1	1	8	100	32
AT	<i>Paederota lutea</i>	E1	1	1	+	+	.	.	+	.	5	63	17
AT	<i>Primula x venusta</i>	E1	+	.	.	.	.	.	.	.	1	13	3
Caricion austroalpinae													
	<i>Laserpitium peucedanoides</i>	E1	+	1	+	.	.	.	.	+	4	50	10
	<i>Asperula aristata</i>	E1	.	+	.	+	.	.	.	.	2	25	6
Caricion firmae													
	<i>Carex firma</i>	E1	+	.	.	.	.	.	.	.	1	13	3
	<i>Gentiana nivalis</i>	E1	.	r	.	.	.	.	.	.	1	13	1
Caricion ferrugineae													
	<i>Carex ferruginea</i>	E1	.	.	+	.	.	+	+	+	4	50	8
ES	Elyno-Seslerietea												
	<i>Sesleria caerulea</i> subsp. <i>calcaria</i>	E1	3	2	4	3	2	3	3	3	8	100	64
	<i>Carex mucronata</i>	E1	+	1	+	+	2	+	1	.	7	88	26
	<i>Phyteuma orbiculare</i>	E1	.	.	.	.	.	+	+	1	3	38	6
	<i>Aster bellidiastrum</i>	E1	.	.	.	.	+	.	.	+	2	25	3
	<i>Betonica alopecuroides</i>	E1	+	.	.	.	.	.	.	+	2	25	3
	<i>Gentiana clusii</i>	E1	+	.	.	.	.	.	.	.	1	13	3
	<i>Thymus alpigenus</i>	E1	+	.	.	.	.	.	.	.	1	13	3
	<i>Hieracium villosum</i>	E1	.	.	.	+	.	.	.	.	1	13	3

Number of relevé (Številka popisa)		1	2	3	4	5	6	7	8	Pr.	Fr.	Ic.
AT	<i>Asplenietea trichomanis</i>											
	<i>Phyteuma scheuchzeri</i> subsp. <i>columnae</i>	E1	.	+	+	+	.	.	.	3	38	8
	<i>Asplenium ruta-muraria</i>	E1	.	.	r	+	.	.	.	2	25	4
	<i>Primula auricula</i>	E1	+	.	.	.	.	.	.	1	13	3
	<i>Saxifraga crustata</i>	E1	+	.	.	.	.	.	.	1	13	3
	<i>Potentilla caulescens</i>	E1	.	.	.	+	.	.	.	1	13	3
TR	<i>Thlaspietea rotundifolii</i>											
	<i>Hieracium bifidum</i>	E1	.	+	+	.	.	.	+	3	38	8
	<i>Campanula cespitosa</i>	E1	.	.	+	.	.	+	r	3	38	7
	<i>Astrantia carniolica</i>	E1	.	.	.	.	+	+	1	3	38	10
	<i>Aquilegia bertolonii</i>	E1	+	.	.	.	.	.	.	1	13	3
FB	<i>Festuco-Brometea</i>											
	<i>Carex flacca</i>	E1	.	.	.	.	+	+	+	3	38	8
	<i>Lotus corniculatus</i>	E1	+	+	.	.	.	.	.	2	25	6
	<i>Bupthalmum salicifolium</i>	E1	.	.	+	.	.	.	.	1	13	3
	<i>Galium lucidum</i>	E1	.	.	.	.	.	.	1	1	13	0
SC	<i>Scheuchzerio-Caricetea fuscae</i>											
	<i>Pinguicula alpina</i>	E1	.	+	r	.	.	+	1	4	50	11
	<i>Tofieldia calyculata</i>	E1	.	.	+	.	+	.	+	4	50	8
	<i>Blysmus compressus</i>	E1	.	.	.	.	+	.	.	1	13	3
MA	<i>Mulgedio-Aconitetea</i>											
	<i>Salix glabra</i>	E2a	.	.	.	+	.	+	+	3	38	8
	<i>Salix glabra</i>	E1	+	2	.	.	.	.	.	2	25	10
	<i>Salix appendiculata</i>	E2a	.	.	.	+	.	.	r	2	25	4
	<i>Salix appendiculata</i>	E1	+	2	.	.	.	.	.	2	25	10
	<i>Viola biflora</i>	E1	r	.	.	.	.	.	.	1	13	1
	<i>Veratrum album</i>	E1	.	.	.	.	.	.	+	1	13	3
EP	<i>Erico-Pinetea</i>											
	<i>Erica carnea</i>	E1	2	3	1	.	1	1	1	2	7	88 33
	<i>Rhododendron hirsutum</i>	E1	2	2	+	+	.	.	.	1	5	63 19
	<i>Polygala chamaebuxus</i>	E1	.	.	1	.	+	1	1	+	5	63 15
	<i>Rhodothamnus chamaecistus</i>	E1	3	.	2	1	.	.	.	3	38	21
	<i>Rubus saxatilis</i>	E1	+	1	.	.	.	.	.	2	25	7
	<i>Calamagrostis varia</i>	E1	.	.	.	.	.	+	.	+	2	25 3
	<i>Gymnadenia odoratissima</i>	E1	+	.	.	.	.	.	.	1	13	3
	<i>Allium ericetorum</i>	E1	+	.	.	.	.	.	.	1	13	3
	<i>Cotoneaster integerrimus</i>	E1	+	.	.	.	.	.	.	1	13	3
	<i>Carex alba</i>	E1	.	+	.	.	.	.	.	1	13	3
	<i>Pinus mugo</i>	E2a	.	.	.	+	.	.	.	1	13	3
	<i>Aquilegia nigricans</i>	E1	.	.	.	.	.	.	r	1	13	1
	<i>Chamaecytisus hirsutus</i>	E1	.	.	.	.	.	.	.	+	1	13 0
	<i>Genista radiata</i>	E1	.	.	.	.	.	.	.	+	1	13 0
VP	<i>Vaccinio-Piceetea</i>											
	<i>Picea abies</i>	E1	.	.	r	r	.	.	r	3	38	4
	<i>Rosa pendulina</i>	E1	+	.	.	.	.	.	.	1	13	3
	<i>Clematis alpina</i>	E1	.	+	.	.	.	.	.	1	13	3
	<i>Homogyne sylvestris</i>	E1	.	.	+	.	.	.	.	1	13	3
	<i>Veronica urticifolia</i>	E1	.	.	.	.	.	.	r	1	13	1
FS	<i>Fagetalia sylvaticae</i>											0
	<i>Cyclamen purpurascens</i>	E1	+	.	.	.	.	.	.	1	13	3

