

Plant communities of moist rock crevices with endemic *Primula carniolica* in the (sub)montane belt of western Slovenia

Igor Dakskobler¹ & Andrej Martinčič²

Key words: phytosociology, synsystematics, calcareous rock faces, *Astrantia carniolica*, *Pinguicula alpina*, *Primula carniolica*, *Saxifraga aizoides*, Natura 2000, Julian Alps, Dinaric Alps, Slovenia.

Ključne besede: fitocenologija, sinsistematika, karbonatno skalovje, *Astrantia carniolica*, *Pinguicula alpina*, *Primula carniolica*, *Saxifraga aizoides*, Natura 2000, Julijske Alpe, Dinarsko gorstvo, Slovenija.

Abstract

Based on our analysis of a large number of relevés of communities of moist rock crevices in western Slovenia (southern Julian Alps, northern part of the Trnovski Gozd Plateau) we described several new syntaxa with the endemic *Primula carniolica*. The most unique in terms of ecology is a hygrophytic chasmophytic community classified into the association *Astrantio carniolicae-Primuletum carniolicae*, which is, together with similar hygrophytic associations *Astrantio carniolicae-Pinguiculetum alpinae* and *Campanulo cespitosae-Saxifragetum aizoidis*, associations *Phyteumato columnnae-Primuletum carniolicae*, *Primulo carniolicae-Potentilletum clusianae* and the subassociation *Primuletum carniolicae violetosum biflorae*, temporarily classified into the alliance *Cystopteridion* and order *Potentilletalia caulescentis*. Only the new association *Paederoto luteae-Potentilletum caulescentis* is classified into the alliance *Physoplexido comosae-Saxifragion petraeae*. The elevational range of chasmophytic communities with *Primula carniolica* is 200 to 1460 m a.s.l. Species that most commonly accompany *Primula carniolica* in rock crevices include *Paederota lutea*, *Phyteuma scheuchzeri* subsp. *columnnae*, *Sesleria caerulea*, *Aster bellidiastrum* and moss *Orthothecium rufescens*.

Izvleček

Z obdelavo obsežnega števila fitocenoloških popisov združb vlažnih skalnih razpok v zahodni Sloveniji (južne Julijske Alpe, severni del Trnovskega gozda) smo opisali nekatere nove sintaksone, v katerih uspeva endemit *Primula carniolica*. Ekološko najbolj posebna je vlagoljubna združba skalnih razpok, ki jo uvrščamo v asociacijo *Astrantio carniolicae-Primuletum carniolicae*. Skupaj s podobnima vlagoljubnima asociacijama *Astrantio carniolicae-Pinguiculetum alpinae* in *Campanulo cespitosae-Saxifragetum aizoidis* ter tudi asociacijama *Phyteumato columnnae-Primuletum carniolicae* in *Primulo carniolicae-Potentilletum clusianae* ter subasociacijo *Primuletum carniolicae violetosum biflorae* jih za zdaj uvrščamo v zvezo *Cystopteridion* in red *Potentilletalia caulescentis*. Le novo asociacijo *Paederoto luteae-Potentilletum caulescentis* uvrščamo v zvezo *Physoplexido comosae-Saxifragion petraeae*. Razpon nahajališč združb skalnih razpok z vrsto *Primula carniolica* je od 200 m do 1460 m nm. v. Vrste, ki v skalnih razpokah najbolj pogosto rastejo skupaj z njo pa so *Paederota lutea*, *Phyteuma scheuchzeri* subsp. *columnnae*, *Sesleria caerulea*, *Aster bellidiastrum* in mah *Orthothecium rufescens*.

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1 Scientific Research Centre of the Slovenian Academy of Sciences and Arts, Institute of Biology, Regional Unit Tolmin, Brunov drevored 13, 5220 Tolmin, Slovenia. E-mail: igor.dakskobler@zrc-sazu.si

2 Zaloška 78 a, SI-1000 Ljubljana, Slovenia. E-mail: andrej.martincic@siol.net

Introduction

Primula carniolica is endemic to Slovenia and has a relatively small distribution area in the pre-Alpine and Dinaric phytogeographical region of Slovenia, which spans the foothills of the southern Julian Alps and NW Dinaric Alps. Its northernmost localities are in the northeastern edge of the Šentviška Gora Plateau at the village Bukovski Vrh, in the gorge Selska Voda under the village of Bukovo and in Orehovska Grapa gorge under the hamlet of Nemci at the foothills of Mt. Kojca. The southeasternmost locality is under Pšeničev Vrh above Sodražica and the ridge of Velika Gora above Ribnica (Figure 1, see also Dakskobler et al. 2004, Dolinar et al. 2013, Dakskobler & Vreš 2014). There are many localities in its distribution area and they frequently feature many specimens. The Carniolan primrose occurs in different plant communities, but mainly on dolomite or dolomite-limestone bedrock, most often on rocky and at least slightly moist sites, in narrow, hard-to-access ravines, more rarely on karstified Dinaric plateaus, at elevations spanning 200 to 1460 m. Numerous plant communities featuring this species have already been supported by phytosociological tables. It has been identified (by the authors of this study and others) in stands of the following forest syntaxa: *Omphalodo-Fagetum rhododendretosum hirsuti* (Dakskobler et al. 2000, Surina & Dakskobler 2013), *Rhododendro hirsuti-Fagetum* (Dakskobler 2003, Accetto 2015), *Arunco-Fagetum* (Dakskobler 2015a), *Polysticho lonchitis-Fagetum* (Dakskobler & Rozman 2020, in preparation), *Lamio orvalae-Aceretum pseudoplatani* (Dakskobler 2007), *Lamio orvalae-Salicetum eleagni caricetosum albae* (Dakskobler 2010), *Fraxino orni-Ostryetum phyteumatetosum columnae* (Dakskobler 2015b), *Rhododendro hirsuti-Ostryetum* (Dakskobler 2015b, Accetto 2015), *Ostryo carpinifoliae-Piceetum* (Accetto (2013), *Fraxino orni-Pinetum nigrae* var. geogr. *Primula carniolica* (Dakskobler 1998, 1999, Accetto 2015), *Primulo carniolicae-Pinetum nigrae* (Accetto 2008, 2015), *Genisto januensis-Pinetum sylvestris campanuletosum cespitosae* (Rozman et al. 2020). It has been recorded in several grassland communities as well: *Primulo carniolicae-Caricetum firmae*, *Primulo carniolicae-Seslerietum calcariae* (Surina & Dakskobler 2005, Dakskobler 2006), *Saxifrago squarrosae-Caricetum mucronatae* var. geogr. *Primula carniolica* (Dakskobler 2006, Dakskobler & Surina 2017a), *Primulo carniolicae-Caricetum sempervirentis* (Accetto 2010), in a frost pocket community of moist rocky hollows *Drepanocladu uncinati-Heliospermetum pusillae* (Surina & Vreš 2009), in a community of moist screes *Astrantio carniolicae-Adenostyletum glabrae* (Dakskobler 2008), community of dolomite headwaters *Astrantio carniolicae-Schoenetum nigricantis* (Dakskobler

& Martinčič 2018) and in two shrub communities of rocky sites, namely *Heliospermo pusillae-Rhododendretum hirsuti* and *Rhododendro hirsuti-Salicetum appendiculatae* (Dakskobler & Surina 2017b).

In most of the listed forest and grassland communities *Primula carniolica* occurs with a lower frequency and cover than in chasmophytic (rock-face) communities, where its optimal sites are. Only two such communities have been described to date: *Primulo carniolicae-Potentilletum caulescentis* (Dakskobler 1998, Accetto 2008) and *Primuletum carniolicae* (Accetto 2008, 2015, Dolinar et al. 2013, 2015, 2017). Most of our relevés of chasmophytic communities with *Primula carniolica* have not yet been processed and published. In this article we provide a brief description of the identified communities and try to find an appropriate syntaxonomic classification for some of them.

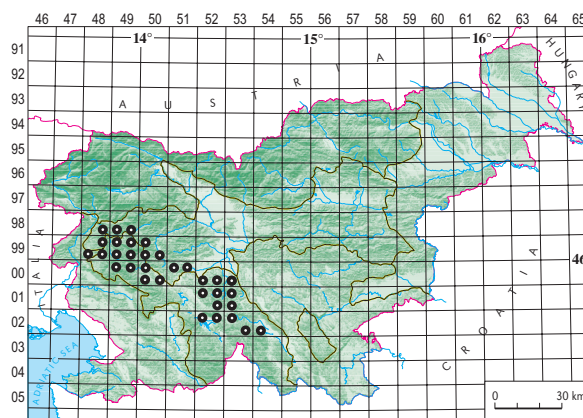


Figure 1: Distribution of *Primula carniolica* in Slovenia (FloVegSi database).

Slika 1: Razširjenost vrste *Primula carniolica* v Sloveniji (podatkovna baza FloVegSi).

Methods

Our analysis was based on the phytosociological relevés recorded on the sites of *Primula carniolica* using the Central-European (Braun-Blanquet 1964) approach. The relevés were made in the northwestern part of its distribution area, between Čepovan, Slap ob Idriji, Bukovski Vrh, Bukovo, Orehek in the northwest and north, and the Golaki range, Črni Vrh nad Idrijo and the Žirovnica valley near Žiri in the south and southeast. The plot size was determined based on site homogeneity. Relevés were entered into the FloVegSi database (Fauna, Flora, Vegetation and Paleovegetation of Slovenia) of the Jovan Hadži Institute of Biology at ZRC SAZU (Seliškar et al. 2003). In further analyses we focused only on the relevés of chasmophytic communities in this area (altogether about 320 – Figure 2) and ordered them using hierarchical classifica-

tion, unweighted average linkage method – UPGMA and Wishart’s similarity ratio, using SYN-TAX 2000 program package (Podani 2001). We transformed the combined cover-abundance values with numerical values (1–9) according to van der Maarel (1979). The UPGMA method was used because it better recognises the relevés that stand out from others. The results of the UPGMA correspond to our experience in the field, as the clusters comprise the relevés (stands) that are in fact ecologically similar.

The relevés where *Primula carniolica* is mostly accompanied by distinctly hygrophytic species *Pinguicula al-*

pina, *Astrantia carniolica*, *Hymenostylium recurvirostre* and *Palustriella commutata* (the smaller group) clustered separately from all other relevés (the bigger group), which either comprised only some of the above-listed species, usually with low mean coverage, or none of these species (Dendrogram, Figure 14 in Appendix). In the next step, these two, distinctly different groups of relevés were processed separately, but without taking into account all similar relevés in the bigger group, in order to avoid the tables being too extensive.

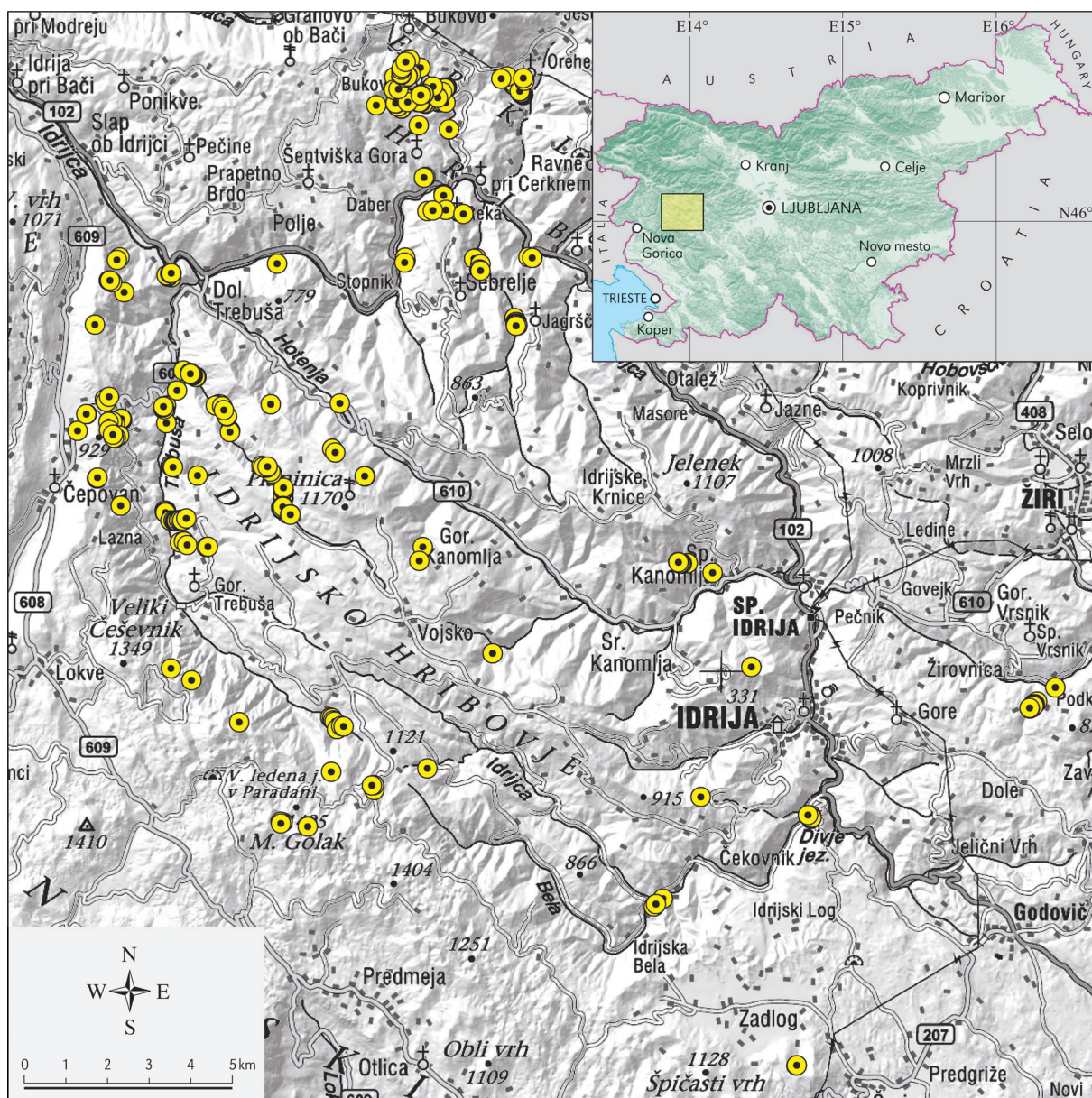


Figure 2: Localities of rock crevice communities with *Primula carniolica* in western Slovenia.

Slika 2: Nahajališča združb skalnih razpok z vrsto *Primula carniolica* v zahodni Sloveniji.

For the sake of comparison our analysis included also several other communities of moist rock crevices in the submontane-montane belt of the southern Julian Alps and the northern part of the Dinaric Alps, which are dominated by *Pinguicula alpina* and (or) *Saxifraga aizoides*, have a rich moss layer, but do not comprise *Primula carniolica* (these communities are partly distributed outside its distribution area). These relevés were arranged into tables in the same manner, through hierarchical classification, the same as the columns in the synoptic table. Numerical comparisons were performed with the SYN-TAX 2000 program package (Podani 2001). When describing new associations of plant communities with poor species composition and few dominant species, we focused on the latter and their mean coverage, rather than only on floristic similarity between the compared syntaxa.

The nomenclatural source for the names of vascular plants was the Mala flora Slovenije (Martinčič et al. 2007), except for the name *Molinia arundinacea* Schrank. The nomenclature of Flora alpina (Aeschimann et al. 2004) – *Sesleria caerulea* was used for the taxon *Sesleria caerulea* subsp. *calcaria* (MFS). Ros et al. (2007) was the nomenclatural source for the names of liverworts (*Marchantiophyta*) and Ros et al. (2013) for the names of mosses. Šilc & Čarni (2012), Accetto (2015), Mucina et al. (2016), Dakskobler & Surina (2017a, b) and Dakskobler & Martinčič (2018) served as nomenclatural sources for the names of the syntaxa. The data source for geological bedrock was Buser (2009). The geographic coordinates of the relevés were determined according to the Slovenian geographic coordinate system D 48 (Zone 5) on the Bessel ellipsoid and with Gauss-Krüger projection.

Results and discussion

Arrangement of relevés into tables

Our analysis of 348 relevés of rock crevices with *Primula carniolica* (from its entire distribution area), showed that even though they comprise about 300 species of vascular plants and mosses, the species with constancy higher than 50% are (in addition to *Primula carniolica*) only *Paederota lutea*, *Phyteuma scheuchzeri* subsp. *columnae*, *Sesleria caerulea*, *Aster bellidiastrum* and moss *Orthothecium rufescens*. Seven species have the constancy of 40% or higher: *Astrantia carniolica*, *Asplenium ruta-muraria*, *Valeriana saxatilis*, *Asplenium trichomanes*, *Calamagrostis varia* and mosses *Neckera crispa* and *Ctenidium molluscum*. The entire species composition of these communities features less than 10% of the species with constancy higher than

20% and only 42 species (35 vascular plants and 7 mosses) with constancy more than 10% (the list of the most common species in chasmophytic communities with *Primula carniolica* is in Table 11). This clearly demonstrates that the decisive factor when classifying communities with the average number of only 15 to 20 species per relevé into a syntaxonomic system are in the first place the species with constancy of at least 40% or higher. Some species with the constancy of 10 to 35%, but high mean coverage can be in the first place differential species or species that indicate entirely different sites.

The relevés of distinctly moist calcareous rock crevices, with occasional tufa formations, were arranged into two tables. Table 1 comprises hygrophilous communities where *Primula carniolica* has similar constancy and mean coverage as *Pinguicula alpina* and *Astrantia carniolica*, while *Hymenostylium recurvirostre* in *Palustriella commutata* stand out in the moss layer, both with their frequency and mean coverage.

With hierarchical clustering we arranged the stands that were the most similar to these in terms of site moisture (stands with dominating *Pinguicula alpina* and *Astrantia carniolica*, with some stands comprising also *Saxifraga aizoides*) in Table 2 and Table 3 (stands with dominating *Saxifraga aizoides*).

Table 5 comprises the relevés with three dominant species alongside *Primula carniolica*: *Orthothecium rufescens*, *Paederota lutea* and *Phyteuma scheuchzeri* subsp. *columnae*. The latter subspecies is not included in the phytosociological table of the original description of the association *Primuletum carniolicae* (Accetto 2008), because its distribution area (Figure 3) does not overlap with the entire distribution area of *Primula carniolica*, but only with its western part, primarily the Idrijca river basin with the Trnovski Gozd Plateau. Ecology of *Phyteuma columnae* is slightly different from the ecology of *Primula carniolica*. As it requires less moisture it is more common in very dry rock crevices. It is a character species of the association *Phyteumato-Potentilletum caulescentis*, whose stands dominate on the southern rocky edge of the Trnovski Gozd and Nanos plateaus (Poldini 1978), more rarely also on their northern side, and of the association *Phyteumato-Moebringietum villosae* from the foothills of the southern Julian Alps (Dakskobler 2000). In stands with *Primula carniolica* it is therefore above all a phytogeographical differential species. The entire species composition of the community in Table 5 is not considerably different from the floristic composition of the community in Table 1, but there are obvious differences in terms of constancy and mean coverage of the most frequent species, and in the percentage of groups of diagnostic species (Table 10).

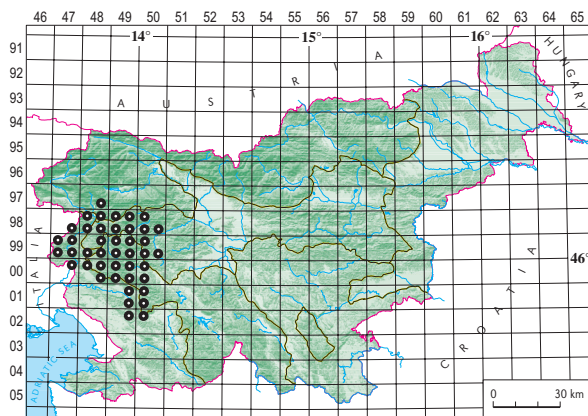


Figure 3: Distribution of *Phyteuma scheuchzeri* subsp. *columnae* in Slovenia (FloVegSi database).

Slika 3: Razširjenost taksona *Phyteuma scheuchzeri* subsp. *columnae* v Sloveniji (podatkovna baza FloVegSi).

While the relevés arranged in Table 6 are similar to the relevés in Table 5, many of them were made at higher elevations and have a higher frequency of more hygrophytic species such as *Astrantia carniolica* and *Viola biflora*. In terms of ecological conditions these relevés indicate a certain similarity also with the community in Table 1 (compare structure by groups of diagnostic species, Table 10).

Table 7 comprises the relevés that grouped separately in the comparison of the relevés of the association *Primuletum carniolicae* s. lat. and have until now been classified into the association *Primulo carniolicae-Potentilletum caulescentis*.

Table 8 comprises six relevés from Govci (rock faces under the top of Zeleni Rob and Poldanovec on the northern edge of the Trnovski Gozd Plateau above the Trebuša valley), characterised by *Potentilla clusiana*, *Carex firma*, *Rhodothamnus chamaecistus* and *Campanula cochleariifolia*.

The relevés in Table 4 grouped separately and were mainly made on the fringe of the distribution area of *Primula carniolica*, in the gorge Raskovec and the Železnica valley (municipality of Idrija, although historically this territory belongs to Žiri and Gorenjska regions). *Viola biflora* and *Pinguicula alpina* are frequent here, but *Paederota lutea* and *Phyteuma scheuchzeri* subsp. *columnae* are very rare.

Syntaxonomic classification of of recorded communities based on the synoptic table

Table 9 was decisive in our assessment and synsystematic classification of the studied communities. The synoptic table was used because the syntaxa were described with more than one relevé. As no single relevé is fully representative of a syntaxon it is only in a synthetic form

(a cluster of relevés) that the author can convey how he understands a certain syntaxon. Individual stands (communities) that occur in nature and are depicted by our relevés can never fully correspond to what the author recognised as a (specific) abstract syntaxon. We therefore compared the syntaxa described in this article, which were obtained with the cluster analysis of individual relevés (see the dendrogram, Figure 14 in the Appendix), with other, already published syntaxa, which were considered in a synthetic form. In addition to most of the communities in the listed tables (except the community in Table 3, which is obviously different from other chasmophytic communities with dominant *Pinguicula alpina* and/or *Primula carniolica*) it comprises, in synoptic form, also the following, already published communities: four tables of the association *Primuletum carniolicae* s. lat. (Dolinar et al. 2013, 2015, 2017) and two published tables of the same association (Accetto 2008, 2015). These six synoptic columns present chasmophytic communities in the central and southeastern part of the distribution area of *Primula carniolica* (the above-mentioned tables have no relevés from this area). We also added two other forms of the association *Primulo carniolicae-Potentilletum caulescentis* (Dakskobler 1998, Accetto 2008) to the synoptic table. The table comprises 15 syntaxa. By comparing them we obtained the dendrogram in Figure 4, in which we took into account the species' constancy, and not only their presence or absence. This decision is based on the already mentioned observation that the species that play the decisive role in these communities, which are distributed across small areas and have few recorded species, are in the first place the species with higher constancy and mean coverage. Some researchers assess mean coverage also with a specific cover index (for communities in the territory of Slovenia comp. Surina 2005).

Based on the synoptic table and hierarchical classification we can describe two new associations, *Astrantio carniolicae-Primuletum carniolicae* (Table 1) and *Astrantio carniolicae-Pinguiculetum alpinae* (Table 2) whose stands occur on apparently moister sites than those of the communities from previously described associations *Primuletum carniolicae* and *Primulo carniolicae-Potentilletum caulescentis*. They are similar also in terms of constancy of diagnostic species, except that the stands of the first association differ so significantly from the stands of the other in terms of certain community-defining species (see also Table 10) that we find the classification of the community in Table 1 into the subassociation *Astrantio-Pinguiculetum alpinae primuletosum carniolicae* less appropriate.

In terms of entire species composition the stands of the association *Astrantio-Pinguiculetum alpinae* are slightly similar to the stands of the association *Hymenostylio recur-*

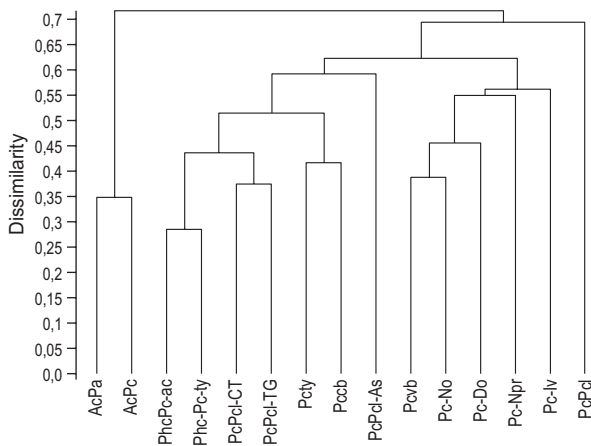


Figure 4: Dendrogram of rock crevices communities with endemic *Primula carniolica*, UPGMA, 1-similarity ratio.

Slika 4: Dendrogram združb skalnih razpok z endemitom *Primula carniolica* (UPGMA, 1-similarity ratio).

Legend / Legend:

- AcPa** *Astrantio carniolicae-Pinguiculetum alpinae*, this article, Table 2.
- AcPc** *Astrantio carniolicae-Primuletum carniolicae*, this article, Table 1.
- PhcPc-ac** *Phyteumato columnnae-Primuletum carniolicae astrantiosum carniolicae*, this article, Table 6.
- Phc-Pc-ty** *Phyteumato carniolicae-Primuletum carniolicae typicum*, this article, Table 5.
- PcPcl-CT** *Phyteumato columnnae-Primuletum carniolicae potentilletosum caulescentis*, this article, Table 7 (CT – Cerknoska and Trebuška regions).
- PcPcl-TG** *Phyteumato columnnae-Primuletum carniolicae potentilletosum caulescentis (Primulo carniolicae-Potentilletum caulescentis)*, Dakskobler (1998, Table 1, pp. 286–287) – TG (Trnovski Gozd).
- Pcty** *Primuletum carniolicae*, Accetto (2008, Table 1, pp. 42–44).
- Pccb** *Primuletum carniolicae caricetosum brachystachyos*, Accetto (2015, Table 27, pp. 98–99).
- PcPcl-As** *Paederoto luteae-Potentilletum caulescentis (Primulo carniolicae-Potentilletum caulescentis var. Asplenium seelosii)*, Accetto (2008, Table 5, pp. 49–50).
- Pcvb** *Primuletum carniolicae violetosum biflorae*, this article, Table 4.
- Pc-No** *Primuletum carniolicae* s. lat., Dolinar et al. (2017, Table 1, pp. 30–32) – No – Notranjska region
- Pc-Do** *Primuletum carniolicae* s. lat., Dolinar et al. (2013, Table 1, pp. 13–16) – Do – Dolenjska region.
- Pc-Npr** *Primuletum carniolicae* s. lat., Dolinar et al. (2015, Table 1, pp. 40–43) – Notranjski Park Cerknica.
- Pc-Iv** *Primuletum carniolicae* s. lat., Dolinar et al. (2013: Table 2, pp. 17–18) – Iv – Iški Vintgar.
- PcPcl** *Primulo carniolicae-Potentilletum clusiana*, this article, Table 8.

viostro-Pinguiculetum poldinii from the Venetian Prealps, which its authors Giovagnoli & Tassinazzo (2012) classify into the alliance *Adiantum* and class *Adiantetea*. Given the presence of certain bryophytes, character species of this class (*Hymenostylium recurvirostre*, *Preissia quadrata*, *Pellia endiviifolia* and *Eucladium verticillatum*) in the stands of the associations *Astrantio-Pinguiculetum alpinae* and *Astrantio-Primuletum carniolicae*, these associations could be classified in the same way. Nevertheless, the fact that among the listed moss species only *Hymenostylium recurvirostre* has higher constancy and mean coverage, the absence of *Adiantum capillus-veneris* from our relevés as well as the entire species composition speak against such classification.

(Sub)montane stands of moist rock crevices with *Saxifraga aizoides*, which according to the hierarchical classification do not belong to the association *Astrantio carniolicae-Pinguiculetum alpinae*, are a curiosity in the Southeastern Alps, and we therefore classify them into the new association *Campanulo cespitosae-Saxifragetum aizoidis*.

The second group with the highest degree of similarity features two forms of the association *Primuletum carniolicae* s. lat. with the taxon *Phyteuma scheuchzeri* subsp. *columnnae* and two forms of the association *Primulo carniolicae-Potentilletum caulescentis*. This means that similar stands from the northwestern part of *Primula carniolicae*'s distribution area are grouped together. These communities could be treated as a special geographical variant of the association *Primuletum carniolicae*. According to our criteria the rank of geographical variant (a small or regional association) is higher than the rank of subassociation. Since the applicable Code of Phytosociological Nomenclature (Weber et al. 2000) does not deal with this rank, we have two options for a valid typification:

- to reduce the rank of geographical variant to the rank of subassociation, or
- to bring the rank of geographical variant to the rank of association.

The results of hierarchical classification speak in favour of the latter option (see also Tables 9 and 10), as they point to certain floristic differences between the studied stands and the stands described by Accetto (2008, 2015) and Dolinar et al. (2013, 2015, 2017) as the association *Primuletum carniolicae*, also in terms of the updated selection of diagnostic species (in both cases the common species are *Primula carniolica*, *Orthothecium rufescens* and *Valeriana tripteris*). Based on these criteria it makes sense to classify our stands into the new association *Phyteumato columnnae-Primuletum carniolicae*. Only in this case can we take into account the results of hierarchical classification (Figure 4), which demonstrate considerable similar-

ity of the stands of the association *Primulo carniolicae-Potentilletum caulescentis* from the northwestern part of the distribution area of *Primula carniolica* (Dakskobler 1998, 2000) with presently described communities from the same area. With these findings in mind, this association should be reduced to the rank of the subassociation *Phyteumato columnae-Primuletum carniolicae potentilletosum caulescentis*.

Based on floristic similarity (Figure 4), however, the relevés from the rock faces of Govci under Zeleni Rob and Poldanovec, where *Potentilla clusiana* occurs or even dominates, cannot be classified into the association *Phyteumato-Primuletum carniolicae*. In the dendrogram in Figure 4 they grouped separately from other relevés and are therefore classified into the new association *Primulo carniolicae-Potentilletum clusianae*.

Based on the results of hierarchical classification (Figure 4, Table 9) it would make sense to rename the subassociation *Primuletum carniolicae caricetosum brachystachyos* (Accetto 2015) into *Primuletum carniolicae caricetosum mucronatae*. The nomenclatural type is the same, but *Carex mucronata* (frequency 100%) defines these stands significantly more than *C. brachystachyos* (frequency 50%). However, the Code (Weber et al. 2000) does not allow such renaming, because the valid name *caricetosum brachystachyos* is not based on a taxonomical error (Arts. 29a and 43).

Justification of the possible new suballiance (alliance) of (sub)montane chasmophytic communities

Table 9 serves also as the basis for classification of the described communities into higher syntaxonomic units. So far, these communities have been classified either into the alliance *Physoplexido comosae-Saxifragion petraeae* or into the alliance *Cystopteridion* (Šilc & Čarni 2012, Accetto 2015, Dolinar et al. 2015, 2017). A more recent review of the vegetation of Europe at the rank of classes, orders and alliances (Mucina et al. 2016) indicates that the alliance *Violo biflorae-Cystopteridion alpinae* (syntax. syn. *Cystopteridion*) belongs to the order *Violo biflorae-Cystopteridetalia alpinae* and class *Polypodietae*. This classification is different from that of Theurillat (2004), and E. and S. Pignatti (2014, 2016), who classify the alliance *Cystopteridions* into the order *Potentilletalia caulescentis* and class *Asplenietea trichomanis*. The studied communities with their entire species composition also undoubtedly belong to this order and class, and are characterised by higher occurrence of hygrophytic species. According to Mucina et al. (2016) they cannot be classified into

the alliance *Violo biflorae-Cystopteridion* (syn. *Cystopteridion*). According to Theurillat (in litt.) the classification of the alliance *Cystopteridion* into the order *Violo biflorae-Cystopteridetalia alpinae* is problematic. In the original diagnosis this order corresponds to communities that are intermediate between the classes *Asplenietea trichomanis* and *Thlaspietea rotundifoliae*, and indifferent to the substrate. Therefore, the alliance *Cystopteridion* Richard 1972 is not the same syntaxon as the alliance *Violo biflorae-Cystopteridion alpinae* Fernández Casas 1970, as described in Mucina & al. (2016).

With this in mind, we provisionally classify most of the communities described in this article into the alliance *Cystopteridion* and order *Potentilletalia caulescentis*. We also propose another possible alliance, an alliance of hygrophytic rock crevice (chasmophytic) communities of the Southeastern Alps and northern Dinaric Alps (*Astrantio carniolicae-Paederotium luteae* nom. prov.) an ecological vicariant of the alliance *Physoplexido comosae-Saxifragion petraeae*. Based on Table 9, *Paederota lutea* and *Astrantia carniolica* seem to be appropriate name-giving species for such an alliance. *Paederota lutea* is an eastern-Alpine-Illyrian species and a character species of chasmophytic communities (Aeschimann et al. 2004). In Slovenia it is distributed in chasmophytic communities, on screes, stony subalpine-alpine grasslands and stony shrub communities and forests from the colline to the alpine belt. In the colline, submontane and montane belts it frequently occurs on shady moist rocks and is one of the most constant companions of the endemic *Primula carniolica*. Surina (2005) described its association *Ranunculo traunfellneri-Paederotetum luteae* in the Krn Mts. and classified it into the alliance *Cystopteridion*. *Paederota lutea* is also the name-giving species of the association *Paederoto luteae-Minuartietum rupestris* (Wraber 1986, Surina 2005). Both described associations occur in the subalpine or alpine belt. A detailed ecological, phytogeographical and phytosociological description of *Astrantia carniolica* was published recently (Dakskobler & Martinčič 2018), and is therefore not repeated herein. Although it occurs also in different communities, in dolomite headwaters, on moist screes and in stony forests, *Astrantia carniolica* nevertheless meets the criteria (together with *Paederota lutea*, which has a very similar, but slightly larger distribution area) for naming southeastern-Alpine–northern-Dinaric communities of moist rock crevices. However, to ensure that the description of the new alliance is valid, we should take into account also similar syntaxa from other parts of the Southeastern Alps and northern Dinaric Alps, and perform more extensive numerical comparisons (opinion of two anonymous reviewers, with which the authors agree).

An overview of newly described syntaxa with their nomenclatural types and diagnostic species

Asplenietea trichomanis (Br.-Bl. in Meier et Br.-Bl. 1934) Oberd. 1977

Potentilletalia caulescentis Br.-Bl. in Br.-Bl. et Jenny 1926
Cystopteridion fragilis Richard 1972 (non. *Viola biflora*-*Cystopteridion alpinae* sensu Mucina et al. 2016) (*Astrantio carniolicae*-*Paederotion luteae* nom. prov.)

In the context of this article the diagnostic species of this alliance include the species expected to be diagnostic also for the suggested possible new alliance: *Astrantia carniolica*, *Paederota lutea*, *Primula carniolica*, *Orthothecium rufescens*, *Aster bellidiastrum*, *Pinguicula alpina*, *Carex brachystachys*, *Asplenium viride*, *Valeriana saxatilis*, *V. tripteris*, *Viola biflora*, *Saxifraga aizoides*, *Tofieldia calyculata*, *Cystopteris fragilis*, *Hymenostylium recurvirostre*, *Palustriella commutata*.

Astrantio carniolicae-*Primuletum carniolicae* ass. nov. hoc loco

Nomenclatural type, *holotypus*, is relevé 35 in Table 1.

Diagnostic species: *Primula carniolica*, *Astrantia carniolica*, *Pinguicula alpina*, *Hymenostylium recurvirostre*, *Palustriella commutata* (character species) and *Phyteuma scheuchzeri* subsp. *columnae*, *Molinia arundinacea*, *Valeriana saxatilis* and *Carex mucronata* (differential species).

- *asteretosum bellidiastrum* subass. nov. hoc loco (relevés 4–26 in Table 1), nomenclatural type, *holotypus*, is relevé 15 in Table 1.

Differential species: *Aster bellidiastrum*, *Paederota lutea*.

- *hymenostylietosum recurvirostris* subass. nov. hoc loco (relevés 27–56 in Table 1), nomenclatural type, *holotypus*, is relevé 35 in Table 1.

Differential species: *Hymenostylium recurvirostre*, *Pinguicula alpina* (because of higher medium cover value than in the stands of the former subassociation).

Relevés 1–3 in Table 1 are classified only at the rank of the association.

Astrantio carniolicae-*Pinguiculetum alpinae* ass. nov. hoc loco

Nomenclatural type, *holotypus*, is relevé 11 in Table 2.

Diagnostic species: *Pinguicula alpina*, *Astrantia carniolica*, *Hymenostylium recurvirostre*, *Palustriella comutata*, *Petasites paradoxus*.

var. *Molinia arundinacea* (relevés 13–19 in Table 2)

Campanulo cespitosae-*Saxifragetum aizoidis* ass. nov. hoc loco

Nomenclatural type, *holotypus*, is relevé 6 in Table 3.

Diagnostic species: *Saxifraga aizoides*, *Campanula cespitosa*, *Molinia arundinacea*, *Palustriella commutata*, *Calamagrostis varia*, *Preissia quadrata*.

Variants:

var. *Pinguicula alpina* (relevés 1–2 in Table 3): differential species *Pinguicula alpina*, *Carex flacca*

var. *Caltha palustris* (relevés 3–4 in Table 3): differential species *Caltha palustris*, *Gymnostomum aeruginosum*.

var. *Hymenostylium recurvirostre* (relevés 5–9 in Table 3): differential species *Hymenostylium recurvirostre*, *Tofieldia calyculata*.

var. *Aster bellidiastrum* (relevés 10–14 in Table 3): differential species *Aster bellidiastrum*, *Orthothecium rufescens*, *Veronica urticifolia*, *Saxifraga cuneifolia*.

Phyteumato columnae-*Primuletum carniolicae* ass. nov. hoc loco

Nomenclatural type, *holotypus*, is relevé 28 in Table 5.

Diagnostic species: *Primula carniolica*, *Phyteuma scheuchzeri* subsp. *columnae*, *Paederota lutea*, *Orthothecium rufescens*, *Valeriana tripteris*, *Carex brachystachys*.

- *typicum* subass. nov. hoc loco (nomenclatural type is the same as the nomenclatural type of the association, relevé 28 in Table 5)

var. *Viola biflora* (relevés 1–3 in Table 5), differential species *Viola biflora*, *Cystopteris fragilis*.

- *astrantietosum carniolicae* subass. nov. hoc loco

Nomenclatural type, *holotypus*, is relevé 17 in Table 6.

Differential species: *Astrantia carniolica*, *Viola biflora*, *Valeriana saxatilis*.

- *potentilletosum caulescentis* (Dakskobler (1998) 2000) subass. nov. stat. nov. (basonym *Primulo carniolicae*-*Potentilletum caulescentis* Dakskobler (1998) 2000,

see Dakskobler 1998: 272–273, 286–287; 2000: 56)

Nomenclatural type, *lectotypus*, is relevé 1 in Table 1 (Dakskobler 1998: 286–287).

Differential species: *Potentilla caulescens*, *Erica carnea*, *Polygala chamaebuxus*, *Primula auricula*, *P. × venusta*.

Primulo carniolicae-Potentilletum clusianae ass. nov. hoc loco

Nomenclatural type, *holotypus*, is relevé 4 in Table 8.

Diagnostic species: *Potentilla clusiana*, *Primula carniolica*, *Carex firma*, *Campanula cochleariifolia*, *Rhodothamnus chamaecistus*, *Hladnikia pastinacifolia*, *Hieracium pillosum*, *Aquilegia iulia*.

Primuletum carniolicae Accetto 2008 *violeto-*
biflorae subass. nov. hoc loco

Nomenclatural type, *holotypus*, is relevé 11 in Table 4.

Differential species: *Viola biflora*, *Pinguicula alpina*, *Veronica urticifolia*.

Physoplexido comosae-Saxifragion petraeae Mucina et Theurillat 2015

Paederoto luteae-Potentilletum caulescentis Accetto ex Dakskobler et Martinčič ass. nov. hoc loco

(basonym *Primulo carniolicae-Potentilletum caulescentis* Dakskobler (1998) 2000 var. *Asplenium seelosii* Accetto 2008)

Nomenclatural type, *lectotypus*, is relevé 6 in Table 5 (Accetto 2008: 49–50).

Diagnostic species: *Potentilla caulescens*, *Paederota lutea*, *Primula carniolica*, *Asplenium seelosii*.

Note: Based on the synoptic table (Table 9) and Figure 4 we reduced the rank of the association *Primulo carniolicae-Potentilletum caulescentis* Dakskobler (1998) 2000 to the rank of the subassociation *Phyteumato-Primuletum carniolicae potentilletosum caulescentis*. As this subassociation clearly does not comprise the syntaxon *Primulo carniolicae-Potentilletum caulescentis* var. *Asplenium seelosii* Accetto 2008 (see Figure 4), we gave it a new name and described a new association, whose author is M. Accetto.

The stands of the association *Primuletum carniolicae* s. lat., which were studied in the central and partly in the southwestern part of the distribution area of *Primula carniolica* by Dolinar et al. (2013, 2015, 2017), differ from the stands of the association *Primuletum carniolicae*

described by Accetto (2008, 2015) mainly because they comprise *Aruncus dioicus*, *Cystopteris fragilis*, *Moebringia muscosa*, *Pinguicula alpina*, *Hieracium bifidum*, *Polystichum aculeatum* and *Scopolia carniolica*, which indicates slightly moister sites, and in percentages of the groups of diagnostic species (a higher percentage of the species of the class *Vaccinio-Piceetea*, order *Fagetalia sylvaticae* and alliances *Aremonio-Fagion* and *Tilio-Acerion* – Table 10). For the time being, however, we do not describe them at the level of subassociation.

Ecology of the studied communities

Astrantio carniolicae-Primuletum carniolicae

Distribution area of the stands of this association is shown in Figure 5. They are located in Orehovska Grapa gorge (under Orehek), in Kazarska Grapa (in particular in Beli Potok) under Bukovo and Bukovski Vrh, and in Poličnica at Police (all of them in the Cerklje region, in the pre-Alpine phytogeographical region), and were recorded also in the Trebuša valley, along the Trebušica, Gačnik, Srna Grapa and Makčeva Grapa gorges, in gorges under Bukov Vrh, Poldanovec and Stanov Rob (Govci), and in Govškarca in the Kanomlja valley. The localities occur at elevations ranging from 230 to 760 m, with a little more than a half of the relevés on shady, and the other on sunny aspects. The parent material is mainly dolomite, with occasional tufa formations, and the average number of species per relevé is 16 (in the range of 7 to 29 species).

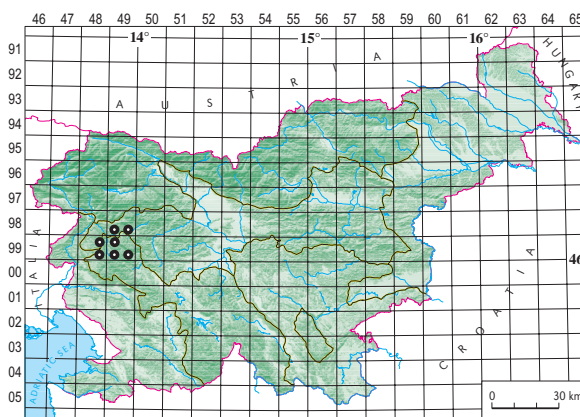


Figure 5: Distribution area of the stands of the association *Astrantio carniolicae-Primuletum carniolicae* on the map of Slovenia.

Slika 5: Območje razširjenosti sestojev asociacije *Astrantio carniolicae-Primuletum carniolicae* na zemljevidu Slovenije.

Astrantio carniolicae-Pinguiculetum alpinae

The distribution area of the stands of this association is shown in Figure 6. They are located in Tolmin Gorge, in the Soča ravine under Magozd (at Otona pool and Globoščak gorge), in Velike Luti (Kneža valley), in the Bača ravine at Klonte and Humar (between Koritnica and Hudajužna), at Brinta waterfall at Selce, in Dabrček gorge under the Šentviška Gora Plateau, in Orehovska Grapa, in the Hotenja valley, the Trebuša valley (at the Trebušica and Gačnik streams). The stands of the association were recorded at elevations ranging from 205 to 590 m, with half of the relevés on shady, and the other half on sunny aspects. The parent material is dolomite, limestone, breccia, in places admixture of marlstone and chert, and in some spots tufa formations. The average number of species per relevé is 12 (in the range of 6 to 30 species).

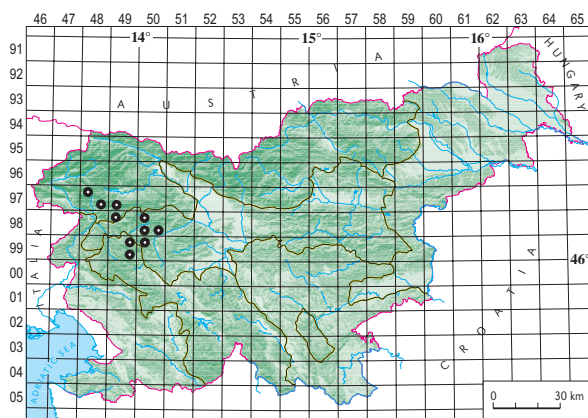


Figure 6: Distribution area of the stands of the association *Astrantio carniolicae-Pinguiculetum alpinae* on the map of Slovenia.

Slika 6: Območje razširjenosti sestojev asociacije *Astrantio carniolicae-Pinguiculetum alpinae* na zemljevidu Slovenije.

Campanulo cespitosae-Saxifragetum aizoidis

The distribution area of the stands of this association is shown in Figure 7. They are located in the upper course of the Volarja river under Gregorčič waterfall, at the stream Godiča at Beri waterfall and downstream toward Poljubinj, in Prodarjeva Grapa gorge under the village of Porezen, in gorges Linderpoh (under Šprickovbl waterfall) and Kacenpoh at Bača near Podbrdo, in the Zadlaščica river valley at Perbla and in the Tolminka valley (at the Zala gorge). It was recorded at elevations ranging from 255 to 990 m, most often on southeastern and north-eastern aspects. The predominant geological bedrock is limestone with an admixture of marlstone and chert, occasionally also dolomite with chert. The average number of species per relevé is 17 (in the range of 10 to 26 species).

The Arctic-Alpine species *Saxifraga aizoides* is characteristic primarily for moist stony sites in the subalpine and alpine belt; it is distributed only in the Alpine phytogeographical region, with several localities also in the pre-Alpine phytogeographical region: Črni vrh above the stream of Batava, Porezen, Prodarjeva Grapa gorge and the Bača valley between Humar and Klonte (Figure 7). Its localities in the valleys of the Godiča, Volarja and Bača and along the Soča under Magozd are among the lowest-lying in Slovenia (comp. Dakskobler et al. 2017b). In Slovenia, the eastern-Alpine species *Campanula cespitosa* is distributed also beyond the Alps, in the pre-Alpine and Dinaric phytogeographical regions (Figure 8) and is not rare on rocky and gravelly areas in the submontane belt.

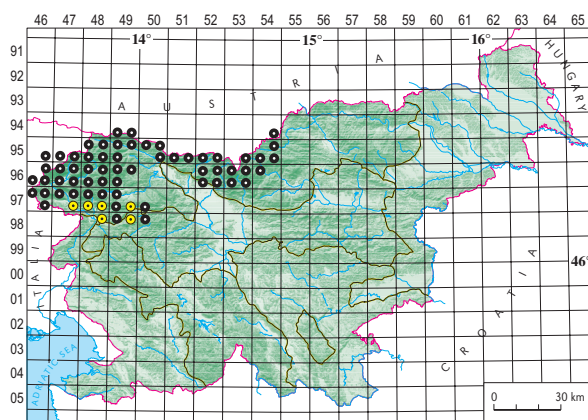


Figure 7: Distribution of *Saxifraga aizoides* (FloVegSi database) and of the stands of the association *Campanulo cespitosae-Saxifragetum aizoidis* in Slovenia.

Slika 7: Razširjenost vrste *Saxifraga aizoides* (podatkovna baza FloVegSi) in sestojev asociacije *Campanulo cespitosae-Saxifragetum aizoidis* na zemljevidu Slovenije.

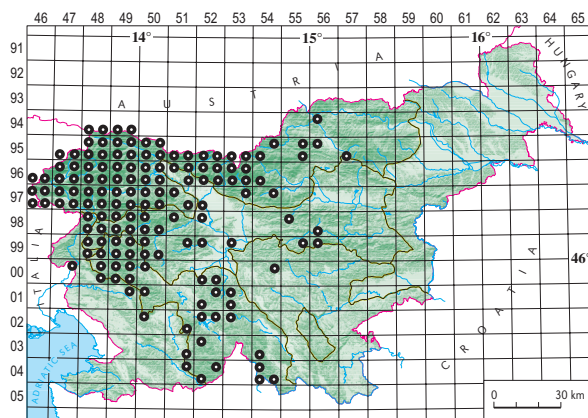


Figure 8: Distribution of *Campanula cespitosa* in Slovenia (FloVegSi database).

Slika 8: Razširjenost vrste *Campanula cespitosa* v Sloveniji (podatkovna baza FloVegSi).

Phyteumato columnae-Primuletum carniolicae typicum

The distribution area of the stands of this subassociation is shown in Figure 9. They are located in the rock faces of Maslenica above the saddle of Oblakov Vrh, in the Trebuša valley (Gačnik, Pršjak, Srna Grapa), under Skopica above the Idrija valley, under Vrše, Drnulk and Kobilica above the Trebuša valley, under Drnulc and the Stador-Kobilica ridge above the Čepovan valley, in the Sjavnica (Sevnica) gorge under the village of Jagrščce, under the hill of Degarnik above Beli Potok gorge and in gorges of Kazarska Grapa and Orehovska Grapa, in Govškarca and V Studencu above the Kanomlja valley, under Sončni Rob above Hudo Polje, under Mali Golak. It was recorded at elevations ranging from 215 to 1460 m (Mali Golak) on predominantly shady aspects. This explains the large elevation range of the localities – in the Trebuša valley at around 200 m a.s.l., for example, *Primula carniolica* can be accompanied also by the subalpine species *Rhododendron hirsutum* and *Rhodothamnus chamaecistus*, and on similar localities and sites *Carex ferruginea* also occurs at very low elevations. Site conditions in moist and shady gorges of the Trebušica, Gačnik and some other streams with a cold local climate are similar to those in the alti-montane belt. The parent material is almost exclusively dolomite. The average number of species per relevé is 17 (in the range of 6 to 34 species).

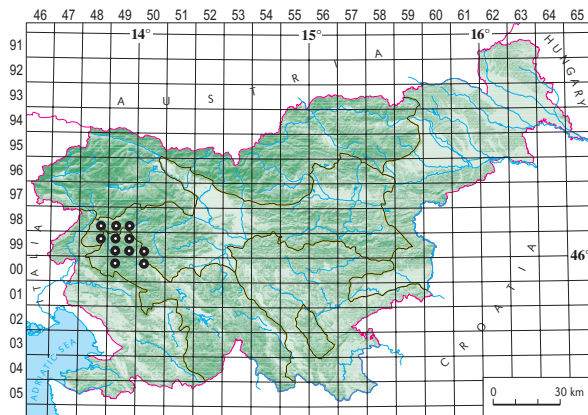


Figure 9: Distribution area of the stands of the subassociation *Phyteumato columnae-Primuletum carniolicae typicum* on the map of Slovenia.
Slika 9: Območje razširjenosti sestojev subasociacije *Phyteumato columnae-Primuletum carniolicae typicum* na zemljevidu Slovenije.

Phyteumato columnae-Primuletum carniolicae astrantietosum carniolicae

The distribution area of the stands of this subassociation is shown in Figure 10: on the Trnovski Gozd Plateau: Sončni Rob above Hudo Polje, under Mts. Mali and Srednji Golak, under Bukov Vrh and Mali Govci; in

Gačnik and Makčeva Grapa gorges in the Trebuša valley, under the hill of Hudournik above the Hotenja valley. It was recorded at elevations ranging from 215 to 1440 m, with most of the relevés at 750 m a.s.l., predominantly on shady aspects. The parent material is dolomite, rarely dolomite limestone. The average number of species per relevé is 18 (in the range of 11 to 24 species).

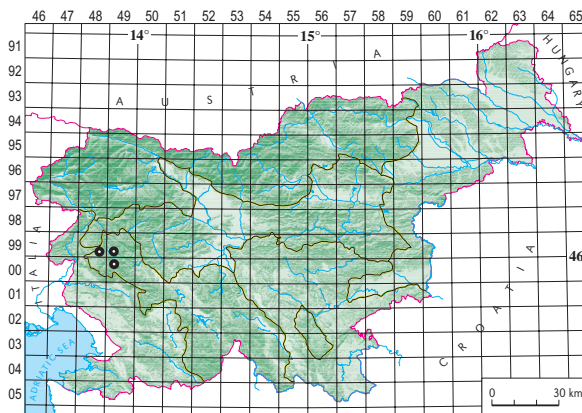


Figure 10: Distribution area of the stands of the subassociation *Phyteumato columnae-Primuletum carniolicae astrantietosum carniolicae* on the map of Slovenia.