Number of relevé (Številka popisa)		1	2	3	4	5	6	7	8	Pr.	Fr.	Ic.
	<i>Euphorbia carniolica</i>	E1	.	.	.	.	.	r	.	1	13	1
	<i>Acer pseudoplatanus</i>	E1	.	.	.	.	.	.	r	1	13	0
QP	<i>Quercetalia pubescentis</i>											
	<i>Ostrya carpinifolia</i>	E2a	.	.	.	.	r	r	.	2	25	3
	<i>Ostrya carpinifolia</i>	E1	.	.	+	.	+	.	+	4	50	8
	<i>Mercurialis ovata</i>	E1	.	.	.	.	.	.	+	1	13	0
QF	<i>Quercu-Fagetea</i>											
	<i>Carex umbrosa</i>	E1	.	.	.	.	.	+	.	1	13	0
O	Other species (Druge vrste)											
	<i>Molinia caerulea</i> subsp. <i>arundinacea</i>	E1	.	.	.	.	+	1	+	3	38	7
	<i>Salix eleagnos</i>	E2a	.	.	.	.	r	.	.	1	13	1
M	Mosses (Mahovi)											
	<i>Ctenidium molluscum</i>	E0	1	.	1	1	+	+	+	7	88	21
	<i>Neckera crispa</i>	E0	+	+	2	1	.	+	+	7	88	22
	<i>Tortella tortuosa</i>	E0	.	.	+	+	.	+	.	3	38	8
	<i>Campylium stellatum</i>	E0	.	.	.	.	1	.	1	2	25	8
	<i>Orthothecium rufescens</i>	E0	.	.	.	.	1	+	.	2	25	7
	<i>Hylocomium splendens</i>	E0	2	.	.	.	.	.	.	1	13	7
	<i>Rhytidiadelphus triquetrus</i>	E0	1	.	.	.	.	.	.	1	13	4
	<i>Dicranum scoparium</i>	E0	+	.	.	.	.	.	.	1	13	3
	<i>Fissidens dubius</i>	E0	.	.	+	.	.	.	.	1	13	3
	<i>Schistidium apocarpum</i>	E0	.	.	.	+	.	.	.	1	13	3

Table 3: The variant *Caricetum ferrugineae* var. *Astrantia carniolica* in the southern Julian Alps and in the Trnovski gozd plateau**Tabela 3:** Varianta *Caricetum ferrugineae* var. *Astrantia carniolica* v južnih Julijskih Alpah in v Trnovskem gozdu

Number of relevé (Številka popisa)		1	2	3	4	5	6	7		
Altitude in m (Nadmorska višina v m)		1460	1370	840	1260	1120	1150	1210		
Aspect (Lega)		N	N	N	NE	N	NW	E		
Slope in degrees (Nagib v stopinjah)		35	20	45	45	35	20	40		
Parent material (Matična podlaga)		A	A	D	D	D	D	D		
Soil (Tla)		Li	Li	Li	Li	Li	Li	Li		
Stoniness in % (Kamnitost v %)		10	10	60	20	30	10	10		
Cover in % (Zastiranje v %):										
Shrub layer (Grmovna plas)	E2			10		20				
Herb layer (Zeliščna plast)	E1	100	95	60	80	70	100	100		
Moss layer (Mahovna plast)	E0				20					
Relevé area (Velikost popisne ploskve)	m2	5	5	4	10	10	10	10		
Number of species (Število vrst)		36	30	27	26	21	22	25		
		10.8.2004	10.8.2004	5.7.2001	27.8.2004	27.8.2004	27.8.2004	27.8.2004		
Date of taking relevé (Datum popisa)										
		Planina Suha	Planina Suha	Gamsarica	Zeleni rob	Zeleni rob	Zeleni rob	Zeleni rob		
Locality (Nahajališče)		9749/3	9749/3	0049/2	9949/3	9949/3	9949/3	9949/3		
Quadrant (Kvadrant)		9749/3	9749/3	0049/2	9949/3	9949/3	9949/3	9949/3		
Character and differential species of the association									Pr.	Fr.
Značilne in razlikovalne vrste asociacije										
CFe Carex ferruginea	E1	4	4	1	4	2	2	1	7	100
ES Aster bellidiasstrum	E1	1	1	+	2	+	+	.	6	86
ES Soldanella alpina	E1	1	+	.	.	.	.	.	2	29
Differential species of the variant										
Razlikovalne vrste variante										
TR Astrantia carniolica	E1	2	3	1	1	2	2	1	7	100
EP Calamagrostis varia	E1	+	2	2	2	3	2	1	7	100
Local differential species										
Geografske razlikovalne vrste										
TR Aquilegia bertolonii	E1	.	1	+	.	.	.	.	2	29
AT Primula carniolica	E1	.	.	+	.	.	.	.	1	14
TR Hladnikia pastinacifolia	E1	.	.	.	r	.	.	.	1	14
AT Phyteuma scheuchzeri subsp. columnae	E1	.	.	.	.	.	.	1	1	14
Caricion austroalpiniae										
Laserpitium peucedanoides	E1	1	1	+	+	.	+	1	6	86
Heracleum austriacum subsp. siifolium	E1	+	.	.	.	.	.	.	1	14
Ranunculus hybridus	E1	.	+	.	.	.	.	.	1	14
Caricion firmae										
Selaginella selaginoides	E1	1	+	.	.	.	.	.	2	29
Carex firma	E1	.	.	+	.	.	.	.	1	14