Slika 10: Območje razširjenosti sestojev subasociacije *Phyteumato columnae-Primuletum carniolicae astrantietosum carniolicae* na zemljevidu Slovenije.

Phyteumato columnae-Primuletum carniolicae potentilletosum caulescentis

The distribution area of the stands of this subassociation is shown in Figure 11: in Orehovska Grapa gorge, in the Idrija valley under Dolenji Potoki (Straža) and under Sv. Ivan (Šebrelje), under Skopica, Hudournik

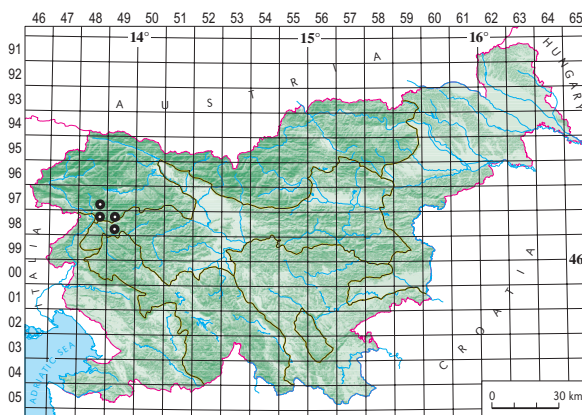


Figure 11: Distribution area of the stands of the subassociation *Phyteumato columnae-Primuletum carniolicae potentilletosum caulescentis* on the map of Slovenia.

Slika 11: Območje razširjenosti sestojev subasociacije *Phyteumato columnae-Primuletum carniolicae potentilletosum caulescentis* na zemljevidu Slovenije.

and Poldanovec, under Drnulc and Kobilica above the Trebuša valley. Its localities are situated at elevations ranging from 240 to 1050 m, with most of them above 550 m a.s.l. Aspects are shady, the parent material is dolomite. The average number of species per relevé is 19 (in the range of 12 to 31 species).

Primulo carniolicae-Potentilletum clusianae

The localities of the stands of this association are under Zeleni Rob and Poldanovec on the northern edge of the Trnovski Gozd Plateau (Figure 12). Elevations range between 1170 and 1330 m, the parent material is dolomite, aspect shady. The average number of species per relevé is 17 (in the range of 13 to 23 species). In terms of species composition the stands of this association show consider-

able similarity and in places contact with the stands of the association *Primulo carniolicae-Caricetum firmae* (Dakskobler 2006), but are substantially different in terms of mean coverage and constancy of certain edifier species. In the stands of the association *Primulo-Caricetum firmae* the species *Carex firma* and *Sesleria caerulea* occur at similar constancy to that in the stands of the association *Primulo-Potentilletum clusianae*, but with a visibly higher mean coverage, and *Potentilla clusiana* occurs with a substantially lower constancy. There are obvious differences also in the constancy and mean coverage of *Aster bellidiflorus*, *Campanula cespitosa* (higher in the first compared association), *C. cochlearifolia*, *Hladnikia pastinacifolia*, *Hieracium pilosum* (higher in the second compared association), in the average number of species per relevé (higher in the first compared association) and in mean coverage (cover) of the herb layer (visibly higher in the first compared association) – comp. Dakskobler (2006, Table 1, relevés 1–23, pp. 90–99). Into the association *Primulo carniolicae-Potentilletum clusianae* we classify stands of moist rock crevices (as demonstrated also by percentages of groups of diagnostic species, Table 10), whereas the stands of stony subalpine grasslands are classified into the association *Primulo carniolicae-Caricetum firmae*.

Primuletum carniolicae violetosum biflorae

The distribution area of the stands of this subassociation is shown in Figure 13. Most of the relevés were made in the Raskovec gorge in the Žirovnica valley at Žiri (in Idrija municipality), several relevés also in the gorge of Gačnik and the Govškarca above the Kanomlja valley. It was recorded at elevations ranging from 430 to 850 m on predominantly shady aspects. The parent material is dolomite. The average number of species per relevé is 20 (in the range of 7 to 28 species).

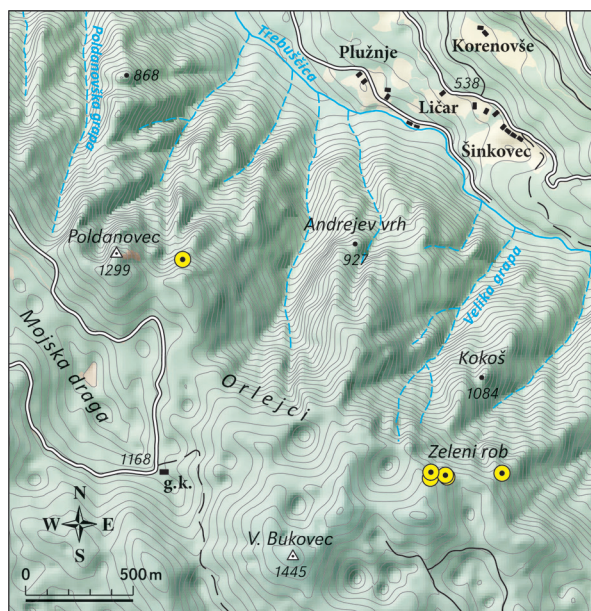


Figure 12: Localities of the stands of the association *Primulo carniolicae-Potentilletum clusianae* on the northern edge of the Trnovski Gozd Plateau.

Slika 12: Nahajališča sestojev asociacije *Primulo carniolicae-Potentilletum clusianae* na severnem robu Trnovskega gozda.

Figure 13: Distribution area of the stands of the subassociation *Primuletum carniolicae violetosum biflorae* on the map of Slovenia.

Slika 13: Območje razširjenosti sestojev subasociacije *Primuletum carniolicae violetosum biflorae* na zemljevidu Slovenije.

Nature conservation status

Primula carniolica is listed in Appendix 2 of the Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora – 1992 (Dakskobler et al. 2004). In the study area, i.e. in the northwestern part of its distribution area, this species occurs the most abundantly in shady gorges in the Cerkno region (Kazarska Grapa, Orehovska Grapa, Poličnica, Sjavnica, on the northeastern edge of the Šentviška Gora Plateau under Degarnik and on the pasture at the homestead Seljak, in rock faces under Sv. Ivan near Šebrelje above the Idrija valley) and in the Trebuša valley (Gačnik, Makčeva Grapa, Srna Grapa, Pršjak, Mali Govci, also along the Trebuška and the gorges that flow into this river on the left bank), and in the rock faces of Govci from Bukov Vrh across Zeleni Rob, Poldanovec and Stanov Rob to Stador, Drnulc and Skopica). The population is abundant and vital, and has not yet been affected by the human impact, except on isolated localities. Also abundant is the population in the Raskovec gorge in the Železnica valley in the Žiri region (Dakskobler et al. 2017a, Dolinar et al. 2017), in Govškarca, Klavžarica and V Studencu above the Kanomlja valley. Another two species of European conservation concern sporadically occur in the studied communities of moist rock crevices, namely *Aquilegia iulia* and *Hladnikia pastinacifolia* (Čušin et al. 2004, Podobnik et al. 2013) as well as a number of protected species (Anon. 2004): *Cyclamen purpurascens*, *Gentiana clusii*, *Gymnadenia odoratissima*, *Hemerocallis lilioasphodelus*, *Leontopodium alpinum*, *Pinguicula alpina*, *Primula auricula*, *Primula* × *venusta*, and *Taxus baccata* as well as several other Red List species (Anon. 2002): *Schoenus nigricans*, *Veratrum nigrum*. Unlike flowering plants, bryophytes do not comprise rare or phytogeographically important species, nor do they comprise species from the Slovenian (Martinčič 2016) or European Red List (Hodgetts et al. 2019). The studied communities belong to Natura 2000 type 8210 Calcareous rocky slopes with chasmophytic vegetation, and the stands of associations *Astrantio-Primuletum* and *Astrantio-Pinguiculetum* also to Natura 2000 habitat type 7220 Petrifying springs with tufa formation (*Cratoneurion*) – Jogan et al. (2004).

Conclusions

A large number of the relevés made in the moist rocks in the submontane and montane belt (mainly in the area of Illyrian beech forests from the alliance *Aremonio-Fagion*) in western Slovenia between the southern Julian Alps and the northern Dinaric Alps can be arranged in tables in

different ways. Our classification followed certain field findings where it was established that as a rule only a few dominant species occur with high mean coverage in these special site conditions. In the predominantly dolomite bedrock it is the moisture conditions that determine which species will dominate. In the southern Julian Alps, where the bedrock comes also as platy limestones with an admixture of marlstone and chert, this depends on other factors as well. With this in mind, it makes sense to classify the stands with *Primula carniolica* on the moistest rocks into the association *Astrantio carniolicae-Primuletum carniolicae*, because *Pinguicula alpina* does not have as high constancy and mean coverage here as in the stands of a similar association, *Astrantio-Pinguiculetum alpinae*, in which *Primula carniolica* does not occur, as these stands are, at least in part, outside its distribution area.

All other relevés of rock crevices with *Primula carniolica* could be classified into the association *Primuletum carniolicae* (in the broadest sense), which was first recorded in Slovenia and named by T. Wraber (he found it at Divje Jezero / Wild Lake at Idrija already on 16/8/1973, and later in the ravine of Kadice at Sodražica on 25/4/1982). Unfortunately, Wraber never processed or published his relevés and we only came across them by chance in 2016 and 2017 when we studied his legacy, which is kept at Wraber's Library at the University of Ljubljana's Botanical Garden. Tone Wraber was without a doubt a pioneer in the phytosociological investigation of chasmophytic communities with *Primula carniolica*, but his relevés cannot have been known to Accetto (2008), who was the first to validly publish the description of the association *Primuletum carniolicae*. The relevés of the association *Primuletum carniolicae* in the northwestern part of the distribution area are nevertheless slightly different from the relevés of this association in the central and southwestern part of its distribution area. The most appropriate syntaxonomic solution would be to describe a new geographical variant with the subspecies *Phyteuma scheuchzeri* subsp. *columnnae*. However, given the results of hierarchical classification we could also describe a new association, *Phyteumato-Primuletum carniolicae*, which would allow us to evaluate the established variability of individual stands at the rank of subassociations and not only at the rank of variants. Wraber's notebook comprises a relevé dated 3 May 1982, locality Strug, rocks on the right side of the road from Fežnar toward Divje Jezero lake, which comprises most of the diagnostic species of the subassociation *Phyteumato-Primuletum carniolicae astrantietosum carniolicae*. The decision for an independent association *Phyteumato-Primuletum carniolicae*, on the other hand, means reducing the rank of the association *Primulo carniolicae-Potentilletum caulescentis* to the rank

of subassociation (which could not happen if we insisted on the association *Primuletum carniolicae* in the broadest sense – comp. Accetto 2008). Because *Primula carniolica* characterises very hygrophytic chasmophytic communities it is rightly considered a character species of the alliance *Cystopteridion* (not *Violo biflorae-Cystopteridion* sensu Mucina et al. 2016), into which we provisionally classify most of the described new syntaxa (except for association *Paederoto luteae-Potentilletum caulescentis*, which is classified into the alliance *Physoplexido comosae-Saxifragion petraeae*). The article also proposes a new possible alliance of hygrophytic rock crevice (chasmophytic) communities of the Southeastern Alps and northern Dinaric Alps, an ecological vicariant of the alliance *Physoplexido comosae-Saxifragion petraeae*. The name-giving species for such an alliance could be *Paederota lutea* and *Astrantia carniolica* (*Astrantio carniolicae-Paederotion luteae* nom. prov.). However, a valid description of a new alliance requires further research that takes into account also similar syntaxa of hygrophytic chasmophytic communities from other parts of the Southeastern Alps and northern Dinaric Alps, and more extensive numerical comparisons.

Povzetek

Združbe vlažnih skalnih razpok z endemitom *Primula carniolica* v (sub)montanskem pasu zahodne Slovenije

Primula carniolica, evropsko varstveno pomembna vrsta (Natura 2000), je v severozahodnem delu svojega areala (v zahodni Sloveniji med južnimi Julijskimi Alpami in severnim delom Dinarskega gorstva) najbolj množično prisotna v senčnih grapah na Cerkljanskem (Kazarska grapa, Orehovska grapa, Poličnica, Sjavnica, v ostenjih pod sv. Ivanom nad dolino Idrije pod Šebreljami, tudi na severovzhodnem robu Šentviške planote: pod Degarnikom in na pašniku pri domačiji Seljak v Bukovskem Vrhu, že na Tolminskem) in v dolini Trebuše (Gačnik, Makčeva grapa, Srna grapa, Pršjak, Mali Govci, tudi ob sami Trebušici in grapah, ki se vanjo izlivajo na levem bregu) ter v ostenju Govcev od Bukovega vrha preko Zelenege roba, Poldanovca in Stanovega roba vse do Stadorja, Drnulka in Skopice). Populacija je bogata, vitalna in za zdaj človek nanjo razen na nekaterih nahajališčih nima večjega vpliva. Bogata je tudi populacija v grapi Raskovec v dolini Železnice na Žirovskem in v Govškarci, Klavžarici in V Studencu nad dolino Kanomlje.

Veliko število fitocenoloških popisov, ki smo jih naredili v vlažnem skalovju v submontanskem in montanskem pasu (večinoma v območju ilirskih bukovih gozdov iz zveze *Aremonio-Fagion*) v raziskovanem območju

je mogoče v tabele razvrščati na več načinov. Naša ureditev je sledila nekaterim spoznanjem na terenu, kjer je očitno, da je v teh posebnih rastiščnih razmerah navadno le malo prevladujočih vrst z večjim srednjim zastiranjem. Katere so, pa je v prevladujoči dolomitni podlagi predvsem odvisno od vlažnostnih razmer. V južnih Julijskih Alpah, kjer so podlaga tudi ploščasti apnenci s primesjo laporovca in roženca, lahko nanjo vplivajo tudi drugi dejavniki. Ob tej podmeni je uvrstitev sestojev z vrsto *Primula carniolica* na najbolj vlažnem skalovju v asociacijo *Astrantio carniolicae-Primuletum carniolicae* smiselna, saj v njej vrsta *Pinguicula alpina* nima tako velike stalnosti in srednjega zastiranja kot v sestojih podobne asociacije *Astrantio-Pinguiculetum alpinae*, v kateri pa vrsta *Primula carniolica* ne uspeva in so ti sestoji vsaj deloma tudi zunaj njenega areala.

Vse ostale popise skalnih razpok, kjer uspeva vrsta *Primula carniolica*, bi lahko uvrstili v široko zajeto asociacijo *Primuletum carniolicae*, ki jo je v Sloveniji prvi popisal in tako imenoval T. Wraber (pri Divjem jezeru pri Idriji že 16. 8. 1973, v soteski Kadice pri Sodražici 25. 4. 1982). Žal popisov ni nikoli obdelal ali objavil in smo nekatere od njih slučajno opazili v letih 2016 in 2017 v njegovi zapuščini, ki jo hrani Wraberjeva knjižnica v Botaničnem vrtu Univerze v Ljubljani. Vsekakor je bil Tone Wraber pionir pri fitocenološkem raziskovanju združb skalnih razpok z vrsto *Primula carniolica*, a njegovih popisov Accetto (2008), ki je prvi veljavno objavil opis asociacije *Primuletum carniolicae* ni mogel poznati. Popisi asociacije *Primuletum carniolicae* v severozahodnem delu areala se vendarle nekoliko razlikujejo od popisov te asociacije v osrednjem in jugozahodnem delu areala. Najprimernejša sintaksonomska rešitev bi bil opis nove geografske variante s podvrsto *Phyteuma scheuchzeri* subsp. *columnnae*. Toda rezultati hierarhične klasifikacije dopuščajo tudi opis nove asociacije *Phyteumato-Primuletum carniolicae*, ki omogoča, da tudi ugotovljeno variabilnost posameznih sestojev vrednotimo na rangu subasociacij in ne zgolj na rangu variant. V Wraberjevi beležnici, datum popisa je 3. 5. 1982, nahajališče pa Strug, skalovje na desni strani ceste od Fežnarja proti Divjemu jezeru, je popis, ki vsebuje večino diagnostičnih vrst subasociacije *Phyteumato-Primuletum carniolicae astrantietosum carniolicae*. Odločitev za samostojno asociacijo *Phyteumato-Primuletum carniolicae* pa ima za posledico tudi znižanje ranga asociacije *Primulo carniolicae-Potentilletum caulescentis* na rang subasociacije (kar bi, če bi ostali pri široko zajeti asociaciji *Primuletum carniolicae*, ne mogli storiti – prim. Accetto 2008). Ker vrsta *Primula carniolica* označuje precej vlagoljubne združbe skalnih razpok, jo upravičeno štejeemo za značilnico zveze *Cystopteridion* (ne *Violo biflorae-Cystopteridion* v smislu Mucina et al. 2016), v katero

za zdaj uvrščamo večino novo opisanih sintaksonov (razen asociacije *Paederota luteae-Potentilletum caulescentis*, ki jo uvrščamo v zvezo *Physoplexido comosae-Saxifragion petraeae*). V članku razmišljamo tudi o novi zvezi združb vlažnih skalnih razpok v Jugovzhodnih Alpah in severnem delu Dinarskega gorstva, ki bi bila ekološka vikariantna zvezi *Physoplexido comosae-Saxifragion petraeae*. Primerni vrsti za poimenovanje take zveze sta vrsti *Paederota lutea* in *Astrantia carniolica* (*Astrantio carniolicae-Paederotion luteae* nom. prov.). Za veljaven opis takšne zveze bi bile potrebne nadaljnje raziskave, predvsem pa upoštevanje podobnih sintaksonov iz drugih delov Jugovzhodnih Alp in Dinarskega gorstva in bolj obsežna primerjava z numeričnimi metodami.

V preučeni združbah vlažnih skalnih razpok ponekod uspevata še dve evropsko varstveni pomembni vrsti *Aquilegia iulia* in *Hladnikia pastinacifolia* in večje število zavarovanih vrst: *Cyclamen purpurascens*, *Gentiana clusii*, *Gymnadenia odoratissima*, *Hemerocallis lilioasphodelus*, *Leontopodium alpinum*, *Pinguicula alpina*, *Primula auricula*, *Primula × venusta* in *Taxus baccata* in nekaterih drugih vrst iz rdečega seznama: *Schoenus nigricans*, *Veratrum nigrum*. Preučene združbe sodijo v Natura 2000 habitatni tip 8210 Karbonatna skalnata pobočja z vegetacijo skalnih razpok, sestoji asociacij *Astrantio-Primuletum* in *Astrantio-Pinguiculetum* tudi v Natura 2000 habitatni tip 7220 Lehnjakotvorni izviri (*Cratoneurion*).

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Appendix

Figure 14: Dendrogram of relevés of rock crevice communities with *Primula carniolica* in the northwestern part of its distribution area.

Slika 14: Dendrogram popisov združb skalnih razpok z vrsto *Primula carniolica* v severozahodnem delu njenega areala.

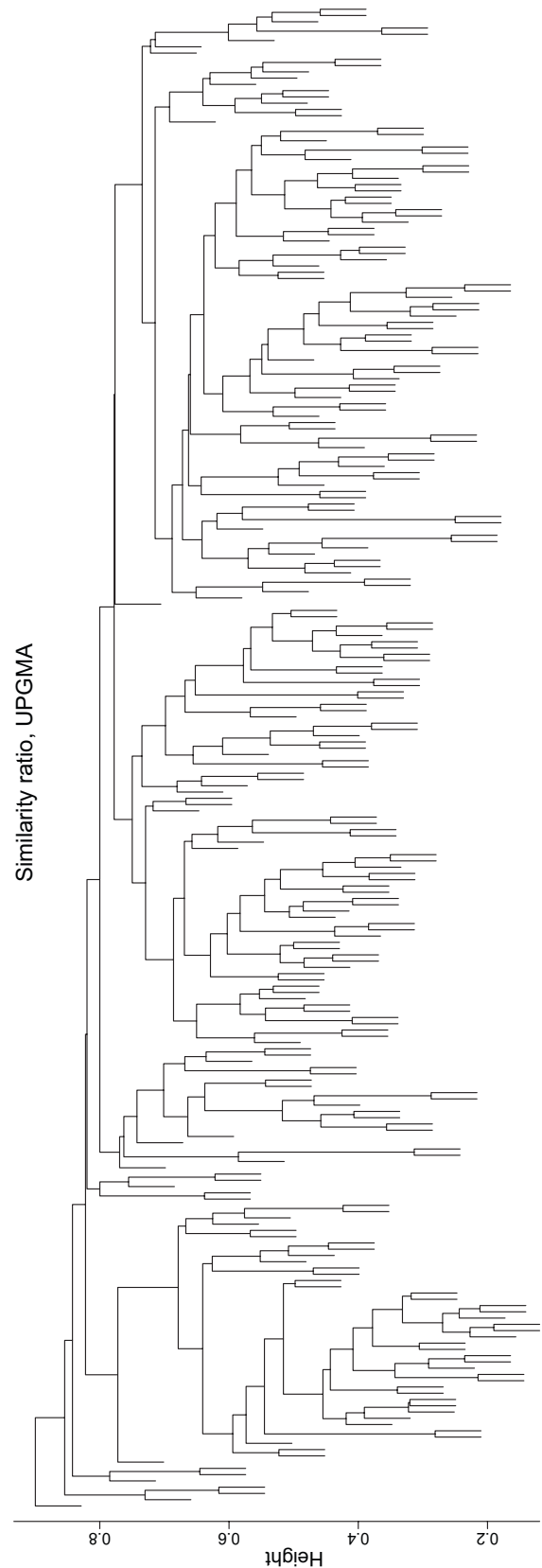


Table 1 (Tabela 1): *Astrantia carniolicae-Primuletum carniolicae*. Relevé number 1–43.

Number of relevé (Zaporedna štev. popisa)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
Database number of relevé (Delovna številka popisa)	269367	263162	269183	269213	274405	274329	278101	234544	234553	274475	278088	269264	241571	241573	271067	274320		
Elevation in m (Nadmorska višina v m)	450	435	435	410	600	480	435	590	700	455	540	590	760	750	310	380		
Aspect (Lega)	SSE	NE	N	N	N	N	SW	W	N	SW	SW	S	NE	N	S	NNE		
Slope in degrees (Nagib v stopinjah)	90	90	90	80	80	85	80	80	95	90	90	70	80-100	80	90	80		
Parent material (Matična podlaga)	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		
Stoniness in % (Kamnitost v %)	100	100	100	100	100	100	100	100	100	100	100	100	60	100	100	100		
Cover of herb layer in % (Zastiranje zeliščne plasti v %):	E1	20	20	30	30	20	30	30	20	30	30	30	40	50	30	40		
Cover of moss layer in % (Zastiranje mahovne plasti v %)	E0	20	20	20	40	20	20	10	20	20	20	30	20	30	30	10	50	
Number of species (Število vrst)	15	20	13	14	18	26	10	18	16	12	11	11	21	14	21	22		
Relevé area (Velikost popisne ploskve)	m ²	5	10	5	5	10	10	15	10	10	10	20	5	10	10	10		
Date of taking relevé (Datum popisa)	3/31/2017	9/12/2016	4/7/2017	4/13/2017	4/23/2018	5/8/2018	12.6.2019	8/26/2003	8/26/2003	6/14/2018	12.6.2019	5/25/2017	5/5/2011	5/5/2011	4/29/2018	5/8/2018		
Locality (Nahajališče)		Kazarska grapa-Žabže	Orehovska grapa	Orehovska grapa	Kazarska grapa-Beli potok	Kazarska grapa	Gorenja Trebuša Srna grapa	Gačnik-Statarska grapa	Poldanovec - Govčenk	Stanov rob - Govška grapa	Gorenja Trebuša Makčeva grapa	Gačnik	Police-Poličnica	Bukov vrh Brusova grapa	Bukov vrh-Suha grapa	Gorenja Trebuša Srna grapa	Gorenja Trebuša Srna grapa	
Quadrant (Kvadrant)		9849/4	9849/4	9849/4	9849/3	9849/3	9949/1	9948/4	9948/4	9949/3	9949/1	9849/3	9949/3	9949/3	9949/3	9949/3		
Coordinate GK Y (D-48)	m	416348	418168	418167	415883	415406	410696	411018	409507	409086	410176	411215	415172	413871	413929	410038	410195	
Coordinate GK X (D-48)	m	5110970	5110871	5110855	5110618	5111232	5100026	5103400	5097980	5098562	5100701	5103015	5110614	5095748	5095734	5100136	5100069	
Diagnostic species of the association (Diagnostične vrste asociacije)																		
AP	<i>Primula carniolica</i>	E1	1	3	3	2	2	2	1	r	+	2	+	2	1	2	2	+
AP	<i>Palustriella commutata</i>	E0	+	+	.	1	1	+	.	1	1	1	2	1	1	1	1	1
AP	<i>Astrantia carniolica</i>	E1	.	1	+	1	+	.	+	2	2	2	2	1	1	1	1	1
AP	<i>Pinguicula alpina</i>	E1	1	.	+	.	+	.	.	1	+	.	1	.	+	+	+	+
AP	<i>Hymenostylium recurvirostre</i>	E0	+	1	1	.	.	+	+	3	.	+	1	.	.	.	+	.
PSP	<i>Phyteuma scheuchzeri</i> subsp. <i>columnae</i>	E1	+	+	+	+	+	+	+	r	.	.	.	+	+	.	+	+
EP	<i>Molinia arundinacea</i>	E1	+	+	1	1	+
AP	<i>Valeriana saxatilis</i>	E1	+	+	+	.	+	.	+	+	.	.
ES	<i>Carex mucronata</i>	E1	r	.	.	.	+
Diagnostic species of the subassociation (Diagnostične vrste subasociacij)																		
AP	<i>Paederota lutea</i>	E1	+	1	+	2	1	+	1	.	2	1	2	2
AP	<i>Aster bellidiastrum</i>	E1	.	.	.	1	+	+	+	1	+	1	1	2	1	+	1	1

Number of relevé (Zaporedna štev. popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
AP	Cystopteridion s. lat. (Astrantio-Paederotium luteae nom. prov.)																	
	<i>Orthothecium rufescens</i>	E0	1	+	1	2	1	+	.	+	+	+	.	+	2	1	+	+
	<i>Tofieldia calyculata</i>	E1	.	r	.	.	.	.	.	.	.	.	.	.	1	.	+	.
	<i>Aster bellidiasstrum</i>	E1	.	.	.	1	+	+	+	1	+	1	1	2	1	+	1	1
	<i>Valeriana saxatilis</i>	E1	.	.	.	.	.	.	+	+	+	.	+	.	+	+	.	.
	<i>Carex brachystachys</i>	E1	.	.	.	.	1	r	+	2	+	.	.	.	+	.	+	+
	<i>Preissia quadrata</i>	E0	.	1	.	.	1	.	.	.	.	.	.	.	.	.	.	.
	<i>Asplenium viride</i>	E1	.	+	.	.	.	+	.	.	.	.	.	.	.	.	+	+
	<i>Valeriana tripteris</i>	E1	.	.	.	.	.	+	.	.	.	r	.	.	.	.	+	+
	<i>Fissidens dubius</i>	E0	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.
	<i>Barbula crocea</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Viola biflora</i>	E1	.	.	.	.	.	.	.	+	1	.	.	.	.	.	.	.
	<i>Eucladium verticillatum</i>	E0	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Pellia endiviifolia</i>	E0	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.
	<i>Soldanella minima</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.
	<i>Moehringia muscosa</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
PcSp	Physoplexido comosae-Saxifragion petraeae																	
	<i>Campanula cespitosa</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Hieracium pospichalii</i>	E1	.	.	.	.	.	.	+	.	.	r	.	.	.	.	.	.
PC	Potentilletalia caulescentis																	
	<i>Potentilla caulescens</i>	E1	.	.	+	.	.	.	.	.	r	.	.	.	.	.	.	.
	<i>Kernera saxatilis</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
AT	Asplenetia trichomanis																	
	<i>Asplenium trichomanes</i>	E1	+	.	+	.	+	+	.	.	r	r	.	.	.	.	.	.
	<i>Asplenium ruta-muraria</i>	E1	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+	.
TR	Iblaspietea rotundifolii																	
	<i>Hieracium bifidum</i>	E1	.	+	+	.	.	.	.	.	.	.	.	.	.	+	.	.
	<i>Adenostyles glabra</i>	E1	.	.	.	.	.	.	.	+	.	.	.	r	+	.	.	.
	<i>Gymnocarpium robertianum</i>	E1	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+
	<i>Achnatherum calamagrostis</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Petasites paradoxus</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Hieracium porrifolium</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
CD	Caricetalia davallianae																	
	<i>Parnassia palustris</i>	E1	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	.
	<i>Schoenus nigricans</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
MC	Montio-Cardaminetia																	
	<i>Conocephalum conicum</i>	E0	+	+	2	1	1	+	.	.	.	1	.	.	.	.	+	2
	<i>Campylium stellatum</i>	E0	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Bryum pseudotriquetrum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Cratoneuron filicinum</i>	E0	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Distichium capillaceum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Campylium calcareum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Campylium elodes</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Ditrichum flexicaule</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
ES	Elyno-Seslerietea																	
	<i>Sesleria caerulea</i>	E1	.	.	.	.	.	.	1	r	.	.	+	+	+	1	.	.
	<i>Phyteuma orbiculare</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Carex ferruginea</i>	E1	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.
	<i>Carex firma</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	2	2	.	.
	<i>Laserpitium peucedanoides</i>	E1	.	.	.	.	.	.	.	.	.	.	.	r	.	.	.	.
	<i>Betonica alopecuroides</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Number of relevé (Zaporedna štev. popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
FB	Festuco-Brometea																
	<i>Buphthalmum salicifolium</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Galium lucidum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
CA	Calthion																
	<i>Caltha palustris</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	r
	<i>Cirsium oleraceum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
BA	Betulo-Alnetea																
	<i>Salix appendiculata</i>	E2a	.	.	.	.	.	.	.	.	.	.	.	+	.	.	r
	<i>Salix glabra</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
MuA	Mulgedio-Aconitetea																
	<i>Chaerophyllum hirsutum</i>	E1	.	.	.	.	.	.	.	.	.	r	.	.	.	r	.
	<i>Crepis paludosa</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
EA	Epilobietea angustifolii																
	<i>Eupatorium cannabinum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
TG	Trifolio-Geranietea																
	<i>Laserpitium siler</i>	E1	.	.	.	.	.	.	.	r	.	.	.	.	.	.	.
	<i>Laserpitium latifolium</i>	E1	.	.	.	.	.	.	.	.	.	.	r	.	.	.	.
EP	Erico-Pinetea																
	<i>Calamagrostis varia</i>	E1	.	.	.	.	.	.	.	.	.	.	.	+	+	.	+
	<i>Erica carnea</i>	E1	.	.	.	r	.	.	.	.	.	.	.	r	.	.	.
	<i>Rhododendron hirsutum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.
	<i>Rhodothamnus chamaecistus</i>	E1	.	.	.	.	.	.	.	.	.	.	.	l	+	.	.
	<i>Carex ornithopoda</i>	E1	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.
	<i>Aquilegia nigricans</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Polygala chamaebuxus</i>	E1	.	.	.	.	.	.	.	.	.	.	.	r	.	.	.
	<i>Cirsium erisithales</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
VP	Vaccinio-Piceetea																
	<i>Veronica urticifolia</i>	E1	+	+	.	.	+	+	.	.	.	.	.	.	.	.	.
	<i>Solidago virgaurea</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Aposeris foetida</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Homogyne sylvestris</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Oxalis acetosella</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Picea abies</i>	E2a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Gentiana asclepiadea</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
AF	Aremonio-Fagion																
	<i>Cyclamen purpurascens</i>	E1	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.
	<i>Euphorbia carniolica</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Primula vulgaris</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Knautia drymeia</i>	E1	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.
	<i>Cardamine trifolia</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Helleborus niger</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Potentilla carniolica</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Anemone trifolia</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	r
	<i>Hemerocallis lilioasphodelus</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Lamium orvala</i>	E1	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.
TA	Tilio-Acerion																
	<i>Aruncus dioicus</i>	E1	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Phyllitis scolopendrium</i>	E1	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Polystichum aculeatum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	r
	<i>Acer pseudoplatanus</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Number of relevé (Zaporedna štev. popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
FS	Fagetalia sylvaticae																
	<i>Mycelis muralis</i>	E1	.	r	+	.	.	+	.	r	.	.	.	.	.	.	.
	<i>Salvia glutinosa</i>	E1	r	.	.	.	+	.	.	.	.	.	.	.	.	.	.
	<i>Carex umbrosa</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+
	<i>Galeobdolon flavidum</i>	E1	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+
	<i>Galium laevigatum</i>	E1	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.
	<i>Brachypodium sylvaticum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Melica nutans</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Prenanthes purpurea</i>	E1	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Asarum europaeum</i> subsp. <i>caucasicum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
	<i>Cardamine pentaphyllos</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
QP	Quercetalia pubescenti-petraeae																
	<i>Carex flacca</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Fraxinus ornus</i>	E1	.	.	.	r	.	r	.	.	.	.	.	.	.	.	.
	<i>Ostrya carpinifolia</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
QF	Quercus-Fagetia																
	<i>Carex digitata</i>	E1	+	+	+	+	+	.	.	.	.	.	.	.	.	+	r
	<i>Hedera helix</i>	E1	.	+	.	.	.	.	.	.	.	.	.	.	.	+	.
	<i>Clematis vitalba</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Hepatica nobilis</i>	E1	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.
	<i>Taxus baccata</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Frangula alnus</i>	E2a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
ML	Mosses and lichens (Mahovi in lišaji)																
	<i>Neckera crispa</i>	E0	.	1	1	+	1	1	.	.	.	.	.	.	.	.	.
	<i>Ctenidium molluscum</i>	E0	.	.	.	.	.	+	.	.	.	.	.	.	.	+	.
	<i>Tortella tortuosa</i>	E0	.	.	.	.	.	+	.	.	.	.	.	.	.	.	1
	<i>Heterocladium heteropterum</i>	E0	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Marchantia polymorpha</i>	E0	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.
	<i>Mnium thomsonii</i>	E0	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.
	<i>Lophozia</i> sp.	E0	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.
	<i>Brachythecium rutabulum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Dichodontium pellucidum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Bryum</i> sp.	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Encalypta vulgaris</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Mnium marginatum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	<i>Rhynchostegium murale</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Table 1 (Tabela 1): *Astrantia carniolicae-Primuletum carniolicae*. Relevé number 44–56.

Number of relevé (Zaporedna štev. popisa)	44	45	46	47	48	49	50	51	52	53	54	55	56	Pr.	Fr.		
Database number of relevé (Delovna številka popisa)	269257	269260	269218	269258	269185	269195	269216	266151	269188	266708	269214	269194	269259				
Elevation in m (Nadmorska višina v m)	575	580	410	580	464	520	410	260	460	525	410	520	580				
Aspect (Lega)	NE	SE	N	NE	E	SSW	S	N	SE	N	N	SW	S				
Slope in degrees (Nagib v stopinjah)	90	90	80	85	70	80	80	90	90	70	65	95	80				
Parent material (Matična podlaga)	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				
Stoniness in % (Kamnitost v %)	100	100	100	100	70	100	100	100	100	100	100	100	100				
Cover of herb layer in % (Zastiranje zeliščne plasti v %):	E1	25	30	40	40	60	40	50	40	30	70	40	20	30			
Cover of moss layer in % (Zastiranje mahovne plasti v %)	E0	65	30	50	40	30	60	80	30	40	30	50	20	30			
Number of species (Število vrst)	12	16	17	16	15	23	20	7	7	23	22	17	13				
Relevé area (Velikost popisne ploskve)	m ²	10	10	10	20	5	5	10	10	5	10	10	5	5			
Date of taking relevé (Datum popisa)	5/25/2017	5/25/2017	4/13/2017	5/25/2017	4/7/2017	4/7/2017	4/13/2017	4/9/2017	4/7/2017	4/13/2017	4/13/2017	4/7/2017	5/25/2017				
Locality (Nahajališče)		Police-Poličnica	Police-Poličnica	Kazarska grapa-Beli potok	Police-Poličnica	Orehovska grapa	Orehovska grapa	Kazarska grapa-Beli potok	Gačnik	Orehovska grapa	Kazarska grapa-Beli potok	Kazarska grapa-Beli potok	Orehovska grapa	Police-Poličnica			
Quadrant (Kvadrant)		9849/3	9849/3	9849/3	9849/3	9849/4	9849/4	9849/3	9949/1	9849/4	9849/3	9849/3	9849/4	9849/3			
Coordinate GK Y (D-48)	m	415224	415228	415848	415222	418156	418009	415836	410394	418144	415493	415892	418037	415225			
Coordinate GK X (D-48)	m	5110523	5110540	5110618	5110537	5110906	5111059	5110650	5104079	5110929	5110727	5110602	5111081	5110585			
Diagnostic species of the association (Diagnostične vrste asociacije)															Pr.	Fr.	
AP	<i>Primula carniolica</i>	E1	+	1	1	3	1	2	+	1	2	2	1	2	1	56	100
AP	<i>Palustriella commutata</i>	E0	4	1	3	3	2	2	4	2	4	.	1	.	.	50	89
AP	<i>Astrantia carniolica</i>	E1	1	1	2	2	1	1	3	.	+	+	1	.	1	49	88
AP	<i>Pinguicula alpina</i>	E1	2	2	2	1	2	2	1	3	3	1	1	2	2	48	86
AP	<i>Hymenostylium recurvirostre</i>	E0	3	1	+	2	+	3	1	.	.	1	1	1	1	43	77
PSP	<i>Phyteuma scheuchzeri</i> subsp. <i>columnae</i>	E1	.	+	+	.	+	27	48
EP	<i>Molinia arundinacea</i>	E1	.	+	.	1	1	+	.	.	.	1	+	.	+	24	43
AP	<i>Valeriana saxatilis</i>	E1	.	.	+	1	.	.	+	.	+	+	+	+	+	24	43
ES	<i>Carex mucronata</i>	E1	.	1	+	+	.	+	.	.	.	+	1	1	2	21	38
Diagnostic species of the subsociation (Diagnostične vrste subsociacij)																	
AP	<i>Paederota lutea</i>	E1	+	22	39
AP	<i>Aster bellidiastrum</i>	E1	1	.	.	.	24	43

Number of relevé (Zaporedna štev. popisa)		44	45	46	47	48	49	50	51	52	53	54	55	56	Pr.	Fr.
AP	Cystopteridion s. lat. (Astrantio-Paederotium luteae nom. prov.)															
	<i>Orthothecium rufescens</i>	E0	3	2	2	2	1	+	1	1	.	1	1	+	1	47 84
	<i>Tofieldia calyculata</i>	E1	+	+	+	.	+	+	.	.	.	1	.	.	.	30 54
	<i>Aster bellidiastrum</i>	E1	.	.	.	.	.	.	.	.	.	1	.	.	.	24 43
	<i>Valeriana saxatilis</i>	E1	.	.	+	1	.	.	.	+	.	+	+	+	+	24 43
	<i>Carex brachystachys</i>	E1	.	+	.	1	.	.	+	.	.	+	.	.	.	18 32
	<i>Preissia quadrata</i>	E0	.	+	+	.	.	.	+	.	.	+	1	.	.	16 29
	<i>Asplenium viride</i>	E1	.	.	r	.	.	.	.	.	.	+	+	.	.	12 21
	<i>Valeriana tripteris</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	6 11
	<i>Fissidens dubius</i>	E0	.	.	.	.	.	.	.	.	.	.	+	+	.	5 9
	<i>Barbula crocea</i>	E0	.	.	.	.	.	+	.	.	.	.	.	1	.	5 9
	<i>Viola biflora</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	4 7
	<i>Eucladium verticillatum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	4 7
	<i>Pellia endiviifolia</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	3 5
	<i>Soldanella minima</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	1 2
	<i>Moehringia muscosa</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	1 2
PcSp	Physoplexido comosae-Saxifragion petraeae															
	<i>Campanula cespitosa</i>	E1	+	+	+	+	.	.	+	.	.	.	.	.	1	15 27
	<i>Hieracium pospichalii</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	2 4
PC	Potentilletalia caulescentis															
	<i>Potentilla caulescens</i>	E1	.	.	.	.	.	.	.	.	.	.	.	+	r	12 21
	<i>Kernera saxatilis</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	2 4
AT	Asplenetea trichomanis															
	<i>Asplenium trichomanes</i>	E1	.	.	.	.	.	.	.	.	.	.	.	+	.	8 14
	<i>Asplenium ruta-muraria</i>	E1	.	.	.	.	.	+	.	.	.	.	.	.	.	6 11
TR	Iblaspietea rotundifolii															
	<i>Hieracium bifidum</i>	E1	r	.	.	+	.	.	.	.	.	.	.	.	.	10 18
	<i>Adenostyles glabra</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	7 13
	<i>Gymnocarpium robertianum</i>	E1	.	.	.	.	.	+	.	.	.	.	.	.	.	5 9
	<i>Achnatherum calamagrostis</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	1 2
	<i>Petasites paradoxus</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	1 2
	<i>Hieracium porrifolium</i>	E1	.	.	.	.	.	+	.	.	.	.	.	.	.	1 2
CD	Caricetalia davallianae															
	<i>Parnassia palustris</i>	E1	+	.	.	.	.	.	.	.	.	.	.	.	.	3 5
	<i>Schoenus nigricans</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	3 5
MC	Montio-Cardaminetea															
	<i>Conocephalum conicum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	18 32
	<i>Campylium stellatum</i>	E0	.	.	.	.	.	.	.	.	.	1	.	.	.	4 7
	<i>Bryum pseudotriquetrum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	2 4
	<i>Cratoneuron filicinum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	2 4
	<i>Distichium capillaceum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	1 2
	<i>Campylium calcareum</i>	E0	.	.	.	.	.	.	.	.	.	1	.	.	.	1 2
	<i>Campylium elodes</i>	E0	.	.	.	.	.	.	.	.	.	.	+	.	.	1 2
	<i>Ditrichum flexicaule</i>	E0	.	.	.	.	.	.	.	.	.	.	.	+	.	1 2
ES	Elyno-Seslerietea															
	<i>Sesleria caerulea</i>	E1	.	+	+	1	1	1	.	+	1	1	+	+	1	34 61
	<i>Phyteuma orbiculare</i>	E1	.	.	+	.	1	+	.	.	.	+	.	.	.	5 9
	<i>Carex ferruginea</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	4 7
	<i>Carex firma</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	2 4
	<i>Laserpitium peucedanoides</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	1 2
	<i>Betonica alopecuroides</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	1 2

Number of relevé (Zaporedna štev. popisa)		44	45	46	47	48	49	50	51	52	53	54	55	56	Pr.	Fr.
FB	Festuco-Brometea															
	<i>Buphthalmum salicifolium</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	2	4
	<i>Galium lucidum</i>	E1	.	.	.	.	.	.	.	.	+	.	.	.	1	2
CA	Calthion															
	<i>Caltha palustris</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	1	2
	<i>Cirsium oleraceum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	1	2
BA	Betulo-Alnetea															
	<i>Salix appendiculata</i>	E2a	.	.	.	.	.	.	.	+	.	+	.	.	7	13
	<i>Salix glabra</i>	E1	.	.	r	+	.	.	.	.	+	.	.	r	6	11
MuA	Mulgedio-Aconitetea															
	<i>Chaerophyllum hirsutum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	2	4
	<i>Crepis paludosa</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	1	2
EA	Epilobietea angustifolii															
	<i>Eupatorium cannabinum</i>	E1	r	.	.	+	.	+	.	.	.	.	.	.	3	5
TG	Trifolio-Geranietea															
	<i>Laserpitium siler</i>	E1	.	.	.	r	.	.	.	.	.	.	.	.	2	4
	<i>Laserpitium latifolium</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	1	2
EP	Erico-Pinetea															
	<i>Calamagrostis varia</i>	E1	+	+	.	.	.	+	.	.	.	.	+	.	18	32
	<i>Erica carnea</i>	E1	.	.	+	.	1	+	.	.	.	+	+	+	12	21
	<i>Rhododendron hirsutum</i>	E1	.	.	.	.	.	.	.	.	.	+	.	.	6	11
	<i>Rhodothamnus chamaecistus</i>	E1	.	.	.	.	.	.	.	.	.	+	.	.	4	7
	<i>Carex ornithopoda</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	3	5
	<i>Aquilegia nigricans</i>	E1	.	.	.	.	+	.	.	.	.	.	.	.	2	4
	<i>Polygala chamaebuxus</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	1	2
	<i>Cirsium erisithales</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	1	2
VP	Vaccinio-Piceetea															
	<i>Veronica urticifolia</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	4	7
	<i>Solidago virgaurea</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	2	4
	<i>Aposeris foetida</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	1	2
	<i>Homogyne sylvestris</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	1	2
	<i>Oxalis acetosella</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	1	2
	<i>Picea abies</i>	E2a	.	.	.	.	.	.	.	.	.	.	.	.	1	2
	<i>Gentiana asclepiadea</i>	E1	.	.	.	.	.	+	.	.	.	.	.	.	1	2
AF	Aremonio-Fagion															
	<i>Cyclamen purpurascens</i>	E1	.	.	.	.	+	+	.	.	.	+	.	.	7	13
	<i>Euphorbia carniolica</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	5	9
	<i>Primula vulgaris</i>	E1	.	.	.	.	.	.	+	.	.	.	.	.	3	5
	<i>Knautia drymeia</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	2	4
	<i>Cardamine trifolia</i>	E1	.	.	.	.	.	.	+	.	.	.	.	.	2	4
	<i>Helleborus niger</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	2	4
	<i>Potentilla carniolica</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	2	4
	<i>Anemone trifolia</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	1	2
	<i>Hemerocallis lilioasphodelus</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	1	2
	<i>Lamium orvala</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	1	2
TA	Tilio-Acerion															
	<i>Aruncus dioicus</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	2	4
	<i>Phyllitis scolopendrium</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	2	4
	<i>Polystichum aculeatum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	1	2
	<i>Acer pseudoplatanus</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	1	2

Number of relevé (Zaporedna štev. popisa)		44	45	46	47	48	49	50	51	52	53	54	55	56	Pr.	Fr.
FS	Fagetalia sylvaticae															
	<i>Mycelis muralis</i>	E1	.	.	.	.	.	+	.	.	.	.	.	.	11	20
	<i>Salvia glutinosa</i>	E1	.	.	.	.	.	.	.	.	.	+	.	.	5	9
	<i>Carex umbrosa</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	3	5
	<i>Galeobdolon flavidum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	3	5
	<i>Galium laevigatum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	2	4
	<i>Brachypodium sylvaticum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	2	4
	<i>Melica nutans</i>	E1	.	.	.	.	.	+	.	.	.	.	.	.	2	4
	<i>Prenanthes purpurea</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	1	2
	<i>Asarum europaeum</i> subsp. <i>caucasicum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	1	2
	<i>Cardamine pentaphyllos</i>	E1	.	.	.	.	.	.	.	.	.	.	.	+	1	2
QP	Quercetalia pubescenti-petraeae															
	<i>Carex flacca</i>	E1	.	.	+	.	.	.	.	.	.	.	.	.	3	5
	<i>Fraxinus ornus</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	3	5
	<i>Ostrya carpinifolia</i>	E1	.	.	.	.	.	.	.	.	.	+	.	.	1	2
QF	Quercus-Fagetea															
	<i>Carex digitata</i>	E1	.	+	.	.	+	+	+	.	.	+	+	.	18	32
	<i>Hedera helix</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	5	9
	<i>Clematis vitalba</i>	E1	.	.	.	.	.	+	.	.	.	+	.	.	4	7
	<i>Hepatica nobilis</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	3	5
	<i>Taxus baccata</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	1	2
	<i>Frangula alnus</i>	E2a	.	.	.	.	.	.	.	.	.	.	.	.	1	2
ML	Mosses and lichens (Mahovi in lišaji)															
	<i>Neckera crispa</i>	E0	.	.	.	.	1	1	.	.	.	1	+	.	15	27
	<i>Ctenidium molluscum</i>	E0	.	.	.	.	.	+	.	.	.	.	.	+	8	14
	<i>Tortella tortuosa</i>	E0	.	.	.	.	.	+	.	.	.	.	.	1	6	11
	<i>Heterocladium heteropterum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	2	4
	<i>Marchantia polymorpha</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	2	4
	<i>Mnium thomsonii</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	2	4
	<i>Lophozia</i> sp.	E0	.	.	.	.	.	.	.	.	.	.	.	.	1	2
	<i>Brachythecium rutabulum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	1	2
	<i>Dichodontium pellucidum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	1	2
	<i>Bryum</i> sp.	E0	.	.	.	.	.	.	.	.	.	.	.	.	1	2
	<i>Encalypta vulgaris</i>	E0	.	.	.	.	.	+	.	.	.	.	.	.	1	2
	<i>Mnium marginatum</i>	E0	.	.	.	.	.	+	.	.	.	.	.	.	1	2
	<i>Rhynchostegium murale</i>	E0	.	.	.	.	.	+	.	.	.	.	.	.	1	2

Legend / Legenda

- D Dolomite – dolomit
- Tu Tufa – lehnjak
- Li Lithosol – kamnišče
- Pr. Presence (number of relevés in which the species is presented) – število popisov, v katerih se pojavlja vrsta
- Fr. Frequency in % – frekvenca v %

Table 2 (Tabela 2): *Asranatio carniolicae-Pinguiculetum alpinae*.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Pr.	Fr.	
Number of relevé (Zaporedna številka popisa)	218422	274938	277751	277752	269176	273916	275187	275846	230488	273681	269333	271028	272241	275019	275441	275440	275163	275020	273679			
Database number of relevé (Delovna številka popisa)	205	233	240	240	420	590	250	470	350	265	380	338	340	340	240	240	460	330	270			
Elevation in m (Nadmorska višina v m)																						
Aspect (Lega)	E	NNE	S	SW	E	SW	NW	SW	NW	NW	SW	SW	NW	SW	NW	NW	SW	SW	SE			
Slope in degrees (Nagib v stopinjah)	80	90	85	85	85	100	90	95	80	95	80	90	80	90	80	85	90	85	80			
Parent material (Matična podlaga)	D	D	L	L	D	D	Br	D	DC	D	D	L	DC	LCM	D	D	Tu	LCM	Do			
Soil (Tla)	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li		
Stoniness in % (Kamnitost v %)	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
Cover of herb layer in % (Zastiranje zeliščne plasti v %): E1	30	30	15	20	30	30	50	30	30	30	30	40	30	40	60	35	70	40	40			
Cover of moss layer in % (Zastiranje mahovne plasti v %): E0	30	30	15	20	20	30	20	290	40	20	20	50	40	40	30	40	40	20	40			
Number of species (Število vrst)	9	7	10	14	12	10	10	10	33	19	12	12	10	8	10	10	14	11	11			
Relevé area (Velikost popisne ploskve)	10	5	10	10	10	20	10	10	10	20	10	10	10	10	10	10	15	10	10			
Date of taking relevé (Datum popisa)	3/23/2008	5/20/2018	7/9/2019	7/9/2019	4/7/2017	7/25/2018	4/19/2019	6/17/2019	6/2/2009	9/4/2018	5/18/2017	4/17/2018	8/23/2018	7/1/2018	5/7/2019	5/7/2019	4/22/2019	7/1/2018	9/4/2018			
Locality (Nahajališče)	Tolminska korta	Tolminska-Kortia	Magozd-Soča-Globoščak	Magozd-Soča-Globoščak	Orhovska grapa	Gačnik-Medved	Magozd-Soča-Otona	Hortenja-Rizevec	Humar-Bača	Gorenja Trebuša	Dabrček	Malenšček-Brinta	Klonce-Bača	Kneža-Velike luti	Magozd-Soča-Otona	Magozd-Soča-Otona	Gačnik-Stararska grapa	Kneža-Velike luti	Gorenja Trebuša	Trebušica		
Quadrant (Kvadrant)																						
Coordinate GK Y (D-48)	403250	403232	390441	390448	418247	411191	390505	413890	415394	409638	414615	396405	414991	410855	390492	390493	411100	410935	409708	5101244		
Coordinate GK X (D-48)	403250	403232	390441	390448	418247	411191	390505	413890	415394	409638	414615	396405	414991	410855	390492	390493	411100	410935	409708	5101244		