Number of relevé (Številka popisa)		1	2	3	4	5	6	7	Pr.	Fr.
ES	<i>Elyno-Seslerietea</i>									
	<i>Sesleria caerulea</i> subsp. <i>calcaria</i>	E1	.	+	1	+	2	3	4	6 86
	<i>Betonica alopecuroides</i>	E1	2	.	+	.	.	+	2	4 57
	<i>Phyteuma orbiculare</i>	E1	+	1	.	.	.	.	.	2 29
	<i>Campanula scheuchzeri</i>	E1	1	.	.	.	.	.	.	1 14
	<i>Trollius europaeus</i>	E1	1	.	.	.	.	.	.	1 14
	<i>Thesium pyrenaicum</i>	E1	+	.	.	.	.	.	.	1 14
	<i>Polygonum viviparum</i>	E1	+	.	.	.	.	.	.	1 14
	<i>Pulsatilla alpina</i>	E1	+	.	.	.	.	.	.	1 14
	<i>Gentiana clusii</i>	E1	.	.	+	.	.	.	.	1 14
	<i>Juncus monanthos</i>	E1	.	.	.	.	1	.	.	1 14
AT	<i>Asplenietea trichomanis</i>									
	<i>Paederota lutea</i>	E1	+	1	+	+	.	.	+	5 71
	<i>Valeriana saxatilis</i>	E1	1	+	+	.	.	+	.	4 57
	<i>Potentilla caulescens</i>	E1	.	.	r	.	.	.	+	2 29
	<i>Asplenium viride</i>	E1	.	.	.	r	.	.	.	1 14
TR	<i>Thlaspietea rotundifolia</i>									
	<i>Adenostyles glabra</i>	E1	1	1	1	+	2	.	+	6 86
	<i>Campanula cespitosa</i>	E1	.	.	r	r	.	.	1	3 43
	<i>Biscutella laevigata</i>	E1	+	+	.	.	.	.	.	2 29
	<i>Gymnocarpium robertianum</i>	E1	.	+	.	r	.	.	.	2 29
	<i>Soldanella minima</i>	E1	.	+	.	.	+	.	.	2 29
	<i>Campanula cochleariifolia</i>	E1	.	+	.	.	.	+	.	2 29
	<i>Cystopteris montana</i>	E1	.	.	.	r	.	.	.	1 14
	<i>Festuca nitida</i>	E1	.	.	.	.	+	.	.	1 14
	<i>Hieracium bifidum</i>	E1	.	.	.	.	.	.	+	1 14
FB	<i>Festuco-Brometea</i>									
	<i>Buphthalmum salicifolium</i>	E1	+	1	.	+	.	+	1	5 71
	<i>Linum catharticum</i>	E1	.	.	+	.	.	.	1	2 29
	<i>Euphrasia stricta</i>	E1	1	.	.	.	.	.	.	1 14
	<i>Lotus corniculatus</i>	E1	.	.	.	.	.	.	+	1 14
SC	<i>Scheuchzerio-Caricetalia fuscae</i>									
	<i>Pinguicula alpina</i>	E1	+	+	+	+	+	+	.	6 86
	<i>Parnassia palustris</i>	E1	+	.	+	1	1	1	.	5 71
	<i>Tofieldia calyculata</i>	E1	+	+	+	.	.	1	.	4 57
MA	<i>Mulgedio-Aconitetea</i>									
	<i>Viola biflora</i>	E1	1	1	.	+	.	.	.	3 43
	<i>Salix glabra</i>		.	.	1	.	1	.	.	2 29
	<i>Salix glabra</i>	E1	.	.	.	.	+	+	+	3 43
	<i>Salix appendiculata</i>	E1	.	.	.	.	+	.	r	2 29
	<i>Aconitum lycoctonum</i> subsp. <i>ranunculifolium</i>	E1	+	.	.	.	.	.	.	1 14
	<i>Crepis paludosa</i>	E1	+	.	.	.	.	.	.	1 14
EP	<i>Erico-Pinetalia</i>									
	<i>Rhododendron hirsutum</i>	E1	+	.	+	+	+	1	+	6 86
	<i>Euphrasia cuspidata</i>	E1	.	.	+	.	.	+	.	2 29
	<i>Gymnadenia odoratissima</i>	E1	r	.	.	.	.	+	.	2 29
	<i>Rhodothamnus chamaecistus</i>	E1	.	.	r	r	.	.	.	2 29
	<i>Cirsium erisithales</i>	E1	+	.	.	.	.	.	.	1 14
	<i>Rubus saxatilis</i>	E1	.	+	.	.	.	.	.	1 14