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Pt.	Fr.	
Number of relevé (<i>Zaporedna števila popisov</i>)																							
Diagnostic species of the association (Diagnostične vrste asociacije)																							
AP	<i>Pinguicula alpina</i>	E1	2	2	2	2	3	3	2	2	3	2	3	+	3	3	+	3	3	3	3	19	100
AP	<i>Hymenostylium recurvirostre</i>	E0	1	1	1	2	2	1	1	2	3	+	3	1	2	1	3	2	.	.	16	84	
AP	<i>Palustrisella commutata</i>	E0	2	2	1	.	.	+	.	2	.	1	3	2	3	2	3	3	+	3	14	74	
AP	<i>Astrantia carniolica</i>	E1	1	.	.	.	+	1	.	.	+	1	.	2	2	2	3	2	3	.	11	58	
TR	<i>Petasites paradoxus</i>	E1	.	.	+	.	.	.	.	r	+	.	+	.	.	.	.	.	+	+	7	37
Differential species of the variant (Razlikovalnica variante)																							
EP	<i>Molinia arundinacea</i>	E1	.	.	.	.	.	.	.	r	+	+	+	1	2	2	3	1	2	3	11	58
AT Cystopteridion s. lat. (Astrantio-Paederotion luteae nom. prov.)																							
	<i>Tofieldia cabyclatata</i>	E1	2	2	+	+	1	.	.	1	1	.	.	+	+	.	.	+	.	.	11	58	
	<i>Aster bellidiflorus</i>	E1	+	+	1	1	.	.	.	2	1	.	.	+	.	.	.	2	1	1	11	58	
	<i>Oribothecium rufescens</i>	E0	.	.	.	2	+	+	+	1	1	+	.	.	.	.	.	1	.	1	9	47
	<i>Paederota lutea</i>	E1	.	.	.	.	+	.	1	.	+	2	.	.	.	.	.	+	.	.	5	26
	<i>Saxifraga aizoides</i>	E1	.	.	.	.	.	.	.	2	.	.	.	+	+	+	.	.	.	.	4	21
	<i>Carex brachystachys</i>	E1	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	3	16
	<i>Pellia endiviifolia</i>	E0	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+	3	16	16
	<i>Barbula crocea</i>	E0	2	1	1	.	3	16	16
	<i>Preissia quadrata</i>	E0	+	2	+	3	16	16
	<i>Valeriana saxatilis</i>	E1	+	1	5	5
	<i>Selaginella helvetica</i>	E1	+	1	5	5
	<i>Eucladium verticillatum</i>	E0	+	1	5	5
	<i>Fissidens dubius</i>	E0	+	.	.	1	5	5
PCSp Physoplexido comosae-Saxifragion petraeae																							
	<i>Campanula cespitosa</i>	E1	+	.	+	+	+	+	+	+	.	.	+	.	.	.	.	.	.	+	9	47
	<i>Phyteuma scheuchzeri</i> subsp. <i>columnae</i>	E1	.	.	.	1	.	.	.	+	2	11	11
	<i>Micromeria thymifolia</i>	E1	+	.	1	5	5
PcSp Potentillietalia caulescens																							
	<i>Potentilla caulescens</i>	E1	.	.	.	+	r	.	.	.	2	3	16	16
AT Asplenietea trichomanis																							
	<i>Asplenium trichomanes</i>	E1	+	2	11	11
TR Thlaspietea rotundifolii																							
	<i>Achnatherum calamagrostis</i>	E1	r	2	11	11

Number of relevé (Zaporedna številka števila popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Pt.	Fr.		
CD	<i>Adenostyles glabra</i>	E1	.	.	.	.	r	.	.	r	.	.	.	.	.	.	.	.	.	.	.	2	11	
	<i>Hieracium bifidum</i>	E1	.	.	.	.	.	.	.	r	.	.	+	.	.	.	.	.	.	.	.	2	11	
	<i>Hieracium porrifolium</i>	E1	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	5	
MC	<i>Caricetalia davallianae</i>	E1	.	.	.	.	.	.	.	.	+	.	.	1	.	.	+	1	.	.	.	4	21	
	<i>Carex lepidocarpa</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
ES	Monio-Cardaminetea	E0	.	1	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	2	11
	<i>Conocephalum conicum</i>	E0	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	11
	<i>Cratoneuron filicinum</i>	E0	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	2	11
	<i>Bryum pseudotriquetrum</i>	E0	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	2	11
MA	Elyno-Seslerietea	E1	1	1	+	.	+	.	.	.	.	1	1	.	1	1	+	1	+	.	.	13	68	
	<i>Sesleria caerulea</i>	E1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	11
	<i>Carex mucronata</i>	E1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	11
BA	Molinio-Arrhenatheretea	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	5
	<i>Angelica sylvestris</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	5
	<i>Pimpinella major</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	5
	<i>Crepis paludosa</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	5
NuA	Betulo-Alnetea	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	21
	<i>Salix appendiculata</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	21
EA	Mulgedio-Aconitetea	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	5
	<i>Petasites hybridus</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	5
	<i>Chaerophyllum hirsutum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	5
EP	Epilobietea angustifolii	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	5
	<i>Eupatorium cannabinum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	5
VP	Erico-Pinetea	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	7	37
	<i>Calamagrostis varia</i>	E1	.	.	.	.	.	.	.	2	+	.	1	.	.	.	.	.	.	.	.	.	3	16
	<i>Erica carnea</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	11
	<i>Leontodon incanus</i>	E1	r	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	2	11
	<i>Carex ornithopoda</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	11
FS	<i>Gymnadenia odoratissima</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	5
	Vaccinio-Piceetea	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	5
	<i>Picea abies</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	5
FS	<i>Veronica urticifolia</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	5
	Fagetalia sylvaticae	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	11
	<i>Galium laevigatum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	11

Number of relevés (Zaporedna številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Pr.	Fr.		
	<i>Salvia glutinosa</i>	E1	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	5
	<i>Fagus sylvatica</i>	E1	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	1	5
	<i>Laburnum alpinum</i>	E2a	.	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	1	5
QP	<i>Quercetalia pubescenti-petraeae</i>																							
	<i>Carex flacca</i>	E1	.	.	.	.	.	.	.	.	.	.	1	.	.	+	1	.	1	.	.	4	21
	<i>Ostrya carpinifolia</i>	E1	.	.	.	.	+	.	r	.	.	.	.	.	.	.	.	.	.	.	.	2	11
QF	<i>Quercus-Fagetea</i>																							
	<i>Potentilla erecta</i>	E1	+	1	5
SP	<i>Salicetea purpureae</i>																							
	<i>Salix eleagnos</i>	E1	.	.	+	+	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+	4	21
ML	Mosses and lichens (Mahovi in lišaji)																							
	<i>Brachydictyon rutabulum</i>	E0	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	1	5
	<i>Glenidium molluscum</i>	E0	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	1	5
	<i>Leiocolea collaris</i>	E0	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	1	5
	<i>Reboulia hemisphaerica</i>	E0	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	1	5
	<i>Tortella tortuosa</i>	E0	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	1	5
	<i>Neckera crispa</i>	E0	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	1	5

Legend / Legenda

Br Breccia – breča

C Chert – roženec

D Dolomite – dolomit

L Limestone – apnenec

M Marlstone – laporovec

Li Lithosol – kamnišče

Pr. Presence (number of relevés in which the species is presented) – število popisov, v katerih se pojavlja vrsta

Fr. Frequency in % – frekvenca v %

Table 3 (Tabela 3): *Campanulo cespitosae-Saxifragetum aizoidis*.

Number of relevé (Zaporedna štev. popisa)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Pr.	Fr.		
Database number of relevé (Delovna številka popisa)	271077	271078	271075	272101	272102	272105	272126	272127	272106	256295	269090	257491	271257	273342				
Elevation in m (Nadmorska višina v m)	400	400	392	414	265	260	255	255	260	327	990	755	420	460				
Aspect (Lega)	SSE	SE	SW	SW	SE	SE	SE	SSE	SE	SE	NW	NEE	NE	E				
Slope in degrees (Nagib v stopinjah)	70	70	85	80	85	90	85	85	80	100	80	80	85	80				
Parent material (Matična podlaga)	LMC	LMC	LMC	LMC	D	DC	DC	DC	DC	A	AC	A	LMC	LMC				
Soil (Tla)	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li	Li				
Stoniness in % (Kamnitost v %)	80	80	80	80	80	90	80	80	70	100	80	80	70	70				
Cover of herb layer in % (Zastiranje zeliščne plasti v %):	E1	40	40	30	40	30	20	40	40	50	15	30	30	50	50			
Cover of moss layer in % (Zastiranje mahovne plasti v %)	E0	40	10	40	40	30	25	39	30	20	10	20	20	50	30			
Number of species (Število vrst)	15	10	12	25	18	18	15	13	20	11	11	18	25	26				
Relevé area (Velikost popisne ploskve)	m ²	10	10	10	10	10	10	10	10	5	10	10	10	10				
Date of taking relevé (Datum popisa)	4/26/2018	4/26/2018	4/26/2018	6/2/2018	6/2/2018	6/2/2018	8/15/2018	8/15/2018	6/2/2018	4/19/2015	5/17/2017	5/12/2015	5/20/2018	8/10/2018				
Locality (Nahajališče)	Volarja-Gregorčičev slap	Volarja-Gregorčičev slap	Volarja-Gregorčičev slap	Godiča-Beri	Godiča	Godiča	Godiča	Godiča	Godiča	Zadlaščica-Perbla	Kacempoh-Kobla	Linderpoh-Šprickovbl	Tolminka Valley - Zala	Prodarjeva grapa				
Quadrant (Kvadrant)	9747/4	9747/4	9747/4	9848/2	9848/2	9848/2	9848/2	9848/2	9848/2	9748/4	9749/4	9749/4	9748/3	9849/2				
Coordinate GK Y (D-48)	m	396956	396957	397001	405021	404708	404660	404631	404636	404636	404710	420118	419818	402551	418767			
Coordinate GK X (D-48)	m	5120880	5120873	5120880	5116236	5116076	5116070	5116045	5116052	5116052	5119380	5121314	5120042	5119318	5117456			
Diagnostic species of the association (Diagnostične vrste asociacije)																		
AP	<i>Saxifraga aizoides</i>	E1	2	2	1	+	3	1	+	1	1	+	+	1	3	+	14	100
AP	<i>Palustriella commutata</i>	E0	2	1	3	2	.	1	1	.	.	.	1	1	1	2	10	71
PcSp	<i>Campanula cespitosa</i>	E1	.	.	+	+	+	1	1	1	1	+	1	.	+	.	10	71
EP	<i>Molinia arundinacea</i>	E1	1	.	1	2	+	1	3	2	1	.	.	+	.	1	10	71
EP	<i>Calamagrostis varia</i>	E1	1	.	.	+	.	+	.	.	+	+	+	+	1	+	9	64
AP	<i>Preissia quadrata</i>	E0	+	.	.	.	+	+	+	+	+	.	.	+	+	+	9	64
AP	<i>Cystopteridion</i> s. lat. (<i>Astrantio-Paederotium luteae</i> nom. prov.)																	
	<i>Hymenostylium recurvirostre</i>	E0	.	+	.	.	2	2	3	2	+	.	.	+	.	.	7	50
	<i>Barbula crocea</i>	E0	+	+	.	.	+	.	.	.	1	+	5	36
	<i>Pinguicula alpina</i>	E1	2	1	r	r	.	.	4	29
	<i>Carex brachystachys</i>	E1	+	+	+	1	4	29
	<i>Tofieldia calyculata</i>	E1	1	1	1	2	4	29

Number of relevé (Zaporedna štev. popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	Pr.	Fr.	
	<i>Orthothecium rufescens</i>	E0	.	.	.	.	.	.	.	.	2	1	.	1	1	4	29
	<i>Aster bellidiastrum</i>	E1	.	.	.	.	.	.	.	.	1	1	+	.	1	4	29
	<i>Pellia endiviifolia</i>	E0	+	.	+	2	.	.	.	.	.	.	.	+	1	5	36
	<i>Jungermannia atrovirens</i>	E0	.	.	.	.	.	.	.	+	.	.	.	+	+	3	21
	<i>Valeriana tripteris</i>	E1	.	.	.	.	.	.	.	.	.	.	.	+	1	2	14
	<i>Fissidens dubius</i>	E0	.	.	.	.	.	.	.	.	.	.	.	+	+	2	14
	<i>Paederota lutea</i>	E1	.	.	.	.	.	.	.	.	1	.	.	.	.	1	7
	<i>Valeriana saxatilis</i>	E1	.	.	.	.	.	.	.	.	+	.	.	.	.	1	7
	<i>Asplenium viride</i>	E1	.	.	.	.	.	.	.	.	.	.	.	1	.	1	7
	<i>Viola biflora</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	1	1	7
PcSp	<i>Physoplexido comosae-Saxifragion petraeae</i>																	
	<i>Campanula carnica</i>	E1	.	.	.	+	.	.	.	.	+	.	.	.	+	3	21
	<i>Hieracium pospichalii</i>	E1	.	.	.	.	.	.	.	.	.	.	.	+	.	1	7
PC	<i>Potentilletalia caulescentis</i>																	
	<i>Potentilla caulescens</i>	E1	.	.	.	.	+	+	.	.	+	.	.	+	.	4	29
	<i>Primula auricula</i>	E1	.	.	.	.	.	.	.	.	.	.	1	.	.	1	7
	<i>Rhannus pumilus</i>	E1	.	.	.	.	.	.	.	.	.	.	.	+	.	1	7
AT	<i>Asplenetea trichomanis</i>																	
	<i>Asplenium ruta-muraria</i>	E1	.	.	.	.	.	.	.	.	+	.	.	+	.	2	14
TR	<i>Thlaspietea rotundifolii</i>																	
	<i>Hieracium porrifolium</i>	E1	.	.	.	+	+	+	+	1	+	.	.	.	.	6	43
	<i>Petasites paradoxus</i>	E1	+	.	+	.	+	+	.	.	.	.	.	.	.	4	29
	<i>Hieracium bifidum</i>	E1	.	.	.	+	.	+	.	.	.	.	.	1	.	4	29
	<i>Adenostyles glabra</i>	E1	.	.	.	.	.	.	.	.	.	.	+	r	1	3	21
	<i>Leontodon hispidus</i> subsp. <i>hyoseroides</i>	E1	+	+	.	.	.	.	.	.	.	.	.	.	.	2	14
	<i>Trisetum argenteum</i>	E1	.	.	1	.	.	.	.	.	.	.	.	+	.	2	14
	<i>Achnatherum calamagrostis</i>	E1	.	.	.	.	+	.	.	.	.	.	.	.	.	1	7
CD	<i>Caricetalia davallianae</i>																	
	<i>Carex flava</i> agg.	E1	.	1	.	.	.	.	.	.	.	.	.	.	.	1	7
	<i>Epilobium alsinifolium</i>	E1	.	.	+	.	.	.	.	.	.	.	.	.	.	1	7
	<i>Pinguicula vulgaris</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	1	1	7
MC	<i>Montio-Cardaminetea</i>																	
	<i>Gymnostomum aeruginosum</i>	E0	2	.	2	1	.	.	.	.	.	.	.	.	.	3	21
	<i>Campyllum stellatum</i>	E0	+	.	.	.	.	.	.	.	.	.	.	.	+	+	21
	<i>Conocephalum conicum</i>	E0	.	.	.	.	.	.	.	.	.	.	1	.	.	1	7
	<i>Bryum pseudotriquetrum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	+	.	1	7
	<i>Oxyrrhynchium schleicheri</i>	E0	.	.	.	.	.	.	.	.	.	.	.	+	.	1	7
	<i>Cololejeunea calcarea</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	+	1	7
	<i>Barbilophozia</i> sp.	E0	.	.	.	.	.	.	.	.	.	.	.	.	+	1	7
ES	<i>Elyno-Seslerietea</i>																	
	<i>Sesleria caerulea</i>	E1	.	.	.	+	1	.	1	+	+	+	.	2	1	2	9	64
	<i>Carex mucronata</i>	E1	.	.	.	.	.	r	+	.	.	.	+	.	.	3	21
	<i>Carex ornithopodoides</i>	E1	.	.	.	.	.	.	.	r	.	.	.	.	.	1	7
	<i>Carex ferruginea</i>	E1	.	.	.	.	.	.	.	.	.	1	.	.	.	1	7
FB	<i>Festuco-Brometea</i>																	
	<i>Buphthalmum salicifolium</i>	E1	.	.	.	.	+	+	.	1	+	.	.	.	.	4	29
MA	<i>Molinio-Arrhenatheretea</i>																	
	<i>Caltha palustris</i>	E1	.	.	2	+	.	.	.	.	.	.	.	.	.	2	14
	<i>Angelica sylvestris</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	+	1	7
BA	<i>Betulo-Alnetea</i>																	
	<i>Salix appendiculata</i>	E1	.	.	.	.	+	.	+	+	+	.	.	.	+	5	36

Number of relevé (Zaporedna štev. popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	Pr.	Fr.
MuA	Mulgedio-Aconitetea																
	<i>Chaerophyllum hirsutum</i>	E1	.	.	.	+	.	.	.	.	.	.	.	.	.	1	7
	<i>Petasites hybridus</i>	E1	.	.	r	.	.	.	.	.	.	.	.	.	.	1	7
EA	Epilobietea angustifolii																
	<i>Eupatorium cannabinum</i>	E1	.	.	.	1	+	+	.	.	.	.	.	.	.	3	21
	<i>Tussilago farfara</i>	E1	+	.	.	.	.	.	.	.	.	.	.	.	.	1	7
EP	Erico-Pinetea																
	<i>Erica carnea</i>	E1	.	.	.	.	+	+	1	+	+	.	.	.	.	5	36
	<i>Leontodon incanus</i>	E1	.	.	.	.	+	+	.	.	.	.	.	.	.	3	21
	<i>Peucedanum austriacum</i>	E1	.	.	.	.	.	+	.	.	.	.	.	.	.	2	14
	<i>Carex ornithopoda</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	1	7
VP	Vaccinio-Picetea																
	<i>Veronica urticifolia</i>	E1	.	.	.	+	.	.	.	.	.	+	.	+	1	5	36
	<i>Saxifraga cuneifolia</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	+	2	14
AF	Aremonio-Fagion																
	<i>Lamium orvala</i>	E1	.	.	.	+	.	.	.	.	.	.	.	.	.	1	7
	<i>Primula vulgaris</i>	E1	.	.	.	+	.	.	.	.	.	.	.	.	.	1	7
TA	Tilio-Acerion																
	<i>Acer pseudoplatanus</i>	E1	.	+	.	.	.	.	.	.	.	.	.	.	.	1	7
	<i>Tilia platyphyllos</i>	E2a	.	r	.	.	.	.	.	.	.	.	.	.	.	1	7
	<i>Aruncus dioicus</i>	E1	.	.	.	.	r	.	.	.	.	.	.	.	.	1	7
FS	Fagetalia sylvaticae																
	<i>Petasites albus</i>	E1	.	.	.	+	.	.	.	.	.	.	.	.	+	2	14
	<i>Galium laevigatum</i>	E1	.	.	.	+	.	.	.	.	.	.	.	.	.	2	14
	<i>Brachypodium sylvaticum</i>	E1	.	.	.	+	.	.	.	.	.	.	.	.	.	1	7
	<i>Salvia glutinosa</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	1	7
QP	Quercetalia pubescenti-petraeae																
	<i>Carex flacca</i>	E1	2	2	+	.	.	.	.	.	.	.	.	.	.	3	21
	<i>Ostrya carpinifolia</i>	E2a	.	.	.	+	.	.	.	+	.	.	.	.	.	3	21
	<i>Fraxinus ornus</i>	E2a	r	.	.	.	.	.	.	.	.	.	.	.	.	1	7
QF	Quercu-Fagetea																
	<i>Hedera helix</i>	E1	.	.	.	+	.	.	.	.	.	.	.	.	.	1	7
	<i>Carex digitata</i>	E1	.	.	.	.	.	.	.	.	.	.	+	.	.	1	7
SP	Salicetea purpureae																
	<i>Salix purpurea</i>	E2a	.	r	.	.	.	.	.	.	.	.	.	.	.	1	7
ML	Mosses and lichens (Mahovi in lišaji)																
	<i>Tortella tortuosa</i>	E0	.	.	.	.	+	.	1	+	+	.	.	.	.	4	29
	<i>Brachythecium rutabulum</i>	E0	.	.	.	+	.	.	.	.	.	.	.	.	.	1	7
	<i>Rhynchostegium riparioides</i>	E0	.	.	.	+	.	.	.	.	.	.	.	.	.	1	7
	<i>Ctenidium molluscum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	+	.	1	7
	<i>Encalypta streptocarpa</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	1	1	7

Legend / Legenda

- C Chert – roženec
- D Dolomite – dolomit
- L Limestone – apnenec
- M Marlstone – laporovec
- Li Lithosol – kamnišče
- Pr. Presence (number of relevés in which the species is presented) – število popisov, v katerih se pojavlja vrsta
- Fr. Frequency in % – frekvenca v %

Table 4 (Tabela 4): *Primuletum carniolicae* Accetto 2008 *violetosum biflorae*.

Number of relevé (Zaporedna številka popisa)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Pr.	Fr.																		
Database number of relevé (Delovna štev. popisa)	460	258588	560	260931	550	260936	550	260938	570	260929	600	261055	560	260932	850	268210	550	260915	550	260940	560	260930	430	275149	570	260916	580	260917	600	261056					
Elevation in m (Nadmorska višina v m)	460	258588	560	260931	550	260936	550	260938	570	260929	600	261055	560	260932	850	268210	550	260915	550	260940	560	260930	430	275149	570	260916	580	260917	600	261056					
Aspect (Lega)	N	W	W	NW	SE	NW	NW	NE	NE	NW	NW	N	NW	N	NE																				
Slope in degrees (Nagib v stopinjah)	90	95	85	90	90	70	95	90	80	80	80	80	80	90	95																				
Parent material (Matična podlaga)	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																				
Stoniness in % (Kamnitost v %)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100																				
Cover of herb layer in % (Zastiranje zeliščne plasti v %)	E1	20	15	30	20	20	30	20	20	40	60	20	20	30	50	30																			
Cover of moss layer in % (Zastiranje mahovne plasti v %)	E0	10	20	20	10	30	30	20	20	60	80	20	40	20	30	10																			
Number of species (Število vrst)		18	15	28	28	23	26	14	14	17	26	20	17	22	22	7																			
Relevé area (Velikost popisne ploskve)	m ²	10	4	4	10	5	5	5	5	5	10	10	15	10	5	5																			
Date of taking relevé (Datum popisa)		9/29/2015	4/15/2016	4/15/2016	4/15/2016	4/15/2016	4/20/2016	4/15/2016	8/30/2017	4/15/2016	4/15/2016	4/15/2016	4/22/2019	4/15/2016	4/15/2016	4/20/2016																			
Locality (Nahajališče)		Groškarka - Kanomlja	Žirovnica - Raskovec	Žirovnica - Raskovec	Žirovnica - Raskovec	Žirovnica - Raskovec	Žirovnica - Raskovec	Žirovnica - Raskovec	Gačnik - Brdo	Žirovnica - Raskovec	Žirovnica - Raskovec	Žirovnica - Raskovec	Gačnik	Žirovnica - Raskovec	Žirovnica - Raskovec	Žirovnica - Raskovec																			
Quadrant (Kvadrant)		9949/4	9950/4	9950/4	9950/4	9950/4	9950/4	9950/4	9949/3	9950/4	9950/4	9950/4	9949/1	9950/4	9950/4	9950/4																			
Coordinate GK Y (D-48)	m	422149	430440	430488	430430	430388	430318	430464	412447	430396	430418	430422	410984	430391	430373	430310																			
Coordinate GK X (D-48)	m	509632	5096271	5096326	5096266	5096235	5096162	5096296	5100926	5096265	5096248	5096252	5103382	5096208	5096190	5096174																			
Diagnostic species of the association (Diagnostične vrste asociacije)																	Pr.	Fr.																	
AP <i>Primula carniolica</i>	E1	2	1	2	2	2	1	2	2	1	1	2	1	2	2	1	15	100																	
AP <i>Orthothecium rufescens</i>	E0	+	1	+	1	2	1	1	+	3	2	2	2	1	2	1	15	100																	
AP <i>Valeriana tripteris</i>	E1	+	+	+	.	r	+	.	.	+	.	+	.	+	.	.	8	53																	
Differential species of the subassociation (Razlikovalnice asociacije)																																			
AP <i>Viola biflora</i>	E1	+	+	+	+	1	+	+	1	2	3	1	+	+	+	2	15	100																	
VP <i>Veronica urticifolia</i>	E1	+	+	+	+	+	1	+	+	+	+	.	.	.	.	.	11	73												
AP <i>Pinguicula alpina</i>	E1	.	+	.	+	+	.	.	.	+	.	+	+	1	1	+	9	60																	
<i>Cystopteridion</i> s. lat. (<i>Astrantio-Paederotium luteae</i> nom. prov.)																																			
<i>Aster bellidiastrum</i>	E1	1	+	+	1	1	1	+	.	1	+	1	1	1	1	+	14	93																	
<i>Asplenium viride</i>	E1	+	1	+	+	1	1	.	.	+	1	.	.	+	.	.	9	60																	
<i>Cystopteris fragilis</i>	E1	.	.	+	+	+	.	1	+	.	1	1	.	+	.	.	8	53																	
<i>Carex brachystachys</i>	E1	+	.	+	1	.	.	.	+	.	.	1	.	+	+	.	7	47																	
<i>Paederota lutea</i>	E1	1	.	.	.	.	.	.	+	.	.	.	1	.	.	.	3	20											

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Pr.	Fr.		
	<i>Hymenostylium recurvirostre</i>	E0	.	.	+	.	.	+	.	.	.	.	.	.	.	+	.	3	20
	<i>Tofieldia calyculata</i>	E1	.	.	.	+	.	.	.	.	.	.	.	1	.	+	.	3	20
	<i>Palustriella commutata</i>	E0	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	7
	<i>Moehringia muscosa</i>	E1	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	1	7
	<i>Astrantia carniolica</i>	E1	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	1	7
	<i>Fissidens dubius</i>	E0	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	1	7
	<i>Valeriana saxatilis</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	1	7
PcSp	<i>Physoplexido comosae-Saxifragion petraeae</i>																			
	<i>Campanula cespitosa</i>	E1	+	1	+	3	20
	<i>Phyteuma scheuchzeri</i> subsp. <i>columnae</i>	E1	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	1	7
AT	<i>Asplenietea trichomanis</i>																			
	<i>Asplenium ruta-muraria</i>	E1	+	r	+	+	+	+	+	.	+	.	.	.	r	+	.	11	73	
	<i>Asplenium trichomanes</i>	E1	+	+	+	1	+	.	1	1	.	+	+	.	.	.	.	9	60
TR	<i>Thlapietea rotundifolii</i>																			
	<i>Hieracium bifidum</i>	E1	r	.	.	+	.	+	+	.	.	.	+	+	.	.	.	6	40	
	<i>Gymnocarpium robertianum</i>	E1	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	1	7
MC	<i>Montio-Cardaminetea</i>																			
	<i>Conocephalum conicum</i>	E0	1	1	+	+	+	1	.	+	2	2	1	2	.	+	.	12	80	
	<i>Oxyrrhynchium bians</i>	E0	+	.	+	.	.	+	.	.	.	.	.	.	.	.	.	3	20
	<i>Campylium stellatum</i>	E0	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	2	13
	<i>Oxyrrhynchium schleicheri</i>	E0	.	.	.	.	+	.	.	.	.	.	.	.	.	+	.	2	13
	<i>Cirriphyllum cirrhosum</i>	E0	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	1	7
	<i>Distichium capillaceum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	1	7
ES	<i>Elyno-Seslerietea</i>																			
	<i>Sesleria caerulea</i>	E1	.	.	.	.	.	+	.	.	.	.	.	.	2	1	.	3	20
	<i>Carex mucronata</i>	E1	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	1	7
FB	<i>Festuco-Brometea</i>																			
	<i>Buphthalmum salicifolium</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	r	+	.	2	13
BA	<i>Betulo-Alnetea</i>																			
	<i>Salix appendiculata</i>	E1	.	.	.	.	.	.	r	.	.	.	.	.	.	+	.	2	13
MuA	<i>Mulgedio-Aconitetea</i>																			
	<i>Petasites hybridus</i>	E1	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	1	7
EP	<i>Erico-Pinetea</i>																			
	<i>Calamagrostis varia</i>	E1	+	+	+	+	.	.	.	.	+	+	+	+	+	2	.	10	67
	<i>Rhododendron hirsutum</i>	E1	+	1	.	2	13
	<i>Rubus saxatilis</i>	E1	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	1	7
	<i>Molinia arundinacea</i>	E1	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	1	7
	<i>Erica carnea</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	1	7
VP	<i>Vaccinio-Piceetea</i>																			
	<i>Veronica urticifolia</i>	E1	+	+	+	+	+	1	+	+	+	+	+	.	.	.	.	11	73
	<i>Homogyne sylvestris</i>	E1	.	.	.	+	.	r	.	.	.	.	.	.	.	.	.	2	13
	<i>Oxalis acetosella</i>	E1	.	.	.	.	.	.	.	.	1	.	+	.	.	.	.	2	13
	<i>Clematis alpina</i>	E1	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	1	7
	<i>Rosa pendulina</i>	E1	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	1	7
	<i>Aposeris foetida</i>	E1	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	1	7
AF	<i>Aremonio-Fagion</i>																			
	<i>Scopolia carniolica</i>	E1	.	.	r	.	.	.	.	.	.	.	.	.	r	.	.	2	13
	<i>Cyclamen purpurascens</i>	E1	.	.	.	r	.	.	.	.	.	.	.	+	.	.	.	2	13
	<i>Helleborus niger</i>	E1	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	1	7

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Pr.	Fr.	
	<i>Cardamine enneaphyllos</i>	E1	.	.	.	.	.	.	.	.	r	.	.	.	.	.	1	7
	<i>Euphorbia carniolica</i>	E1	.	.	.	.	.	.	.	.	r	.	.	.	.	.	1	7
	<i>Cardamine trifolia</i>	E1	.	.	.	.	.	.	.	.	r	.	.	.	.	.	1	7
TA	Tilio-Acerion																		
	<i>Aruncus dioicus</i>	E1	.	r	.	.	.	+	.	.	+	+	.	.	.	.	5	33
	<i>Thalictrum aquilegifolium</i>	E1	.	.	.	.	.	.	.	.	+	r	+	r	.	.	4	27
	<i>Polystichum aculeatum</i>	E1	.	.	+	.	.	.	.	.	.	r	.	.	.	.	2	13
	<i>Ulmus glabra</i>	E2a	.	.	.	.	.	.	.	+	r	.	.	.	.	.	2	13
	<i>Acer pseudoplatanus</i>	E1	.	.	r	.	.	.	.	.	.	.	.	.	.	.	1	7
	<i>Phyllitis scolopendrium</i>	E1	.	.	r	.	.	.	.	.	.	.	.	.	.	.	1	7
FS	Fagetalia sylvaticae																		
	<i>Galeobdolon flavidum</i>	E1	r	.	+	+	r	+	.	.	.	.	+	.	+	.	7	47
	<i>Cardamine pentaphyllos</i>	E1	.	r	.	.	.	.	.	.	r	r	.	.	r	.	4	27
	<i>Campanula trachelium</i>	E1	.	+	r	.	.	.	.	.	+	.	.	.	.	.	3	20
	<i>Lathyrus vernus</i>	E1	.	.	r	.	.	.	.	.	+	.	.	.	.	.	2	13
	<i>Galium laevigatum</i>	E1	.	.	.	.	.	+	r	.	.	.	.	.	.	.	2	13
	<i>Salvia glutinosa</i>	E1	r	.	.	.	.	.	.	.	.	.	.	.	.	.	1	7
	<i>Daphne mezereum</i>	E1	.	.	.	r	.	.	.	.	.	.	.	.	.	.	1	7
	<i>Mercurialis perennis</i>	E1	.	.	.	r	.	.	.	.	.	.	.	.	.	.	1	7
	<i>Mycelis muralis</i>	E1	.	.	.	.	.	+	.	.	.	.	.	.	.	.	1	7
	<i>Fagus sylvatica</i>	E1	.	.	.	.	.	.	.	.	r	.	.	.	.	.	1	7
	<i>Prenanthes purpurea</i>	E1	.	.	.	.	.	.	.	.	r	.	.	.	.	.	1	7
QF	Quercu-Fagetea																		
	<i>Carex digitata</i>	E1	.	.	.	r	.	+	+	.	+	r	r	+	+	+	9	60	
	<i>Hepatica nobilis</i>	E1	.	.	r	r	.	.	.	.	+	+	.	+	.	.	5	33
	<i>Taxus baccata</i>	E2b	+	1	7
ML	Mosses and lichens (Mahovi in lišaji)																		
	<i>Neckera crispa</i>	E0	.	.	+	+	2	1	+	.	.	.	.	+	.	.	6	40
	<i>Ctenidium molluscum</i>	E0	.	.	.	.	.	.	.	+	.	+	2	1	1	.	5	33
	<i>Mnium thomsonii</i>	E0	.	.	+	+	+	+	.	.	.	.	.	.	.	.	4	27
	<i>Tortella tortuosa</i>	E0	.	.	+	.	.	.	+	.	1	.	.	.	.	.	3	20
	<i>Pedinophyllum interruptum</i>	E0	.	.	.	.	1	+	.	.	.	.	.	.	.	1	3	20
	<i>Mnium marginatum</i>	E0	.	.	.	.	+	+	.	.	.	.	.	.	.	+	3	20
	<i>Brachythecium starkei</i>	E0	.	.	.	.	+	.	.	.	.	.	.	.	.	.	1	7
	<i>Plagiomnium rostratum</i>	E0	.	.	.	.	+	.	.	.	.	.	.	.	.	.	1	7
	<i>Marchantia polymorpha</i>	E0	.	.	.	.	.	.	+	.	.	.	.	.	.	.	1	7

Legend / Legenda

D Dolomite – dolomit

Li Lithosol – kamnišče

Pr. Presence (number of relevés in which the species is presented) – število popisov, v katerih se pojavlja vrsta

Fr. Frequency in % – frekvenca v %

Table 5 (Tabela 5): *Phyteumato columnae-Primuletum carniolicae*. Relevé number 1–37.

Number of relevé (Zaporedna številka popisa)	1	2	3	4	5	6	7	8	9	10	11	12	
Database number of relevé (Delovna številka popisa)	259019	259020	273980	217874	258592	275224	269300	278013	278010	226622	266154	269299	
Elevation in m (Nadmorska višina v m)	975	975	745	260	485	230	475	700	660	215	250	475	
Aspect (Lega)	NE	NE	NE	SW	S	E	NW	N	N	NW	N	NE	
Slope in degrees (Nagib v stopinjah)	80	90	90	90	80	95	70	90	80	90	90	90	
Parent material (Matična podlaga)	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	
Stoniness in % (Kamnitost v %)	100	100	100	100	100	100	100	100	100	100	100	100	
Cover of herb layer in % (Zastiranje zeliščne plasti v %)	E1	30	20	30	30	40	40	35	20	30	20	25	30
Cover of moss layer in % (Zastiranje mahovne plasti v %)	E0	30	20	30	10	20	10	50	10	5	10	20	20
Number of species (Število vrst)	24	24	16	17	13	10	20	27	20	11	10	14	
Relevé area (Velikost popisne ploskve)	m ²	10	10	10	10	3	10	10	15	10	5	10	10
Date of taking relevé (Datum popisa)	6/25/2015	6/25/2015	7/2/2018	4/19/2007	9/29/2015	4/18/2019	6/20/2017	4/29/2019	4/29/2019	5/8/2009	4/9/2017	6/20/2017	
Locality (Nahajališče)		Oblakov vrh-Maslinca	Oblakov vrh-Maslinca	Gačnik	Pršjak	Govškarca-Kanomlja	Gorenja trebuša - Ščura	Jagršče-Sjavnica	Gorenja Trebuša-Drnulc	Gorenja Trebuša-Drnulc	Stopnik-Idrija	Gačnik	Jagršče-Sjavnica
Quadrant (Kvadrant)		9949/1	9949/1	9949/1	9949/1	9949/4	9948/2	9949/2	9948/2	9948/2	9849/3	9949/1	9949/2
Coordinate GK Y (D-48)	m	414439	414436	412009	409858	421985	409627	418040	408491	408574	415408	410338	418059
Coordinate GK X (D-48)	m	5101703	5101709	5101929	5101922	5099617	5103347	5105396	5102623	5102681	5106880	5104116	5105394
Diagnostic species of the association (Diagnostične vrste asociacije)													
AP <i>Primula carniolica</i>	E1	r	1	+	1	3	3	2	2	2	+	+	1
PcSp <i>Phyteuma scheuchzeri</i> subsp. <i>columnae</i>	E1	+	+	1	+	+	+	+	+	r	+	+	1
AP <i>Paederota lutea</i>	E1	1	2	2	2	1	1	2	2	2	+	1	2
AP <i>Orthothecium rufescens</i>	E0	+	+	+	+	2	1	1	+	1	+	1	1
AP <i>Valeriana tripteris</i>	E1	1	+	1	.	.	1	r	.	.	.	.	.
AP <i>Carex brachystachys</i>	E1	+	r	2	+	1	1	.	.	+	.	.	+
AP <i>Cystopteridion</i> s. lat. (<i>Astrantio-Paederotion luteae</i> nom. prov.)													
<i>Aster bellidiastrum</i>	E1	+	1	1	1	1	.	.	.	.	1	1	+
<i>Asplenium viride</i>	E1	.	r	+	.	.	.	+	r	.	.	.	.
<i>Fissidens dubius</i>	E0	+	+	.	.	.	.	1	+	.	.	.	.
<i>Valeriana saxatilis</i>	E1	.	.	.	.	.	1	.	.	1	.	2	1
<i>Tofieldia calyculata</i>	E1	.	.	.	1	.	+	+	1	1	.	+	.
<i>Viola biflora</i>	E1	2	+	+	.	.	.	.	.	.	.	.	.
<i>Barbula crocea</i>	E0	.	.	2	.	.	.	.	.	.	.	.	.
<i>Cystopteris fragilis</i>	E1	1	1	+	.	.	.	.	.	.	.	.	.
<i>Preissia quadrata</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12
	<i>Hymenostylium recurvirostre</i>	E0	+	+	.	.	.	.	.	+	.	.	.
	<i>Moebria muscosa</i>	E1	+	.	.	.	.	.	.	.	.	.	.
	<i>Primula x venusta</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Pellia endiviifolia</i>	E0	.	.	.	.	.	.	.	.	.	.	.
	<i>Selaginella helvetica</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Palustriella commutata</i>	E0	.	.	.	.	.	.	.	.	.	.	.
	<i>Heliosperma veselskyi</i> subsp. <i>veselskyi</i>	E1	.	.	.	.	.	.	.	.	.	.	.
PcSp	<i>Physoplexido comosae-Saxifragion petraeae</i>												
	<i>Campanula cespitosa</i>	E1	.	.	.	+	+	.	.	+	+	.	.
	<i>Athamanta turbit</i>	E1	.	.	.	.	.	.	.	r	.	.	.
	<i>Hieracium porrifolium</i>	E1	.	.	.	.	.	.	.	.	.	.	.
PC	<i>Potentilletalia caulescentis</i>												
	<i>Potentilla caulescens</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Kernera saxatilis</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Primula auricula</i>	E1	.	.	.	.	.	.	.	.	.	.	.
AT	<i>Asplenietea trichomanis</i>												
	<i>Asplenium ruta-muraria</i>	E1	.	.	.	+	+	.	.	r	.	+	.
	<i>Asplenium trichomanes</i>	E1	1	+	.	.	.	.	.	r	.	.	+
	<i>Hieracium glaucum</i>	E1	.	.	.	.	.	.	.	+	1	.	.
TR	<i>Thlaspietea rotundifolii</i>												
	<i>Hieracium bifidum</i>	E1	.	.	.	+	+	.	+	+	+	.	.
	<i>Gymnocarpium robertianum</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Adenostyles glabra</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Aquilegia iulia</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Dryopteris villarii</i>	E1	.	.	.	.	.	.	.	.	.	.	.
MC	<i>Montio-Cardaminetea</i>												
	<i>Conocephalum conicum</i>	E0	.	.	.	.	.	.	.	.	.	.	1
	<i>Distichium capillaceum</i>	E0	+	+	.	+	.	.	.	.	.	.	.
	<i>Ditrichum flexicaule</i>	E0	.	.	.	.	.	.	.	.	.	.	.
	<i>Campylium stellatum</i>	E0	.	.	.	.	.	.	.	.	.	.	.
	<i>Cololejeunea calcarea</i>	E0	.	.	.	.	.	.	.	.	.	.	.
ES	<i>Elyno-Seslerietea</i>												
	<i>Sesleria caerulea</i>	E1	.	.	.	.	.	.	+	1	1	1	+
	<i>Carex mucronata</i>	E1	.	.	.	.	.	.	.	.	+	.	.
	<i>Betonica alopecurus</i>	E1	.	.	.	.	.	.	.	.	.	.	+
	<i>Carduus crassifolius</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Carex ferruginea</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Gentiana clusii</i>	E1	.	.	.	.	.	.	.	.	+	.	.
	<i>Laserpitium peucedanoides</i>	E1	.	.	.	.	.	.	.	.	.	.	.
FB	<i>Festuco-Brometea</i>												
	<i>Carex humilis</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Bupthalmum salicifolium</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Galium lucidum</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Brachypodium rupestre</i>	E1	.	.	.	.	.	.	.	.	.	.	.
MA	<i>Molinio-Arrhenatheretea</i>												
	<i>Angelica sylvestris</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Caltha palustris</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Taraxacum x Ruderalia</i>	E1	.	.	.	.	.	.	.	.	.	.	.
BA	<i>Betulo-Alnetea</i>												
	<i>Salix appendiculata</i>	E1	.	.	.	+	.	.	.	+	.	.	+
	<i>Salix glabra</i>	E1	.	.	.	.	.	.	.	+	+	.	.
MuA	<i>Mulgedio-Aconitetea</i>												
	<i>Senecio ovatus</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Ranunculus platanifolius</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Aconitum degenii</i> subsp. <i>paniculatum</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Saxifraga rotundifolia</i>	E1	.	.	.	.	.	.	.	.	.	.	.
TG	<i>Trifolio-Geranietea</i>												
	<i>Laserpitium siler</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Viola hirta</i>	E1	.	.	.	.	.	.	.	.	.	.	.

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12
	<i>Anthericum ramosum</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Laserpitium latifolium</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Thalictrum minus</i>	E1	.	.	.	.	.	.	.	.	.	.	.
EA	<i>Epilobietea angustifolii</i>												
	<i>Rubus idaeus</i>	E1	.	.	.	.	.	.	.	.	.	.	.
EP	<i>Erico-Pinetea</i>												
	<i>Calamagrostis varia</i>	E1	1	.	.	+	+	+	+	.	+	.	.
	<i>Rhododendron hirsutum</i>	E1	.	.	.	.	.	+	+	+	.	.	+
	<i>Erica carnea</i>	E1	.	.	.	+	.	+	.	+	+	.	.
	<i>Polygala chamaebuxus</i>	E1	.	.	.	+	.	.	+	+	.	.	.
	<i>Carex ornithopoda</i>	E1	.	.	.	.	+	.	.	.	.	.	.
	<i>Rubus saxatilis</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Carex alba</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Cirsium erisithales</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Leontodon incanus</i>	E1	.	.	.	1	.	.	.	.	.	.	.
	<i>Molinia arundinacea</i>	E1	.	.	.	.	.	+	.	.	.	.	.
	<i>Amelanchier ovalis</i>	E1	.	.	.	.	.	.	+	.	.	.	.
	<i>Aster amellus</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Rhodothamnus chamaecistus</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Aquilegia nigricans</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Pinus sylvestris</i>	E2a	.	.	.	.	.	.	.	.	.	.	.
VP	<i>Vaccinio-Pinetea</i>												
	<i>Veronica urticifolia</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Homogyne sylvestris</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Solidago virgaurea</i>	E1	.	.	.	.	.	.	r	.	.	.	.
	<i>Hieracium murorum</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Clematis alpina</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Gentiana asclepiadea</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Oxalis acetosella</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Picea abies</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Polystichum lonchitis</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Aposeris foetida</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Rosa pendulina</i>	E1	.	.	.	.	.	.	.	.	.	.	.
AF	<i>Aremonio-Fagion</i>												
	<i>Cyclamen purpurascens</i>	E1	.	.	+	.	.	.	.	.	.	.	.
	<i>Helleborus niger</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Hemerocallis lilioasphodelus</i>	E1	.	.	.	.	.	.	.	.	+	.	.
	<i>Potentilla carniolica</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Cardamine trifolia</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Primula vulgaris</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Anemone trifolia</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Euphorbia carniolica</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Lamium orvala</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Rhamnus fallax</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Laserpitium krapfii</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Omphalodes verna</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Knautia drymeia</i>	E1	.	.	.	.	.	.	.	.	.	.	.
TA	<i>Tilio-Acerion</i>												
	<i>Aruncus dioicus</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Polystichum aculeatum</i>	E1	r	.	.	.	.	.	.	.	.	.	.
	<i>Phyllitis scolopendrium</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Acer pseudoplatanus</i>	E1	r	.	.	.	.	.	.	.	.	.	.
	<i>Geranium robertianum</i>	E1	+	+	.	.	.	.	.	.	.	.	.
	<i>Tephrosieris pseudocrispa</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Thalictrum aquilegifolium</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Ulmus glabra</i>	E2a	.	.	.	.	.	.	.	.	.	.	.
	<i>Acer platanoides</i>	E2a	.	.	.	.	.	.	.	.	.	.	.

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	8	9	10	11	12	
FS	Fagetalia sylvaticae													
	<i>Salvia glutinosa</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Galeobdolon flavidum</i>	E1	.	r	+	.	.	.	.	.	.	.	.
	<i>Mercurialis perennis</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Mycelis muralis</i>	E1	r	+	.	.	.	.	.	.	.	.	.
	<i>Galium laevigatum</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Fagus sylvatica</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Melica nutans</i>	E1	+
	<i>Symphytum tuberosum</i>	E1
	<i>Campanula trachelium</i>	E1
	<i>Cardamine pentaphyllos</i>	E1
	<i>Asarum europaeum</i> subsp. <i>caucasicum</i>	E1
	<i>Petasites albus</i>	E1
	<i>Sambucus nigra</i>	E2a
	<i>Lathyrus vernus</i>	E1
QP	Quercetalia pubescenti-petraeae													
	<i>Fraxinus ornus</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Ostrya carpinifolia</i>	E1	.	.	.	.	.	.	+	+	.	.	.
	<i>Mercurialis ovata</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Clematis recta</i>	E1	.	.	.	.	.	.	.	.	.	.	.
<i>Euonymus verrucosa</i>	E2a	.	.	.	.	.	.	.	.	.	.	.
QF	Quercus-Fagetalia													
	<i>Carex digitata</i>	E1	.	.	.	.	.	.	+	+	.	.	.
	<i>Hepatica nobilis</i>	E1	.	.	+	.	.	.	.	.	.	.	.
	<i>Hedera helix</i>	E1	.	.	.	.	.	.	.	.	.	+	.
	<i>Veratrum nigrum</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Acer campestre</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Clematis vitalba</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Quercus petraea</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Cardamine impatiens</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Lonicera xylosteum</i>	E1	.	.	.	.	.	.	.	.	.	.	.
ML	Mosses and lichens (Mahovi in lišaji)													
	<i>Neckera crispa</i>	E0	1	1	1	.	+	.	.	+	.	.	.	
	<i>Ctenidium molluscum</i>	E0	1	1	.	.	.	.	.	+	+	.	.
	<i>Tortella tortuosa</i>	E0	.	.	1	+	1	.	2	1	+	1	+	
	<i>Mnium thomsonii</i>	E0	.	.	.	.	.	.	1	.	.	.	.
	<i>Schistidium apocarpum</i>	E0	.	.	.	.	.	.	.	.	.	.	.
	<i>Plagiochila porreloides</i>	E0	+	+	.	.	.	.	.	.	.	.	.
	<i>Encalypta streptocarpa</i>	E0	+	+	.	.	.	.	.	.	.	.	.
	<i>Leiocolea collaris</i>	E0	.	.	.	.	.	.	.	+	.	.	.
	<i>Marchantia polymorpha</i>	E0	.	.	.	.	.	.	.	.	.	.	.
	<i>Bryum capillare</i>	E0	.	.	.	.	.	.	.	.	.	.	.
	<i>Pedinophyllum interruptum</i>	E0	.	.	.	.	.	.	.	+	.	.	.
	<i>Mnium stellare</i>	E0	.	.	.	.	.	.	.	.	.	.	.
	<i>Isoetecium alopecuroides</i>	E0	.	.	.	.	.	.	.	.	.	.	.
	<i>Lejeunea cavifolia</i>	E0	.	.	+	.	.	.	.	.	.	.	.
	<i>Myurella sibirica</i>	E0	.	.	+	.	.	.	.	.	.	.	.
	<i>Neckera complanata</i>	E0	.	.	+	.	.	.	.	.	.	.	.
	<i>Didymodon ferrugineus</i>	E0	.	.	.	.	.	.	.	+	.	.	.
	<i>Trichostomum brachydontium</i>	E0	.	.	.	.	.	.	.	.	.	.	.
	<i>Myurella julacea</i>	E0	.	.	.	.	.	.	.	.	.	.	.
	<i>Hypnum cupressiforme</i> var. <i>resupinatum</i>	E0	.	.	.	.	.	.	.	.	.	.	.
	Lichenes div.	E0	.	.	.	.	.	.	.	.	.	.	.
	<i>Lophozia</i> sp.	E0	.	.	.	.	.	.	.	.	.	.	.
	<i>Dichodontium pellucidum</i> subsp. <i>flavescens</i>	E0	.	.	.	.	.	.	.	.	.	.	.
	<i>Brachythecium rutabulum</i>	E0	.	.	.	.	.	.	.	.	.	.	.
	<i>Plagiomnium rostratum</i>	E0	.	.	.	.	.	.	.	.	.	.	.
<i>Mnium marginatum</i>	E0	.	.	.	.	.	.	.	.	.	.	.
<i>Plagiobryum zierii</i>	E0	.	.	.	.	.	.	.	.	.	.	.

Table 5 (Tabela 5): *Phyteumato columnae-Primuletum carniolicae*. Relevé number 38–73.