Number of relevé (Številka popisa)		1	2	3	4	5	6	7	Pr.	Fr.
	<i>Polygala chamaebuxus</i>	E1	.	.	.	.	1	.	1	14
	<i>Allium ericetorum</i>	E1	.	.	.	.	.	+	1	14
	<i>Carex ornithopoda</i>	E1	.	.	.	.	.	r	1	14
VP	Vaccinio-Piceetea									
	<i>Homogyne sylvestris</i>	E1	1	1	.	+	.	1	.	4 57
	<i>Gentiana asclepiadea</i>	E1	1	+	.	.	.	.	2	29
	<i>Polystichum lonchitis</i>	E1	.	+	.	r	.	.	2	29
	<i>Larix decidua</i>	E1	+	.	.	.	.	.	1	14
	<i>Picea abies</i>	E1	.	+	.	.	.	.	1	14
	<i>Aposeris foetida</i>	E1	.	.	.	+	.	.	1	14
FS	Fagetalia sylvaticae									
	<i>Acer pseudoplatanus</i>	E1	.	.	r	r	+	.	r	4 57
	<i>Fagus sylvatica</i>	E1	.	.	r	+	+	+	.	4 57
	<i>Cyclamen purpurascens</i>	E1	.	.	.	+	+	.	+	3 43
	<i>Mercurialis perennis</i>	E1	+	+	.	.	.	.	2	29
	<i>Helleborus niger</i>	E1	.	+	.	.	+	.	2	29
	<i>Laburnum alpinum</i>	E1	.	.	.	.	+	.	+	2 29
	<i>Knautia drymeia</i>	E1	+	.	.	.	.	.	1	14
	<i>Omphalodes verna</i>	E1	.	.	.	.	.	.	r	1 14
QF	Quercu-Fagetea									
	<i>Ostrya carpinifolia</i>		.	.	+	.	.	.	.	1 14
	<i>Hepatica nobilis</i>	E1	.	.	.	.	.	.	+	1 14
M	Mosses (Mahovi)									
	<i>Tortella tortuosa</i>	E0	+	+	.	.	+	+	.	4 57
	<i>Orthothecium rufescens</i>	E0	.	.	.	1	.	.	.	1 14
	<i>Ctenidium molluscum</i>	E0	.	.	.	.	+	.	.	1 14
	<i>Campylium stellatum</i>	E0	.	.	.	.	.	+	.	1 14

Table 4: The association *Caricetum mucronatae* s. lat. in the Julian Alps and in the Trnovski gozd plateau**Tabela 4:** Asociacija *Caricetum mucronatae* s. lat. v Julijskih Alpah in v Trnovskem gozdu

Number of relevé (Številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12*	13*	14	15
Altitude in m (Nadmorska višina v m)		1115	1110	1120	1105	1220	1270	1240	1275	1270	1280	2080	1615	1960	1940	1720
Aspect (Lega)		NNE	E	NE	SW	SE	S	NE	S	NE	NE	S	SWW	SE	SW	E
Slope in degrees (Nagib v stopinjah)		60	45	70	20	45	40	70	15	45	60	60	90	70	10	40
Parent material (Matična podlaga)		D	D	D	D	D	D	D	D	D	D	DA	A	A	DA	A
Soil (Tla)		Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li
Stoniness in % (Kamnitost v %)		50	50	70	60	30	20	50	30	60	80	40	70	70	30	30
Cover in % (Zastiranje v %):																
Herb layer (Zeliščna plast)	E1	70	60	40	70	70	80	50	70	40	60	60	30	30	70	70
Moss layer (Mahovna plast)	E0							5	10	10						
Relevé area (Velikost popisne ploskve)	m2	10	5	5	5	4	10	4	4	4	2	5	4	10	5	10
Number of species (Število vrst)		21	21	20	27	24	20	14	20	21	23	23	19	29	16	32
Date of taking relevé (Datum popisa)		20.7.2004	20.7.2004	20.7.2004	20.7.2004	13.8.2003	27.8.2004	13.8.2003	27.8.2004	20.8.2003	20.8.2003	20.9.2004	18.7.2003	5.8.2003	27.8.2003	1.8.2005
Locality (Nahajališče)		Hudournik	Hudournik	Hudournik	Hudournik	Sončni rob	Zeleni rob	Sončni rob	Zeleni rob	Poldanovec	Poldanovec	Rob nad Zagačami	Veliki vrh - Polovnik	Lemež	Zapotoški vrh	Krbulnik-Plazki Kuk
Quadrant (Kvadrant)		9949/1	9949/1	9949/1	9949/1	0049/1	9949/3	0049/1	9949/3	9949/3	9949/3	9548/3	9747/2	9748/1	9648/1	9648/3
Differential species of the ass. <i>Caricetum mucronatae</i>																
Razlikovalnice asociacije <i>Caricetum mucronatae</i>																
																Pr. Fr.
AT <i>Valeriana saxatilis</i>	E1	1	1	1	1	.	r	.	.	1	+	+	+	.	+	11 73
AT <i>Kernera saxatilis</i>	E1	.	.	.	+	.	.	r	r	.	.	.	.	.	.	3 20
TR <i>Campanula cochleariifolia</i>	E1	.	.	.	.	.	.	.	.	.	.	+	+	+	.	3 20
Differential species of the geographical variant																
Razlikovalne vrste geografske variante																
AT <i>Primula carniolica</i>	E1	+	1	+	+	.	.	.	.	.	+	.	.	.	.	5 33
AT <i>Phyteuma scheuchzeri</i> subsp. <i>columnae</i>	E1	.	+	.	+	+	1	+	.	.	.	.	.	.	.	5 33
TR <i>Hladnikia pastinacifolia</i>	E1	.	.	.	.	.	+	.	1	1	3	.	.	.	.	4 27
SJ <i>Edraianthus graminifolius</i>	E1	.	.	.	.	.	.	.	.	+	+	.	.	.	.	2 13
<i>Caricion firmae</i>																
<i>Helianthemum alpestre</i>	E1	.	.	.	.	.	.	.	.	1	1	1	+	+	3	1 7 47
<i>Carex firma</i>	E1	.	.	.	.	.	.	.	r	1	+	+	+	.	1	6 40
<i>Dryas octopetala</i>	E1	.	.	.	.	.	.	.	.	2	1	.	.	+	.	3 20
<i>Oxytropis jacquinii</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	+	.	1 7
<i>Gentiana favratii</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1 7
<i>Arctostaphylos alpina</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1 7
<i>Petrocallis pyrenaica</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1 7
<i>Gentiana nivalis</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1 7