Number of relevé (Zaporedna številka popisa)	38	39	40	41	42	43	44	45	46	47	48	49	
Database number of relevé (Delovna številka popisa)	230615	278030	278031	242921	274414	278019	242923	275598	273969	274020	242931	258598	
Elevation in m (Nadmorska višina v m)	1050	910	925	830	505	750	840	770	775	785	890	500	
Aspect (Lega)	NW	NW	NW	NE	W	NE	N	NNE	S	SSW	NE	W	
Slope in degrees (Nagib v stopinjah)	90	90	70	90	80	90	90	90	85	90	85	80	
Parent material (Matična podlaga)	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	
Stoniness in % (Kamnitost v %)	100	100	100	100	100	100	100	100	100	100	100	100	
Cover of herb layer in % (Zastiranje zeliščne plasti v %)	E1	20	20	20	30	25	15	20	20	20	30	40	
Cover of moss layer in % (Zastiranje mahovne plasti v %)	E0	10	10	30	20	40	10	20	20	10	20	40	
Number of species (Število vrst)	15	18	14	14	20	16	11	14	11	11	10	18	
Relevé area (Velikost popisne ploskve)	m ²	10	20	10	10	15	10	5	10	10	10	2	
Date of taking relevé (Datum popisa)	7/14/2004	4/16/2019	4/16/2019	4/18/2012	4/23/2018	4/29/2019	4/18/2012	5/16/2019	7/2/2018	7/16/2018	4/18/2012	9/29/2015	
Locality (Nahajališče)		Vojsko-V Studencu	Stador-Kobilica	Stador-Kobilica	Skopica	Kazarska grapa	Gorenja Trebuša-Drnulk	Gorenja Trebuša-Drnulk	Gačnik	Gačnik	Velike Više	Govškarca-Kanomlja	
Quadrant (Kvadrant)		9949/3	9948/2	9948/2	9948/2	9849/3	9948/2	9948/2	9949/1	9949/1	9948/2	9949/4	
Coordinate GK Y (D-48)	m	415736	408043	408060	408327	415320	408334	408354	408230	412117	412115	421925	
Coordinate GK X (D-48)	m	5099687	5101657	5101677	5106389	5111461	5102809	5106389	5103541	5101925	5101933	5099650	
Diagnostic species of the association (Diagnostične vrste asociacije)													
AP <i>Primula carniolica</i>	E1	1	+	r	+	+	1	+	+	1	1	2	2
PcSp <i>Phyteuma scheuchzeri</i> subsp. <i>columnae</i>	E1	+	+	+	+	1	+	+	+	+	+	+	+
AP <i>Paederota lutea</i>	E1	1	1	1	+	1	1	+	1	2	1	.	+
AP <i>Orthothecium rufescens</i>	E0	+	+	+	.	+	+
AP <i>Valeriana tripteris</i>	E1	.	.	+	+
AP <i>Carex brachystachys</i>	E1	r	.	.	.	1	+
AP <i>Cystopteridion</i> s. lat. (<i>Astrantio-Paederotion luteae</i> nom. prov.)													
<i>Aster bellidiastrum</i>	E1	1	1	.	+
<i>Asplenium viride</i>	E1	.	.	.	+	+	.	+	+
<i>Fissidens dubius</i>	E0	+	+	.	.	.	+
<i>Valeriana saxatilis</i>	E1	+	.	r	+	.	.	.
<i>Tofieldia calyculata</i>	E1
<i>Viola biflora</i>	E1	+
<i>Barbula crocea</i>	E0	.	.	+
<i>Cystopteris fragilis</i>	E1	.	r
<i>Preissia quadrata</i>	E0	2	1

50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	Pr.	Fr.																													
269424	269425	274402	269198	278005	278008	269430	269297	246397	266158	263169	246395	268193	259018	269394	274407	275254	275255	263172	269177	269181	269182	263753	269396																															
770	770	535	540	680	670	780	450	330	250	450	330	870	970	654	560	690	730	420	425	430	435	380	660																															
SEE	N	N	N	NNE	NNE	N	NE	N	NW	N	NE	NW	NE	NNE	W	N	NE	NE	NE	NE	NE	NW	N																															
85	80	70	70	80	80	80	85	90	100	90	80	85	90	80	80	85	90	80	80	60	80	80	90																															
D	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	Li	Li																															
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100																															
30	30	30	30	35	40	30	30	30	25	20	30	30	25	30	30	30	30	30	40	30	30	30	15																															
40	40	30	50	10	20	30	30	30	25	19	20	30	20	10	30	30	30	30	60	5	20	20	10																															
10	17	21	15	19	23	13	23	17	12	16	34	20	24	22	24	21	29	16	24	15	18	13	6																															
5	10	10	5	15	15	5	10	50	10	10	100	5	10	5	10	15	15	10	10	5	5	10	2																															
4/20/2017	4/20/2017	4/23/2018	4/7/2017	4/29/2019	4/29/2019	4/20/2017	6/20/2017	4/22/2011	4/9/2017	9/12/2016	4/22/2011	8/30/2017	6/25/2015	5/26/2107	4/23/2018	4/27/2019	5/16/2019	9/12/2016	4/7/2017	4/7/2017	4/7/2017	6/24/2016	5/26/2017																															
Bukovski Vrh-Degarnik	Bukovski Vrh-Degarnik	Kazarska grapa	Orehovska grapa-Nemci	Goirenja Trebuša-Drnulak	Goirenja Trebuša-Drnulak	Bukovski Vrh-Degarnik	Jagršče-Sjavnica	Jagršče-Sjavnica	Gačnik	Orehovska grapa	Jagršče-Sjavnica	Gačnik	Oblakov vrh-Maslinca	Kazarska grapa-Degarnik	Kazarska grapa	Čepovan-Drnulak	Čepovan-Drnulak	Orehovska grapa	Orehovska grapa	Orehovska grapa	Orehovska grapa	Kazarska grapa	Kazarska grapa-Degarnik																															
5110930	415139	9849/3	415139	9849/3	415127	9849/3	415127	9849/3	415532	9849/3	417834	9849/4	408621	9948/2	408411	9948/2	415240	9849/3	418011	9949/2	417202	9949/2	410303	9949/1	418076	9849/4	417201	9849/4	412447	9949/3	414448	9949/1	415147	9849/3	415307	9849/3	407582	9948/2	407804	9948/2	418220	9849/4	418224	9849/4	418177	9849/4	418172	9849/4	416035	9849/3	415385	9849/3		
2	1	1	2	2	3	1	1	1	1	1	1	1	1	1	1	2	1	2	1	1	3	2	1	73	100																													
+	+	1	2	1	1	r	+	+	+	+	+	+	1	2	1	+	+	+	+	+	+	+	73	100																														
.	.	1	.	2	3	.	2	1	1	.	1	1	1	.	.	.	.	.	.	.	.	.	54	74																					
.	.	.	+	.	+	.	.	1	+	+	1	+	+	.	+	.	1	.	.	.	.	.	41	56																									
.	.	.	.	.	.	.	+	.	+	.	1	+	+	1	+	.	1	.	.	.	.	.	36	49																			
.	.	.	.	.	.	.	.	.	.	.	r	.	1	1	.	+	+	.	.	.	.	.	33	45															
.	.	.	.	.	.	.	+	+	1	+	.	.	.	.	.	.	+	.	.	.	.	.	.	33	45											
.	.	.	+	.	.	.	+	.	.	.	+	+	.	.	.	+	+	.	.	.	.	.	.	29	40																							
.	.	.	.	+	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	20	27														
.	.	.	r	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	23	32																
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	r	.	.	.	12	16										
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	12	16						
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	7	10						
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	9	12						
.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	9	12									

Number of relevé (Zaporedna številka popisa)		38	39	40	41	42	43	44	45	46	47	48	49
	<i>Hymenostylium recurvirostre</i>	E0	.	.	.	.	.	.	.	.	.	.	.
	<i>Moebria muscosa</i>	E1	+	.	.	.	.	.	.	+	.	.	.
	<i>Primula x venusta</i>	E1	.	r	.	.	.	.	r	.	.	.	.
	<i>Pellia endiviifolia</i>	E0	.	.	.	.	.	.	.	.	.	.	.
	<i>Selaginella helvetica</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Palustriella commutata</i>	E0	.	.	.	.	.	.	.	.	.	.	.
	<i>Heliosperma veselskyi</i> subsp. <i>veselskyi</i>	E1	.	.	.	.	.	.	.	.	.	.	.
PcSp	Physoplexido comosae-Saxifragion petraeae												
	<i>Campanula cespitosa</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Athamanta turbit</i>	E1	.	.	.	.	.	.	r	.	.	.	.
	<i>Hieracium porrifolium</i>	E1	.	.	.	.	.	.	.	.	.	.	.
PC	Potentilletalia caulescentis												
	<i>Potentilla caulescens</i>	E1	.	r	.	.	.	.	r	.	.	1	.
	<i>Kernera saxatilis</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Primula auricula</i>	E1	.	.	.	.	.	.	.	.	.	.	.
AT	Asplenietea trichomanis												
	<i>Asplenium ruta-muraria</i>	E1	+	+	+	1	1	+	+	+	+	1	+
	<i>Asplenium trichomanes</i>	E1	1	+	+	1	1	1	1	.	+	+	1
	<i>Hieracium glaucum</i>	E1	.	.	.	.	.	.	.	.	.	.	.
TR	Thlaspietea rotundifolii												
	<i>Hieracium bifidum</i>	E1	.	+	+	.	+	+	.	.	.	.	.
	<i>Gymnocarpium robertianum</i>	E1	.	.	.	.	+	.	.	.	.	.	r
	<i>Adenostyles glabra</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Aquilegia iulia</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Dryopteris villarii</i>	E1	.	.	.	.	.	.	.	.	.	.	.
MC	Montio-Cardaminetea												
	<i>Conocephalum conicum</i>	E0	.	.	+	.	.	.	.	.	.	.	.
	<i>Distichium capillaceum</i>	E0	+	.	.	.	.	.	.	.	.	.	.
	<i>Ditrichum flexicaule</i>	E0	.	.	.	.	.	.	.	.	.	.	.
	<i>Campylium stellatum</i>	E0	.	.	.	.	.	.	.	.	.	.	.
	<i>Cololejeunea calcarea</i>	E0	.	.	.	.	.	.	.	.	.	.	.
ES	Elyno-Seslerietea												
	<i>Sesleria caerulea</i>	E1	.	r	.	.	.	.	+	+	1	+	1
	<i>Carex mucronata</i>	E1	.	.	.	+	.	.	+	.	.	.	.
	<i>Betonica alopecurus</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Carduus crassifolius</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Carex ferruginea</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Gentiana clusii</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Laserpitium peucedanoides</i>	E1	.	.	.	.	.	.	.	.	.	.	.
FB	Festuco-Brometea												
	<i>Carex humilis</i>	E1	.	.	.	.	.	.	r	.	.	.	.
	<i>Bupthalmum salicifolium</i>	E1	.	r	.	.	.	.	.	.	.	.	.
	<i>Galium lucidum</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Brachypodium rupestre</i>	E1	.	.	.	.	.	.	.	.	.	.	.
MA	Molinio-Arrhenatheretea												
	<i>Angelica sylvestris</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Caltha palustris</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Taraxacum x Ruderalia</i>	E1	.	.	.	.	.	.	.	.	.	.	.
BA	Betulo-Alnetea												
	<i>Salix appendiculata</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Salix glabra</i>	E1	.	.	.	.	.	.	.	.	.	.	.
MuA	Mulgedio-Aconitetea												
	<i>Senecio ovatus</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Ranunculus platanifolius</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Aconitum degenii</i> subsp. <i>paniculatum</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Saxifraga rotundifolia</i>	E1	.	.	.	.	.	.	.	.	.	.	.
TG	Trifolio-Geranietea												
	<i>Laserpitium siler</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Viola hirta</i>	E1	.	.	.	.	.	.	.	.	.	.	.

50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	Pr.	Fr.	
.	+	6	8
.	+	+	+	6	8
.	3	4
.	+	2	3
.	+	+	2	3
.	1	1
.	1	1
.	.	.	.	+	+	+	+	+	+	+	11	15
.	.	.	.	r	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	5
.	+	.	r	.	.	.	+	.	.	.	.	.	.	.	.	4	5
.	+	+	.	.	.	7	10
.	+	+	1	+	.	.	5	7
.	1	1
+	+	+	+	r	.	.	+	+	1	1	.	.	+	+	1	.	.	+	+	.	+	1	+	49	67	
.	+	+	.	.	+	1	+	1	1	1	+	+	.	.	.	1	1	+	41	56	
.	2	3
+	1	+	+	r	+	.	.	.	.	+	.	+	1	+	r	.	+	.	+	+	+	+	.	35	48	
.	.	+	+	r	r	.	.	.	.	.	.	9	12
.	2	3
.	1	1
.	1	1
.	1	+	.	.	.	.	.	1	+	.	+	+	.	18	25	
.	5	7
.	1	1
.	+	1	1
.	+	1	1
1	+	r	.	1	1	+	1	2	1	+	.	.	.	.	+	.	.	1	+	1	1	.	.	39	53	
.	.	.	+	+	.	+	+	10	14
.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	4	5
.	2	3
.	.	.	.	r	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	3
.	1	1
.	1	1
+	3	4
.	2	3
.	1	1
.	1	1
.	1	1
.	1	1
.	3	4
.	1	1
.	1	1
.	1	1
.	2	3
.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	3

Number of relevé (Zaporedna številka popisa)		38	39	40	41	42	43	44	45	46	47	48	49
	<i>Anthericum ramosum</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Laserpitium latifolium</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Thalictrum minus</i>	E1	.	.	.	.	.	.	.	.	.	.	.
EA	<i>Epilobietea angustifolii</i>												
	<i>Rubus idaeus</i>	E1	.	.	.	.	.	.	.	.	.	.	.
EP	<i>Erico-Pinetea</i>												
	<i>Calamagrostis varia</i>	E1	+	+	.	.	.	.	.	.	.	.	+
	<i>Rhododendron hirsutum</i>	E1	.	+	r	r	.	l	.	.	.	r	.
	<i>Erica carnea</i>	E1	.	.	.	.	.	.	.	.	.	.	r
	<i>Polygala chamaebuxus</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Carex ornithopoda</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Rubus saxatilis</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Carex alba</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Cirsium erisithales</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Leontodon incanus</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Molinia arundinacea</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Amelanchier ovalis</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Aster amellus</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Rhodothamnus chamaecistus</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Aquilegia nigricans</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Pinus sylvestris</i>	E2a	.	.	.	.	.	.	.	.	.	.	.
VP	<i>Vaccinio-Pinetea</i>												
	<i>Veronica urticifolia</i>	E1	+	.	.	.	.	.	.	.	.	.	.
	<i>Homogyne sylvestris</i>	E1	.	.	.	+	.	r	.	.	.	.	.
	<i>Solidago virgaurea</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Hieracium murorum</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Clematis alpina</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Gentiana asclepiadea</i>	E1	.	.	.	.	+	.	.	.	.	.	.
	<i>Oxalis acetosella</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Picea abies</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Polystichum lonchitis</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Aposeris foetida</i>	E1	.	.	.	.	.	.	.	.	.	.	r
	<i>Rosa pendulina</i>	E1	.	.	.	.	.	.	.	.	.	.	.
AF	<i>Aremonio-Fagion</i>												
	<i>Cyclamen purpurascens</i>	E1	.	.	.	.	.	.	.	.	.	.	+
	<i>Helleborus niger</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Hemerocallis lilioasphodelus</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Potentilla carniolica</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Cardamine trifolia</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Primula vulgaris</i>	E1	.	.	.	.	+	.	.	.	.	.	.
	<i>Anemone trifolia</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Euphorbia carniolica</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Lamium orvala</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Rhamnus fallax</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Laserpitium krapfii</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Omphalodes verna</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Knautia drymeia</i>	E1	.	.	.	.	.	.	.	.	.	.	.
TA	<i>Tilio-Acerion</i>												
	<i>Aruncus dioicus</i>	E1	.	.	.	.	.	.	.	.	.	.	r
	<i>Polystichum aculeatum</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Phyllitis scolopendrium</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Acer pseudoplatanus</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Geranium robertianum</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Tephrosiopsis pseudocrispa</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Thalictrum aquilegifolium</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Ulmus glabra</i>	E2a	.	.	.	.	.	.	.	.	.	.	.
	<i>Acer platanoides</i>	E2a	.	.	.	.	.	.	.	.	.	.	.

Number of relevé (Zaporedna številka popisa)		38	39	40	41	42	43	44	45	46	47	48	49	
FS	Fagetalia sylvaticae													
	<i>Salvia glutinosa</i>	E1	.	.	.	+	.	.	.	.	.	.	.
	<i>Galeobdolon flavidum</i>	E1	.	.	.	+	.	.	.	.	.	.	r
	<i>Mercurialis perennis</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Mycelis muralis</i>	E1	.	.	+	.	.	.	.	.	.	.	.
	<i>Galium laevigatum</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Fagus sylvatica</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Melica nutans</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Symphytum tuberosum</i>	E1	.	.	.	.	+	.	.	.	.	.	.
	<i>Campanula trachelium</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Cardamine pentaphyllos</i>	E1	.	.	.	.	+	.	.	.	.	.	.
	<i>Asarum europaeum</i> subsp. <i>caucasicum</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Petasites albus</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Sambucus nigra</i>	E2a	.	.	.	.	.	.	.	.	.	.	.
	<i>Lathyrus vernus</i>	E1	.	.	.	.	.	.	.	.	.	.	.
QP	Quercetalia pubescenti-petraeae													
	<i>Fraxinus ornus</i>	E1	.	.	.	.	.	.	.	.	.	r	.
	<i>Ostrya carpinifolia</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Mercurialis ovata</i>	E1	.	.	.	.	.	.	r	.	.	.	.
	<i>Clematis recta</i>	E1	.	.	.	.	.	.	.	.	.	.	.
<i>Euonymus verrucosa</i>	E2a	.	.	.	.	.	.	.	.	.	.	.
QF	Quercus-Fagetalia													
	<i>Carex digitata</i>	E1	.	.	.	.	+	.	.	.	.	.	+
	<i>Hepatica nobilis</i>	E1	.	r	.	.	.	+	.	.	.	.	r
	<i>Hedera helix</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Veratrum nigrum</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Acer campestre</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Clematis vitalba</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Quercus petraea</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Cardamine impatiens</i>	E1	.	.	.	.	.	.	.	.	.	.	.
	<i>Lonicera xylosteum</i>	E1	.	.	.	.	.	.	.	.	.	.	.
ML	Mosses and lichens (Mahovi in lišaji)													
	<i>Neckera crispa</i>	E0	1	+	+	+	2	.	1	1	1	1	1	2
	<i>Ctenidium molluscum</i>	E0	.	+	1	+	+	.	1	1	1	1	2	2
	<i>Tortella tortuosa</i>	E0	+	.	.	+	+	+	.	.	.	1	.	.
	<i>Mnium thomsonii</i>	E0	+	+	.	+	.	.
	<i>Schistidium apocarpum</i>	E0
	<i>Plagiochila porreloides</i>	E0
	<i>Encalypta streptocarpa</i>	E0
	<i>Leiocolea collaris</i>	E0
	<i>Marchantia polymorpha</i>	E0
	<i>Bryum capillare</i>	E0
	<i>Pedinophyllum interruptum</i>	E0
	<i>Mnium stellare</i>	E0
	<i>Isoetecium alopecuroides</i>	E0	.	.	.	1
	<i>Lejeunea cavifolia</i>	E0
	<i>Myurella sibirica</i>	E0
	<i>Neckera complanata</i>	E0
	<i>Didymodon ferrugineus</i>	E0
	<i>Trichostomum brachydontium</i>	E0
	<i>Myurella julacea</i>	E0
	<i>Hypnum cupressiforme</i> var. <i>resupinatum</i>	E0
	Lichenes div.	E0
	<i>Lophozia</i> sp.	E0
	<i>Dichodontium pellucidum</i> subsp. <i>flavescens</i>	E0
	<i>Brachythecium rutabulum</i>	E0
	<i>Plagiomnium rostratum</i>	E0
	<i>Mnium marginatum</i>	E0
<i>Plagiobryum zierii</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.

Legend / Legenda: D Dolomite – dolomit L Limestone – apnenc Li Lithosol – kamnišče Fr. Frequency in % – frekvenca v %

Table 6 (Tabela 6): *Phyteumato-Primuletum carniolicae astrantietosum carniolicae*.

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	8	9
Database number of relevé (Delovna številka popisa)		230633	241567	241568	234480	235012	246868	259052	259053	242177
Elevation in m (Nadmorska višina v m)		1190	810	810	1110	215	1250	1430	1440	1380
Aspect (Lega)		NW	SE	NW	W	NE	NE	N	NW	NE
Slope in degrees (Nagib v stopinjah)		90	90	90	95	90	80	90	80	80
Parent material (Matična podlaga)		DL	D	D	D	D	D	L	L	L
Soil (Tla)		Li	Li	Li	Li	Li	Li	Li	Li	Li
Stoniness in % (Kamnitost v %)		100	100	100	100	100	100	100	100	100
Cover of herb layer in % (Zastiranje zeliščne plasti v %):	E1	20	20	30	20	30	30	30	20	15
Cover of moss layer in % (Zastiranje mahovne plasti v %)	E0	5	5	5	5	30	20	20	10	5
Number of species (Število vrst)		16	17	15	15	15	23	24	18	11
Relevé area (Velikost popisne ploskve)	m ²	10	10	10	10	5	10	5	5	5
Date of taking relevé (Datum popisa)		7/3/2000	5/5/2011	5/5/2011	7/20/2004	4/25/2005	8/13/2003	6/22/2015	6/22/2015	8/4/1998
Locality (Nahajališče)		Bukov vrh	Bukov vrh - Brusova grapa	Bukov vrh - Brusova grapa	Hudournik	Gačnik	Sončni rob	Mali Golak	Mali Golak	Srednji Golak
Quadrant (Kvadrant)		0049/1	9949/3	9949/3	9949/1	9949/1	0049/1	0049/1	0049/1	0049/1
Coordinate GK Y (D-48)	m	413635	413790	413770	413757	410107	414653	412426	412435	413074
Coordinate GK X (D-48)	m	5094650	5095679	5095671	5102207	5104236	5094330	5093455	5093412	5093352
Diagnostic species of the association (Diagnostične vrste asociacije)										
AP <i>Primula carniolica</i>	E1	+	1	1	1	1	1	1	1	+
AP <i>Paederota lutea</i>	E1	1	2	1	1	1	2	2	2	1
PcSp <i>Phyteuma scheuchzeri</i> subsp. <i>columnae</i>	E1	+	+	+	.	+	+	+	+	.
AP <i>Orthothecium rufescens</i>	E0	.	.	.	+	2	2	2	1	1
AP <i>Carex brachystachys</i>	E1	.	.	.	.	.	.	+	.	.
AP <i>Valeriana tripteris</i>	E1	.	.	.	.	.	.	+	.	.
Differential species of the subassociation (Razlikovalnice subasociacije)										
AP <i>Viola biflora</i>	E1	+	+	+	+	.	+	1	+	+
AP <i>Valeriana saxatilis</i>	E1	+	+	+	+	1	+	1	1	+
AP <i>Astrantia carniolica</i>	E1	r	.	.	.	1	+	.	.	.
AP <i>Cystopteridion</i> s. lat. (<i>Astrantio-Paederotion luteae</i> nom. prov.)										
<i>Aster bellidiastrum</i>	E1	+	+	+	.	1	1	+	+	+
<i>Asplenium viride</i>	E1	.	.	.	.	.	.	+	+	.
<i>Pinguicula alpina</i>	E1	r	+	+	r	+	+	+	+	r
<i>Tofieldia calyculata</i>	E1	.	+	+	.	1	+	+	.	.
<i>Cystopteris fragilis</i>	E1	+	.	.	+	.	.	.	.	+
<i>Fissidens dubius</i>	E0	.	+	.	.	.	.	+	.	.

10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	Pr.	Fr.
234555	271153	271155	241563	246867	268197	268209	273971	268206	268207	268204	273912	273973	268212	275148	278093	273964	278100		
810	420	430	800	1250	890	845	775	845	890	850	590	755	840	430	470	780	460		
NE	N	NW	NE	N	E	SE	N	E	NW	W	W	NE	NW	SE	SW	NE	N		
80	90	95	80	80	95	80	85	80	80	90	95	95	85	90	90	80	80		
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		
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100		
40	20	35	30	35	20	30	30	40	60	30	15	20	35	30	30	60	60		
10	10	10	10	20	10	10	20	30	30	20	5	20	20	10	30	30	70		
22	18	16	24	22	16	18	17	18	24	21	18	17	22	14	17	17	20		
5	10	10	10	10	5	5	20	5	5	5	20	10	5	15	15	10	15		
5/19/2004	5/3/2018	5/3/2018	5/5/2011	8/13/2003	8/30/2017	8/30/2017	7/2/2018	8/30/2017	8/30/2017	8/30/2017	7/25/2018	7/2/2018	8/30/2017	4/22/2019	12.6.2019	7/2/2018	12.6.2019		
Gorenja Trebuša - Lazna - Špičast rob	Gorenja Trebuša - Makčeva grapa	Gorenja Trebuša - Makčeva grapa	Mali Govci	Sončni rob	Gačnik	Gačnik - Brdo	Gačnik	Gačnik	Gačnik	Gačnik	Gačnik - Medved	Gačnik	Gačnik-Brdo	Gačnik	Gačnik	Gačnik	Gačnik		
9948/4	9949/3	9949/3	9949/3	0049/1	9949/3	9949/3	9949/1	9949/1	9949/3	9949/1	9949/1	9949/1	9949/3	9949/1	9949/1	9949/1	9949/1		
408748	410066	410105	413679	414658	412494	412459	412108	412495	412577	412503	411222	412050	412457	410992	411150	412218	411121		
5099263	5100660	5100659	5095879	5094216	5101188	5100916	5101912	5101431	5100830	5101371	5102794	5101938	5100950	5103416	5103138	5101768	5103184		
2	1	2	+	2	2	2	1	1	1	1	+	1	1	2	1	+	1	Pr.	Fr.
1	1	2	2	2	2	2	2	1	2	1	1	1	1	1	1	2	1	27	100
+	+	+	1	1	+	+	+	+	1	+	.	+	+	.	+	.	+	22	81
1	.	1	+	.	.	1	1	+	1	1	1	+	+	.	.	1	1	19	70
+	.	.	.	+	+	+	+	+	1	+	+	+	.	.	.	+	+	13	48
+	+	+	+	+	+	.	.	.	.	.	.	+	+	.	.	.	+	10	37
1	+	+	1	+	+	1	+	1	+	r	+	.	+	r	+	+	+	25	93
.	.	+	r	r	+	1	+	1	1	1	1	+	.	.	1	1	.	22	81
.	+	+	+	.	+	r	1	+	2	r	.	+	2	1	1	3	1	18	67
+	r	.	+	+	+	1	1	+	.	.	+	+	+	1	+	1	1	23	85
+	1	1	+	+	+	r	+	.	+	1	+	.	1	+	+	.	.	16	59
.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	11	41
.	.	.	.	.	.	.	.	.	+	+	.	.	.	+	.	+	+	10	37
+	.	.	+	.	.	.	.	.	.	+	.	.	+	.	.	.	.	7	26
.	.	.	.	.	.	.	.	.	1	.	.	.	+	1	+	.	.	6	22

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	8	9
	<i>Soldanella minima</i>	E1	.	.	.	+	.	+	+	.
	<i>Cystopteris regia</i>	E1	.	.	.	+	.	.	.	+
	<i>Hymenostylium recurvirostre</i>	E0	.	.	.	+	.	1	.	.
	<i>Pellia endiviifolia</i>	E0	.	.	.	.	.	.	.	.
	<i>Barbula crocea</i>	E0	.	.	.	.	.	.	.	.
	<i>Solorina saccata</i>	E0	.	.	.	.	.	+	.	.
	<i>Heliosperma pusillum</i>	E1	.	.	.	.	.	.	+	.
	<i>Preissia quadrata</i>	E0	.	.	.	.	.	.	.	.
	<i>Palustriella commutata</i>	E0	.	.	.	.	.	.	.	.
PcSp	Physoplexido comosae-Saxifragion petraeae									
	<i>Campanula cespitosa</i>	E1	.	.	.	.	.	+	.	.
PC	Potentilletum caulescentis									
	<i>Potentilla caulescens</i>	E1	r	.	.	+	.	r	.	.
	<i>Kerneria saxatilis</i>	E1	.	.	.	.	.	.	.	.
AT	Asplenetea trichomanis									
	<i>Asplenium ruta-muraria</i>	E1	r	+	.	.	.	.	.	+
	<i>Asplenium trichomanes</i>	E1	.	+	r	+	.	.	.	.
TR	Thlapietea rotundifolii									
	<i>Adenostyles glabra</i>	E1	.	.	.	.	r	r	+	.
	<i>Hieracium bifidum</i>	E1	.	+	.	.	+	.	.	.
	<i>Dryopteris villarii</i>	E1	.	.	.	.	.	.	+	+
	<i>Aquilegia iulia</i>	E1	.	.	.	.	.	.	.	.
	<i>Gymnocarpium robertianum</i>	E1	.	.	.	.	.	.	.	.
CD	Caricetalia davallianae									
	<i>Parnassia palustris</i>	E1	.	.	.	.	.	+	.	.
MC	Montio-Cardaminetea									
	<i>Conocephalum conicum</i>	E0	.	.	.	.	.	.	+	.
	<i>Campylium stellatum</i>	E0	.	.	.	.	.	.	.	+
	<i>Distichium capillaceum</i>	E0	.	.	.	.	.	.	.	.
ES	Elyno-Seslerietea									
	<i>Sesleria caerulea</i>	E1	+	+	+	+	+	+	r	.
	<i>Laserpitium peucedanoides</i>	E1	.	.	r	.	.	.	+	+
	<i>Carex ferruginea</i>	E1	+	.	.	.	.	.	.	.
	<i>Carex mucronata</i>	E1	.	+	r	+	.	.	.	.
	<i>Carex firma</i>	E1	.	.	r	.	.	1	.	.
	<i>Campanula witasekiana</i>	E1	.	.	.	.	.	.	+	.
	<i>Phyteuma orbiculare</i>	E1	.	.	.	.	.	.	.	.
TG	Trifolio-Geranietea									
	<i>Digitalis grandiflora</i>	E1	.	.	.	.	.	.	.	.
BA	Betulo-Alnetea									
	<i>Salix appendiculata</i>	E1	.	.	.	.	.	.	.	r
MuA	Mulgedio-Aconitetea									
	<i>Chaerophyllum hirsutum</i>	E1	.	.	.	.	.	.	.	.
	<i>Veratrum album</i>	E1	.	.	.	.	.	.	r	.
	<i>Crepis paludosa</i>	E1	.	.	.	.	.	.	.	.
EA	Epilobietea angustifolii									
	<i>Rubus idaeus</i>	E1	.	.	.	.	.	.	.	.
EP	Erico-Pinetea									
	<i>Calamagrostis varia</i>	E1	.	.	.	.	.	+	.	.
	<i>Rhododendron hirsutum</i>	E1	.	r	r	.	.	.	+	+
	<i>Rhodothamnus chamaecistus</i>	E1	+	+	+	.	.	r	.	.