Number of relevé (Številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12*	13*	14	15	Pr.	Fr.
<i>Salix alpina</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1	7
Caricion austroalpinae																		
<i>Asperula aristata</i>	E1	1	+	1	1	+	1	.	+	.	.	.	.	+	+	2	10	67
<i>Laserpitium peucedanoides</i>	E1	+	1	.	.	.	+	.	.	.	.	+	.	.	.	.	4	27
<i>Ranunculus hybridus</i>	E1	.	.	.	.	.	.	.	.	.	.	1	+	+	+	.	4	27
<i>Koeleria eriostachya</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	1	7
ES Elyno-Seslerietea																		
<i>Carex mucronata</i>	E1	2	3	2	3	3	3	2	3	2	1	3	2	3	4	3	15	100
<i>Sesleria caerulea</i> subsp. <i>calcaria</i>	E1	2	2	1	2	3	4	2	3	2	3	1	1	+	+	1	15	100
<i>Hieracium villosum</i>	E1	+	+	+	+	+	.	.	+	.	.	.	.	+	.	+	8	53
<i>Anthyllis vulneraria</i> subsp. <i>alpestris</i>	E1	1	.	+	1	+	.	.	.	.	.	+	.	+	.	1	7	47
<i>Gentiana clusii</i>	E1	.	.	.	.	+	.	+	1	.	+	+	.	+	+	.	7	47
<i>Achillea clavinae</i>	E1	.	.	.	.	.	.	.	.	1	.	.	+	+	.	1	4	27
<i>Thymus alpinus</i>	E1	.	.	.	.	+	+	+	1	.	.	.	.	.	.	.	4	27
<i>Leontopodium alpinum</i>	E1	.	.	.	.	.	.	.	.	+	r	.	.	1	+	.	4	27
<i>Aster bellidiastrum</i>	E1	.	.	.	.	.	.	.	.	.	.	1	+	.	.	1	3	20
<i>Betonica alopecurus</i>	E1	.	.	.	.	+	1	.	.	.	.	.	.	.	.	.	2	13
<i>Helianthemum grandiflorum</i>	E1	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	2	13
<i>Euphrasia salisburgensis</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	+	.	1	2	13
<i>Pedicularis rostrato-capitata</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	+	.	1	2	13
<i>Polygonum viviparum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	+	.	1	2	13
<i>Polygala alpestris</i>	E1	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	1	7
<i>Carduus crassifolius</i>	E1	.	.	.	.	.	.	.	.	.	r	.	.	.	.	.	1	7
<i>Bartsia alpina</i>	E1	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	1	7
<i>Carex sempervirens</i>	E1	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	1	7
<i>Rhinanthus glacialis</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	1	7
<i>Sesleria sphaerocephala</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	1	7
<i>Trisetum alpestre</i> ?	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	1	7
<i>Erigeron glabratus</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	7
<i>Alchemilla velebitica</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1	7
AT Asplenietea trichomanis																		
<i>Primula auricula</i>	E1	.	.	.	.	+	r	1	+	.	r	.	1	1	.	+	8	53
<i>Saxifraga crustata</i>	E1	.	.	.	.	.	.	1	.	+	.	1	1	+	.	1	6	40
<i>Paederota lutea</i>	E1	+	.	.	.	.	r	.	.	.	.	.	.	+	.	.	3	20
<i>Saxifraga squarrosa</i>	E1	.	.	.	.	.	.	.	.	+	r	+	+	+	.	.	5	33
<i>Dianthus sylvestris</i>	E1	.	.	.	.	.	.	.	.	.	.	.	+	+	.	1	3	20
<i>Festuca stenantha</i>	E1	.	.	.	.	.	.	.	.	.	.	.	+	+	.	1	3	20
<i>Potentilla caulescens</i>	E1	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	2	13
<i>Bupleurum petraeum</i>	E1	.	.	.	.	.	.	.	.	1	r	.	.	.	.	.	2	13
<i>Rhamnus pumilus</i>	E1	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	7
<i>Asplenium ruta-muraria</i>	E1	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	1	7
<i>Daphne alpina</i>	E1	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	1	7
<i>Sedum album</i>	E1	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	1	7
<i>Silene hayekiana</i>	E1	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	1	7
<i>Potentilla clusiana</i>	E1	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	1	7
<i>Potentilla nitida</i>	E1	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	1	7
<i>Campanula zoysii</i>	E!	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	1	7
<i>Saxifraga paniculata</i>	E!	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	1	7
TR Thlaspietea rotundifolii																		
<i>Campanula cespitosa</i>	E1	+	1	+	1	+	+	.	+	+	.	.	.	.	.	.	8	53
<i>Hieracium bifidum</i>	E1	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	1	7

Number of relevé (Številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12*	13*	14	15	Pr.	Fr.
<i>Aquilegia bertolonii</i>	E1	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	1	7
<i>Biscutella laevigata</i>	E1	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	1	7
<i>Leontodon hispidus</i> subsp. <i>hyoseroides</i>	E1	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	1	7
<i>Cerastium subtriflorum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	1	7
<i>Trifolium pallescens</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	7
FB Festuco-Brometea																		
<i>Globularia cordifolia</i>	E1	1	1	1	1	+	1	.	2	+	+	+	+	1	+	.	13	87
<i>Teucrium montanum</i>	E1	.	1	.	+	+	1	.	1	.	.	.	.	.	.	.	5	33
<i>Lotus corniculatus</i> s. lat.	E1	.	.	+	.	+	.	.	r	.	+	.	.	.	.	.	4	27
<i>Linum catharticum</i>	E1	.	.	.	.	.	.	.	+	.	+	.	.	.	.	+	3	20
<i>Helianthemum ovatum</i>	E1	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	7
<i>Polygonatum odoratum</i>	E1	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	1	7
<i>Viola hirta</i>	E1	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	1	7
<i>Bupthalmum salicifolium</i>	E1	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	1	7
<i>Coronilla vaginalis</i>	E1	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	1	7
<i>Bromopsis erecta</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1	7
SC Scheuchzerio-Caricetea fuscae																		
<i>Tofieldia calyculata</i>	E1	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	2	13
<i>Parnassia palustris</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	7
<i>Gentiana utriculosa</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1	7
MA Mulgedio-Aconitetea																		
<i>Salix glabra</i>	E1	1	+	+	.	+	+	.	.	.	.	.	.	.	.	.	5	33
<i>Salix waldsteiniana</i>	E1	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	2	13
<i>Salix appendiculata</i>	E1	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+	2	13
<i>Viola biflora</i>	E1	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	1	7
EP Erico-Pinetea																		
<i>Rhodothamnus chamaecistus</i>	E1	1	1	1	.	1	.	+	+	+	+	3	+	+	.	+	12	80
<i>Allium ericetorum</i>	E1	+	+	.	+	+	1	+	+	+	.	.	.	.	.	.	8	53
<i>Erica carnea</i>	E1	+	.	+	.	1	.	.	.	.	.	+	.	+	.	.	5	33
<i>Euphrasia cuspidata</i>	E1	1	1	1	.	.	.	.	.	+	1	.	.	.	.	.	5	33
<i>Rhododendron hirsutum</i>	E1	1	+	.	+	.	.	.	.	.	.	.	.	+	.	.	4	27
<i>Arctostaphylos uva-ursi</i>	E1	.	.	.	.	+	.	2	3	.	r	.	.	.	.	.	4	27
<i>Calamagrostis varia</i>	E1	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	2	13
<i>Gymnadenia odoratissima</i>	E1	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	7
<i>Carex ornithopoda</i>	E1	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	1	7
<i>Epipactis atrorubens</i>	E1	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	1	7
<i>Juniperus alpina</i>	E1	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	1	7
<i>Rubus saxatilis</i>	E1	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	1	7
<i>Cotoneaster tomentosus</i>	E1	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	1	7
<i>Polygala chamaebuxus</i>	E1	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	1	7
FS Fagetalia sylvaticae																		
<i>Cyclamen purpurascens</i>	E1	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	1	7
<i>Fagus sylvatica</i>	E1	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	1	7
VP Vaccinio-Piceetea																		
<i>Larix decidua</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1	7
O Other species (Druge vrste)																		
<i>Juniperus communis</i>	E1	r	.	.	+	.	.	.	.	.	.	.	.	.	.	.	2	13
<i>Hieracium</i> sp.	E1	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	1	7
M Mosses (Mahovi)																		
<i>Tortella tortuosa</i>	E0	.	+	1	1	.	.	1	+	.	+	.	.	.	.	+	7	47
<i>Schistidium apocarpum</i>	E0	.	.	+	.	.	.	+	.	.	.	.	.	.	.	+	3	20

Number of relevé (Številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12*	13*	14	15	Pr.	Fr.
<i>Tortella</i> sp.	E0	.	.	+	.	.	.	.	.	.	.	.	.	.	+	.	2	13
<i>Fissidens dubius</i>	E0	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	1	7
<i>Grimmia pulvinata</i>	E0	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	1	7
<i>Homalothecium</i> sp.	E0	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	1	7
<i>Dicranum</i> sp.	E0	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1	7
<i>Ctenidium molluscum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1	7

*leg & det. I. Dakskobler & B. Surina

Table 5: Synoptic table of the syntaxa from the order *Seslerietalia caeruleae* in the Trnovski gozd plateau

Tabela 5: Sintezna tabela sintaksonov iz reda *Seslerietalia caeruleae* v Trnovskem gozdu

Successive number (Zaporedna številka)		1	2	3	4	5
Sign of syntaxa (Oznaka sintaksonov)		PcCfir	PcSc	PcCm	PnigSc	AcCfer
Number of relevés (Število popisov)		22	4	10	3	5
Averaga number of species per relevé (Povprečno število vrst na popis)		22	24	21	43	24
Standard deviation (Standardni odklon)		5.6	5.7	3.4	1	2.6
Coefficient of variation (Koeficient variacije)		25	23	16	2	11
<i>Caricion firmae</i>						
<i>Carex firma</i>	E1	100	25	30	100	20
<i>Dryas octopetala</i>	E1	5	0	20	67	0
<i>Saxifraga caesia</i>	E1	5	0	0	100	0
<i>Gentiana nivalis</i>	E1	0	25	0	0	0
<i>Helianthemum alpestre</i>	E1	0	0	20	0	0
<i>Caricion austroalpinae</i>						
<i>Laserpitium peucedanoides</i>	E1	55	75	30	100	80
<i>Asperula aristata</i>	E1	14	50	70	33	0
<i>Ranunculus hybridus</i>	E1	5	0	0	33	0
<i>Caricion ferrugineae</i>						
<i>Carex ferruginea</i>	E1	14	25	0	33	100
<i>Seslerion juncifoliae</i>						
<i>Edraianthus graminifolius</i>	E1	5	0	20	0	0
<i>Elyno-Seslerietea</i>						
<i>Sesleria caerulea</i> subsp. <i>calcaria</i>	E1	100	100	100	100	100
<i>Aster bellidiastrum</i>	E1	82	0	0	100	80
<i>Gentiana clusii</i>	E1	59	25	40	0	20
<i>Carex mucronata</i>	E1	50	100	100	0	0
<i>Hieracium villosum</i>	E1	18	25	60	33	0
<i>Betonica alopecuroides</i>	E1	9	25	20	33	60
<i>Senecio abrotanifolius</i>	E1	9	0	0	33	0
<i>Thymus alpinus</i>	E1	5	25	40	0	0
<i>Juncus monanthos</i>	E1	5	0	0	33	20
<i>Leontopodium alpinum</i>	E1	5	0	20	0	0
<i>Anthyllis vulneraria</i> subsp. <i>alpestris</i>	E1	5	0	40	0	0

Successive number (Zaporedna številka)		1	2	3	4	5
<i>Carduus crassifolius</i>	E1	0	0	10	0	0
<i>Achillea clavenae</i>	E1	0	0	10	0	0
<i>Polygala alpestris</i>	E1	0	0	10	0	0
<i>Campanula scheuchzeri</i>	E1	0	0	0	33	0
<i>Silene alpestris</i>	E1	0	0	0	33	0
<i>Asplenietea trichomanis</i>						
<i>Valeriana saxatilis</i>	E1	100	100	70	100	40
<i>Primula carniolica</i>	E1	91	100	50	67	20
<i>Paederota lutea</i>	E1	73	100	20	67	60
<i>Campanula cochleariifolia</i>	E1	32	0	0	33	20
<i>Potentilla caulescens</i>	E1	27	25	20	0	40
<i>Saxifraga squarrosa</i>	E1	18	0	20	33	0
<i>Potentilla clusiana</i>	E1	18	0	10	0	0
<i>Phyteuma scheuchzeri</i> subsp. <i>columnae</i>	E1	14	75	50	0	20
<i>Primula auricula</i>	E1	14	25	50	0	0
<i>Saxifraga crustata</i>	E1	14	25	20	33	0
<i>Asplenium viride</i>	E1	14	0	0	33	20
<i>Asplenium ruta-muraria</i>	E1	9	50	10	0	0
<i>Bupleurum petraeum</i>	E1	9	0	20	0	0
<i>Carex brachystachys</i>	E1	9	0	0	0	0
<i>Kernera saxatilis</i>	E1	5	0	30	0	0
<i>Rhamnus pumilus</i>	E1	5	0	10	0	0
<i>Campanula justiniana</i>	E1	5	0	0	0	0
<i>Primula x venusta</i>	E1	0	25	0	0	0
<i>Daphne alpina</i>	E1	0	0	10	0	0
<i>Sedum album</i>	E1	0	0	10	0	0
<i>Silene hayekiana</i>	E1	0	0	10	0	0
<i>Thlaspietea rotundifolii</i>						
<i>Astrantia carniolica</i>	E1	73	0	0	67	100
<i>Campanula cespitosa</i>	E1	55	25	80	67	60
<i>Aquilegia bertolonii</i>	E1	50	25	10	67	20
<i>Soldanella minima</i>	E1	36	0	0	67	20
<i>Hieracium bifidum</i>	E1	23	50	10	33	20
<i>Hladnikia pastinacifolia</i>	E1	23	0	40	0	20
<i>Adenostyles glabra</i>	E1	14	0	0	67	80
<i>Hieracium porrifolium</i>	E1	14	0	0	33	0
<i>Festuca nitida</i>	E1	5	0	0	0	20
<i>Gymnocarpium robertianum</i>	E1	0	0	0	67	20
<i>Cystopteris montana</i>	E1	0	0	0	0	20
<i>Festuco-Brometea</i>						
<i>Linum catharticum</i>	E1	36	0	20	33	40
<i>Globularia cordifolia</i>	E1	9	0	90	0	0
<i>Lotus corniculatus</i> s. lat.	E1	5	50	40	0	20
<i>Buphthalmum salicifolium</i>	E1	5	25	10	33	60
<i>Teucrium montanum</i>	E1	0	0	50	0	0
<i>Viola hirta</i>	E1	0	0	10	0	0
<i>Coronilla vaginalis</i>	E1	0	0	10	0	0
<i>Helianthemum ovatum</i>	E1	0	0	10	0	0
<i>Polygonatum odoratum</i>	E1	0	0	10	0	0

Successive number (Zaporedna številka)		1	2	3	4	5
Scheuchzerio-Caricetea fuscae						
<i>Tofieldia calyculata</i>	E1	59	25	20	100	40
<i>Pinguicula alpina</i>	E1	55	50	0	100	80
<i>Parnassia palustris</i>	E1	36	0	0	100	80
Mulgedio-Aconitetea						
<i>Salix glabra</i>	E2a	0	25	0	67	40
<i>Salix glabra</i>	E1	55	50	50	33	60
<i>Viola biflora</i>	E1	23	25	0	33	20
<i>Salix appendiculata</i>	E2a	0	25	0	100	0
<i>Salix appendiculata</i>	E1	9	50	10	0	40
<i>Salix waldsteiniana</i>	E1	5	0	20	0	0
Erico-Pinetea						
<i>Rhodothamnus chamaecistus</i>	E1	91	75	80	100	40
<i>Rhododendron hirsutum</i>	E1	73	100	30	100	100
<i>Allium ericetorum</i>	E1	27	25	80	33	20
<i>Erica carnea</i>	E1	27	75	30	67	0
<i>Polygala chamaebuxus</i>	E1	27	25	10	33	20
<i>Euphrasia cuspidata</i>	E1	23	0	50	67	40
<i>Calamagrostis varia</i>	E1	18	0	20	67	100
<i>Arctostaphylos uva-ursi</i>	E1	9	0	40	0	0
<i>Gymnadenia odoratissima</i>	E1	9	25	10	67	20
<i>Pinus nigra</i>	E2a	0	0	0	100	0
<i>Pinus nigra</i>	E1	9	0	0	100	0
<i>Cotoneaster tomentosus</i>	E1	9	0	10	0	0
<i>Pinus mugo</i>	E2a	0	25	0	33	0
<i>Pinus mugo</i>	E1	9	0	0	0	0
<i>Carex ornithopoda</i>	E1	0	0	10	33	20
<i>Rubus saxatilis</i>	E1	0	50	10	33	0
<i>Carex alba</i>	E1	0	25	0	0	0
<i>Cotoneaster integerrimus</i>	E1	0	25	0	0	0
<i>Amelanchier ovalis</i>	E2a	0	0	0	67	0
<i>Epipactis atrorubens</i>	E1	0	0	10	0	0
<i>Cirsium erisithales</i>	E1	0	0	0	33	0
<i>Juniperus alpina</i>	E1	0	0	10	0	0
<i>Pyrola rotundifolia</i>	E1	0	0	0	33	0
Vaccinio-Piceetea						
<i>Picea abies</i>	E2a	0	0	0	67	0
<i>Picea abies</i>	E1	14	50	0	33	0
<i>Homogyne sylvestris</i>	E1	5	25	0	67	40
<i>Clematis alpina</i>	E1	5	25	0	33	0
<i>Rosa pendulina</i>	E1	0	25	0	0	0
<i>Hieracium murorum</i>	E1	0	0	0	67	0
<i>Gentiana asclepiadea</i>	E1	0	0	0	33	0
<i>Aposeris foetida</i>	E1	0	0	0	0	20
<i>Polystichum lonchitis</i>	E1	0	0	0	0	20
Fagetalia sylvaticae						
<i>Acer pseudoplatanus</i>	E2a	0	0	0	33	0
<i>Acer pseudoplatanus</i>	E1	14	0	0	100	80
<i>Cyclamen purpurascens</i>	E1	14	25	10	67	60

Successive number (Zaporedna številka)		1	2	3	4	5
<i>Fagus sylvatica</i>	E2a	0	0	0	33	0
<i>Fagus sylvatica</i>	E1	5	0	10	100	80
<i>Laburnum alpinum</i>	E1	9	0	0	33	40
<i>Helleborus niger</i>	E1	0	0	0	33	20
<i>Lathyrus vernus</i>	E1	0	0	0	33	0
<i>Melica nutans</i>	E1	0	0	0	33	0
<i>Omphalodes verna</i>	E1	0	0	0	0	20
<i>Quercetalia pubescentis</i>						
<i>Ostrya carpinifolia</i>	E1	5	25	0	33	0
<i>Fraxinus ornus</i>	E1	5	0	0	0	0
<i>Ostrya carpinifolia</i>	E2a	0	0	0	33	20
<i>Fraxinus ornus</i>	E2a	0	0	0	33	0
<i>Sorbus aria</i>	E1	0	0	0	33	0
<i>Querco-Fagetea</i>						
<i>Corylus avellana</i>	E1	0	0	0	33	0
<i>Hepatica nobilis</i>	E1	0	0	0	0	20
Other species (Druge vrste)						
<i>Molinia caerulea</i> subsp. <i>arundinacea</i>	E1	9	0	0	67	0
<i>Juniperus communis</i>	E1	0	0	20	0	0
<i>Potentilla erecta</i>	E1	0	0	0	33	0
Mosses and lichens (Mahovi in lišaji)						
<i>Orthothecium rufescens</i>	E0	55	0	0	33	20
<i>Neckera crispa</i>	E0	36	100	0	33	0
<i>Tortella tortuosa</i>	E0	32	50	50	100	40
<i>Ctenidium molluscum</i>	E0	32	75	0	0	20
<i>Marchantia polymorpha</i>	E0	32	0	0	0	0
<i>Fissidens dubius</i>	E0	18	25	10	67	0
<i>Tortella</i> sp.	E0	18	0	20	0	0
<i>Solorina saccata</i>	E0	9	0	0	0	0
<i>Rhytidiadelphus triquetrus</i>	E0	5	25	0	33	0
<i>Dicranum</i> sp.	E0	5	0	10	0	0
<i>Schistidium apocarpum</i>	E0	0	25	20	0	0
<i>Hylocomium splendens</i>	E0	0	25	0	0	0
<i>Dicranum scoparium</i>	E0	0	25	0	0	0
<i>Grimmia pulvinata</i>	E0	0	0	10	0	0
<i>Homalothecium</i> sp.	E0	0	0	10	0	0
<i>Campylium stellatum</i>	E0	0	0	0	0	20

1: *Primulo carniolicae*-*Caricetum firmae*

2: *Primulo carniolicae*-*Seslerietum calcariae*

3: *Caricetum mucronatae* var. *geogr. Primula carniolica*

4: *Pino nigrae*-*Seslerietum calcariae* nom. prov.

5: *Caricetum ferrugineae* var. *Astrantia carniolica*