10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	Pr.	Fr.
.	3	11
.	r	.	.	.	.	.	.	.	3	11
+	3	11
.	+	.	.	.	1	1	.	3	11
.	1	.	.	.	1	.	2	7
.	1	4
.	1	4
.	.	+	1	4
.	+	1	4
.	+	2	7
.	r	.	.	.	.	.	.	.	.	.	4	15
.	.	.	.	+	1	4
.	.	.	+	1	+	.	.	+	+	+	.	+	+	.	.	.	.	11	41
+	+	+	+	+	+	1	.	.	.	.	.	10	37
.	+	r	+	+	.	.	.	.	.	.	.	r	+	9	33
r	+	+	+	+	7	26
.	2	7
.	.	.	.	+	1	4
.	+	1	4
.	1	4
1	1	+	.	.	.	.	.	.	+	1	+	.	+	1	1	1	2	13	48
.	1	4
.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
.	.	.	.	1	+	.	1	+	+	.	+	+	.	.	+	.	1	16	59
.	.	.	.	+	4	15
.	.	.	+	3	11
.	3	11
.	2	7
.	1	4
.	r	1	4
.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
.	+	2	7
.	r	+	.	.	2	7
.	1	4
.	r	.	.	.	1	4
.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
+	.	.	+	.	.	+	+	.	.	+	+	.	+	.	+	.	.	9	33
.	.	.	.	+	.	.	.	+	+	+	r	.	9	33
.	.	.	.	+	5	19

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	8	9
	<i>Pinus nigra</i>	E1	.	r	.	.	.	.	.	.
	<i>Polygala chamaebuxus</i>	E1	.	.	.	.	r	.	.	.
	<i>Erica carnea</i>	E1	.	.	.	.	r	.	.	.
	<i>Cirsium erisithales</i>	E1	.	.	.	.	.	.	.	.
	<i>Aquilegia nigricans</i>	E1	.	.	.	.	.	.	.	.
	<i>Molinia arundinacea</i>	E1	.	.	.	.	.	.	.	.
VP	Vaccinio-Piceetea									
	<i>Homogyne sylvestris</i>	E1	.	.	.	.	.	.	.	.
	<i>Clematis alpina</i>	E1	.	.	.	.	.	.	.	.
	<i>Veronica urticifolia</i>	E1	.	.	.	.	.	.	.	.
AF	Aremonio-Fagion									
	<i>Anemone trifolia</i>	E1	.	.	.	.	.	.	.	.
	<i>Cyclamen purpurascens</i>	E1	.	.	.	.	.	.	.	.
	<i>Cardamine enneaphyllos</i>	E1	.	.	.	.	.	.	.	.
	<i>Cardamine trifolia</i>	E1	.	.	.	.	.	.	.	.
TA	Tilio-Acerion									
	<i>Acer pseudoplatanus</i>	E1	.	.	.	.	r	.	.	.
	<i>Aruncus dioicus</i>	E1	.	.	.	.	.	.	.	.
	<i>Thalictrum aquilegifolium</i>	E1	.	.	.	.	.	.	.	.
FS	Fagetalia sylvaticae									
	<i>Galeobdolon flavidum</i>	E1	.	.	.	.	.	.	.	.
	<i>Fagus sylvatica</i>	E1	.	.	.	.	.	.	.	.
	<i>Galium laevigatum</i>	E1	.	.	.	.	.	.	.	.
	<i>Mycelis muralis</i>	E1	.	.	.	.	.	.	.	.
	<i>Salvia glutinosa</i>	E1	.	.	.	.	.	.	.	.
QP	Quercetalia pubescentis									
	<i>Fraxinus ornus</i>	E1	.	.	.	.	.	.	.	.
	<i>Ostrya carpinifolia</i>	E2a	.	.	.	.	.	.	.	.
QF	Quercu-Fagetea									
	<i>Carex digitata</i>	E1	.	.	.	.	.	.	.	.
	<i>Hepatica nobilis</i>	E1	.	.	.	.	.	.	.	.
	<i>Carex umbrosa</i>	E1	.	.	.	.	r	.	.	.
ML	Mosses and lichens (Mahovi in lišaji)									
	<i>Ctenidium molluscum</i>	E0	+	.	.	.	+	.	.	.
	<i>Neckera crispa</i>	E0	.	.	.	+	.	.	.	.
	<i>Tortella tortuosa</i>	E0	.	.	.	.	.	.	.	+
	<i>Brachythecium rutabulum</i>	E0	.	.	.	.	.	.	.	.
	<i>Plagiopus oederi</i>	E0	+	.	.	.	.	.	+	.
	<i>Bryum</i> sp.	E0	.	.	.	.	.	1	.	.
	<i>Lescuraea plicata</i>	E0	.	.	.	.	.	.	+	.
	<i>Dicranum scoparium</i>	E0	.	.	.	.	.	.	+	.
	<i>Marchantia polymorpha</i>	E0	.	.	.	.	.	.	.	.
	<i>Schistidium apocarpum</i>	E0	.	.	.	.	.	.	.	.
	<i>Pedinophyllum interruptum</i>	E0	.	.	.	.	.	.	.	.
	<i>Plagiochila porelloides</i>	E0	.	.	.	.	.	.	.	.

Legend / Legenda

- D Dolomite – dolomit
- L Limestone – apnenec
- Li Lithosol – kamnišče
- Pr. Presence (number of relevés in which the species is presented) – število popisov, v katerih se pojavlja vrsta
- Fr. Frequency in % – frekvenca v %

10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	Pr.	Fr.
.	1	4
.	1	4
.	1	4
+	1	4
.	r	.	.	.	.	.	.	.	.	.	.	.	1	4
.	1	1	4
+	r	.	.	.	.	.	+	.	r	.	.	.	.	.	.	.	.	4	15
.	+	.	.	+	2	.	.	+	.	4	15
.	1	1	4
+	+	2	7
.	+	+	2	7
.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
.	+	.	.	.	1	4
.	r	.	.	.	.	.	.	.	.	2	7
.	+	1	4
.	+	1	4
.	+	+	+	3	11
r	+	2	7
.	+	+	2	7
.	+	+	2	7
.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4
.	+	.	+	2	7
.	.	.	+	1	4
1	r	+	.	.	.	r	.	.	r	+	.	+	+	.	+	.	.	9	33
.	2	+	.	.	.	2	7
.	1	4
+	+	.	1	1	+	1	1	.	1	.	+	.	+	1	1	.	.	14	52
1	+	1	1	1	+	1	.	1	+	.	.	.	1	.	.	.	.	11	41
.	.	.	.	+	.	1	.	+	2	+	.	+	1	.	.	1	.	9	33
.	1	1	2	3	11
.	2	7
.	1	4
.	1	4
.	1	4
.	.	.	+	1	4
.	.	.	.	+	1	4
.	+	1	4
.	+	1	4

Table 7 (Tabela 7): *Phyteum* s-*Primuletum carniolicae potentilletosum caulescentis*.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Pr.	Fr.
Number of relevé (Zaporedna številka popisa)	228717	244377	246923	247018	275606	246607	269206	269310	255778	278001	278002	278004	275371	277987	278020	278018		
Database number of relevé (Delovna številka popisa)																		
Elevation in m (Nadmorska višina v m)	100	950	1050	1050	670	470	543	485	510	670	670	665	660	710	730	720		
Aspect (Lega)	N	NE	NE	NE	SEE	NE	NE	NEE	N	NE	NE	NNE	NNE	NEE	D	N		
Slope in degrees (Nagib v stopinjah)	100	80	80	80	80	80	70	90	80	85	80	80	90	90	90	95		
Parent material (Matična podlaga)	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		
Stoniness in % (Kamnitost v %)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100		
Cover of herb layer in % (Zastiranje zeliščne plasti v %): E1	30	25	20	20	30	30	30	30	35	35	25	30	30	20	25	20		
Cover of moss layer in % (Zastiranje mahovne plasti v %): E0	30	5	5	5	30	5	10	10	10	20	5	10	10	5	5	5		
Number of species (Število vrst)	27	12	13	15	21	19	19	17	23	29	26	31	23	18	15	13		
Relevé area (Velikost popisne ploskve)	10	5	12	12	15	10	10	5	5	15	15	15	15	10	15	15		
	m ²																	
Date of taking relevé (Datum popisa)	4/22/2004	8/10/2012	7/1/1998	7/1/1998	5/16/2019	5/4/2011	4/7/2017	11/18/2017	5/14/2002	4/29/2019	4/29/2019	4/29/2019	4/29/2019	7/12/2019	4/29/2019	4/29/2019		
Locality (Nahajališče)	Straza (Idrija)	Poldanovec	Hudournik	Hudournik	Gorenja Trebuša - Drnlik	Šebrelje - Sv. Ivan	Orehovska grapa - Nemci	Šebrelje - Sv. Ivan	Skopica - Vučja grapa	Gorenja Trebuša - Drnlik	Gorenja Trebuša - Drnlik	Gorenja Trebuša - Drnlik	Drnlik - Kobilica	Gorenja Trebuša - Drnlik	Gorenja Trebuša - Drnlik	Gorenja Trebuša - Drnlik		
Quadrant (Kvadrant)																		
Coordinate GKY (D-48)																		
Coordinate GKX (D-48)																		

		Number of relevé (Zaporedna številkka popisa)																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Pr.	Fr.
TR	<i>Thlaspietea rotundifolii</i>																		
	<i>Hieracium bifidum</i>	E1	.	r	.	.	1	.	.	.	.	.	.	+	+	+	+	6	38
	<i>Gymnocarpium robertianum</i>	E1	.	.	.	+	.	.	.	.	.	+	.	.	.	.	.	3	19
	<i>Aquilegia iulia</i>	E1	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	1	6
	<i>Campanula cochlearifolia</i>	E1	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	1	6
	<i>Hieracium porrifolium</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1	6
MC	Montio-Cardaminetea																		
	<i>Campylyium stellatum</i>	E0	+	.	.	.	.	.	.	.	.	.	.	+	.	.	.	2	13
	<i>Bryum pseudotriquetrum</i>	E0	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	6
	<i>Oxyrrhynchium bians</i>	E0	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	6
	<i>Cratoneuron filicinum</i>	E0	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	6
	<i>Cololejeunea calcareo</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	6
ES	Elyno-Seslerietea																		
	<i>Sesleria caerulea</i>	E1	1	r	1	1	1	+	2	1	2	1	1	1	+	.	+	15	94
	<i>Carex mucronata</i>	E1	.	.	.	.	1	1	1	1	+	1	+	.	.	.	+	9	56
	<i>Betonica alopecuros</i>	E1	.	.	.	.	.	.	.	r	.	r	+	.	.	.	.	4	25
	<i>Aster bellidiastrum</i>	E1	1	+	.	.	.	.	.	.	.	.	.	.	.	.	.	3	19
	<i>Gentiana clusii</i>	E1	.	.	.	.	.	.	.	.	+	r	.	1	.	.	.	3	19
	<i>Phyteuma orbiculare</i>	E1	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	19
	<i>Hieracium villosum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	13
	<i>Carex firma</i>	E1	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	1	6
	<i>Globularia cordifolia</i>	E1	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	1	6
FB	Festuco-Brometea																		
	<i>Carex humilis</i>	E1	.	.	.	.	+	.	.	.	.	.	+	.	.	.	.	2	13
	<i>Bupthalmum salicifolium</i>	E1	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	1	6
BA	Betulo-Alnetea																		
	<i>Salix appendiculata</i>	E1	+	.	.	.	.	.	.	r	.	+	.	.	.	+	2	7	44
	<i>Salix glabra</i>	E1	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	2	13
RP	Rhamno-Prunetea																		
	<i>Juniperus communis</i>	E2a	.	.	.	.	.	.	.	.	.	r	.	.	.	.	.	1	6
TG	Trifolio-Geranietea																		
	<i>Lasertium siler</i>	E1	.	.	.	.	.	.	.	+	r	+	.	.	.	.	.	4	25
	<i>Thesium bavarum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	6
	<i>Viola hirta</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	6

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Fr.	
Number of relevé (Zaporedna številkla popisa)																			
EP	Erico-Pinetea																		
	<i>Erica carnea</i>	E1	.	.	.	r	+	+	+	+	+	+	+	+	+	.	.	11	69
	<i>Rhododendron hirsutum</i>	E1	+	.	.	.	+	+	+	+	+	+	+	+	+	+	.	9	56
	<i>Calamagrostis varia</i>	E1	1	r	+	+	.	.	.	.	+	.	.	.	+	.	.	8	50
	<i>Polygala chamaebuxus</i>	E1	+	.	.	.	+	+	+	+	+	+	+	2	.	.	.	8	50
	<i>Asperula aristata</i>	E1	.	.	.	.	.	.	.	.	.	.	.	+	1	+	.	3	19
	<i>Leontodon incanus</i>	E1	.	.	.	.	.	.	.	.	r	r	.	+	.	.	3	19	
	<i>Rhodothamnus chamaecistus</i>	E1	.	.	.	.	.	.	.	.	+	+	.	.	.	.	2	13	
	<i>Amelanchier ovalis</i>	E1	.	.	.	.	.	.	.	.	r	.	.	.	.	.	1	6	
	<i>Aquilegia nigricans</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	6	
	<i>Genista janauensis</i>	E1	.	.	.	.	.	.	.	.	r	.	.	.	.	.	1	6	
	<i>Molinia arundinacea</i>	E1	.	.	.	.	.	.	.	.	r	.	.	.	.	.	1	6	
	<i>Pinus nigra</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	6	
VP	Vaccinio-Piceetea																		
	<i>Clematis alpina</i>	E1	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	2	13
	<i>Hieracium murorum</i>	E1	+	.	.	.	.	.	r	.	.	.	.	.	.	.	.	2	13
	<i>Veronica urticifolia</i>	E1	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	6
AF	Aremonio-Fagion																		
	<i>Cyclamen purpurascens</i>	E1	.	.	.	.	.	+	.	.	.	+	.	.	.	.	.	3	19
	<i>Helleborus niger</i>	E1	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	1	6
	<i>Primula vulgaris</i>	E1	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	1	6
FS	Fagetalia sylvaticae																		
	<i>Fagus sylvatica</i>	E1	.	.	.	.	.	.	r	.	.	.	r	.	.	.	.	2	13
	<i>Myrcelis muralis</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	6
QP	Quercetalia pubescenti-petraeae																		
	<i>Ostrya carpinifolia</i>	E1	+	.	.	.	.	+	.	.	.	r	+	+	.	.	+	8	50
	<i>Fraxinus ornus</i>	E1	.	.	.	.	.	.	+	r	r	r	.	.	+	.	.	6	38
	<i>Mercurialis ovata</i>	E1	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	4	25
	<i>Melittis melissophyllum</i>	E1	.	.	.	.	.	.	.	.	.	.	r	.	.	.	.	1	6
QF	Quereco-Fagetea																		
	<i>Carex digitata</i>	E1	.	.	.	.	.	+	.	.	.	.	+	.	.	.	.	3	19
	<i>Hedera helix</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	r	.	1	6
	<i>Hepatica nobilis</i>	E1	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	1	6

Number of relevés (Zaporedna številkna popisa)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Pr.	Fr.	
ML	Mosses and lichens (Mahovi in lišaji)																			
	<i>Ctenidium molluscum</i>	E0	1	.	.	.	.	+	+	.	+	.	.	1	.	.	.	8	50
	<i>Tortella tortuosa</i>	E0	.	+	.	.	.	+	.	.	.	.	.	+	.	.	.	6	38
	<i>Neckera crispa</i>	E0	.	.	.	.	+	1	1	.	.	.	.	.	.	.	.	4	25
	<i>Pedinophyllum interruptum</i>	E0	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	6
	<i>Trichostomum crispulum</i>	E0	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	6
	<i>Anomodon attenuatus</i>	E0	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	6
	<i>Plagiommium rostratum</i>	E0	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	6
	<i>Encalyptia streptocarpa</i>	E0	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	6
	<i>Anomodon viticulosus</i>	E0	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	6
	<i>Homalothecium sericeum</i>	E0	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	1	6
	<i>Neckera complanata</i>	E0	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	1	6
	<i>Lichenes div.</i>	E0	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	1	6
	<i>Dicranodontium denudatum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	6
	<i>Schistidium apocarpum</i>	E0	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	1	6

Legend / Legenda

- D Dolomite – dolomit
- Li Lithosol – kamnišče
- Pr. Presence (number of relevés in which the species is presented) – število popisov, v katerih se pojavlja vrsta
- Fr. Frequency in % – frekvenca v %

Table 8 (Tabela 8): *Primula carniolicae*-*Potentilletum clusianae*.

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	Pr.	Fr.
Database number of relevé (Delovna številka popisa)		236342	234471	246510	236341	236351	236350		
Elevation in m (Nadmorska višina v m)		1320	1280	1170	1330	1325	1320		
Aspect (Lega)		NW	NW	NE	NW	NW	NE		
Slope in degrees (Nagib v stopinjah)		90	90	85	90	90	90		
Parent material (Matična podlaga)		D	D	D	D	D	D		
Soil (Tla)		Li	Li	Li	Li	Li	Li		
Stoniness in % (Kamnitost v %)		100	100	100	70	70	100		
Cover of herb layer in % (Zastiranje zeliščne plasti v %):	E1	30	30	30	30	30	30		
Cover of moss layer in % (Zastiranje mahovne plasti v %)	E0	5	5	5	5	5	5		
Number of species (Število vrst)		13	21	23	18	21	22		
Relevé area (Velikost popisne ploskve)	m ²	2	10	10	5	3	10		
Date of taking relevé (Datum popisa)		7/31/2010	8/27/2004	5/11/2011	8/4/2010	8/4/2010	8/4/2010		
Locality (Nahajališče)		Zeleni rob	Zeleni rob	Poldan-ovec	Zeleni rob	Zeleni rob	Zeleni rob		
Quadrant (Kvadrant)		9949/3	9949/3	9949/3	9949/3	9949/3	9949/3		
Coordinate GK Y (D-48)	m	411517	411773	410299	411442	411445	411512		
Coordinate GK X (D-48)	m	5095832	5095846	5096834	5095838	5095850	5095836		
Diagnostic species of the association (Diagnostične vrste asociacije)								Pr.	Fr.
PC	<i>Potentilla clusiana</i>	E1	+	1	1	2	1	+	6 100
AP	<i>Primula carniolica</i>	E1	+	+	+	1	1	1	6 100
ES	<i>Carex firma</i>	E1	+	1	1	+	+	+	6 100
EP	<i>Rhodothamnus chamaecistus</i>	E1	+	1	1	+	+	+	6 100
PC	<i>Campanula cochlearifolia</i>	E1	+	r	.	+	+	1	5 83
TR	<i>Hladnikia pastinacifolia</i>	E1	.	+	+	r	.	.	3 50
TR	<i>Aquilegia iulia</i>	E1	.	.	+	.	r	+	3 50
ES	<i>Hieracium pilosum</i>	E1	.	.	.	+	+	+	3 50
AP	<i>Cystopteridion</i> s. lat. (<i>Astrantio-Paederotion luteae</i> nom. prov.)								
	<i>Paederota lutea</i>	E1	1	+	.	+	1	2	5 83
	<i>Valeriana saxatilis</i>	E1	.	r	+	+	+	+	5 83
	<i>Astrantia carniolica</i>	E1	r	+	.	.	+	+	4 67
	<i>Viola biflora</i>	E1	+	.	.	r	+	1	4 67
	<i>Tofieldia calyculata</i>	E1	.	r	.	.	+	.	2 33
	<i>Carex brachystachys</i>	E1	.	.	.	r	.	+	2 33
	<i>Orthothecium rufescens</i>	E0	.	.	.	.	+	1	2 33
	<i>Pinguicula alpina</i>	E1	.	+	.	.	.	.	1 17
	<i>Ranunculus traunfellneri</i>	E1	1	.	.	.	.	.	1 17
	<i>Soldanella minima</i>	E1	+	.	.	.	.	.	1 17
	<i>Primula x venusta</i>	E1	.	.	r	.	.	.	1 17
	<i>Cystopteris fragilis</i>	E1	.	.	.	.	.	1	1 17

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	Pr.	Fr.
PcSp	<i>Physoplexido comosae-Saxifragion petraeae</i>								
	<i>Phyteuma scheuchzeri</i> subsp. <i>columnae</i>	E1	.	.	+	+	1	3	50
	<i>Saxifraga squarrosa</i>	E1	.	+	+	.	.	2	33
PC	<i>Potentilletalia caulescentis</i>								
	<i>Bupleurum petraeum</i>	E1	.	.	.	1	1	2	33
	<i>Primula auricula</i>	E1	.	.	1	.	.	1	17
	<i>Rhamnus pumilus</i>	E1	.	.	+	.	.	1	17
AT	<i>Asplenieta trichomanis</i>								
	<i>Valeriana tripteris</i>	E1	.	.	.	.	+	1	17
TR	<i>Thlaspietea rotundifolii</i>								
	<i>Adenostyles glabra</i>	E1	.	.	.	.	r	1	17
	<i>Hieracium bifidum</i>	E1	.	.	.	.	r	1	17
MC	<i>Montio-Cardaminetea</i>								
	<i>Distichium capillaceum</i>	E0	.	+	.	.	.	1	17
ES	<i>Elyno-Seslerietea</i>								
	<i>Sesleria caerulea</i>	E1	r	1	1	2	1	6	100
	<i>Aster bellidiasstrum</i>	E1	+	.	.	.	+	3	50
	<i>Carex mucronata</i>	E1	.	.	+	+	+	3	50
	<i>Laserpitium peucedanoides</i>	E1	.	.	r	+	+	3	50
	<i>Hieracium pilosum</i>	E1	.	.	.	+	+	3	50
	<i>Hieracium villosum</i>	E1	.	r	.	.	.	1	17
	<i>Leontopodium alpinum</i>	E1	.	.	+	.	.	1	17
	<i>Dryas octopetala</i>	E1	.	.	+	.	.	1	17
	<i>Gentiana clusii</i>	E1	.	.	r	.	.	1	17
BA	<i>Betulo-Alnetea</i>								
	<i>Salix appendiculata</i>	E1	.	r	r	.	.	2	33
	<i>Salix glabra</i>	E1	.	+	+	.	.	2	33
EP	<i>Erico-Pinetea</i>								
	<i>Rhododendron hirsutum</i>	E1	.	+	+	.	+	4	67
	<i>Pinus nigra</i>	E1	.	.	r	.	.	1	17
ML	Mosses (Mahovi)								
	<i>Neckera crispa</i>	E0	.	+	+	1	.	3	50
	<i>Tortella tortuosa</i>	E0	.	+	+	+	+	5	83
	<i>Ctenidium molluscum</i>	E0	+	+	.	.	.	2	83

Legend / Legenda

D Dolomite – dolomit

Li Lithosol – kamnišče

Pr. Presence (number of relevés in which the species is presented) – število popisov, v katerih se pojavlja vrsta

Fr. Frequency in % – frekvenca v %

Table 9: Synoptic table of rock crevice communities with *Primula carniolica*.

Tabela 9: Sintezna tabela združb skalnih razpok z vrsto *Primula carniolica*.

Successive number (Zaporedna številka)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Sign for syntaxa (Oznaka sintaksonov)	AcPa	AcPc	PhcPc-ac	PhcPc-ry	PcPc-CT	PcPc-TG	PcTy	Pccb	Pcwb	Pc-No	Pc-Do	PC-Ntp	Pc-lv	PcPc-As	PhPc-pc	
Author (Avtor)	IDAM	IDAM	IDAM	IDAM	IDAM	ID	MA	MA	ID	IDBD	IDBDBV	BDBV	BDID	MA	ID	
Number of relevés (Število popisov)	19	56	27	73	16	8	28	10	15	6	14	5	7	9	6	
<i>Cystopteridion</i> s. lat. (<i>Astrantio carniolicae-Paederotium luteae</i> nom. prov.)																
<i>Pinguicula alpina</i>	E1	100	86	41	.	.	50	7	.	60	33	14	40	71	.	17
<i>Hymenostylium recurvirostre</i>	E0	84	77	11	8	6	.	.	.	20	.	7	.	.	.	.
<i>Palustriella commutata</i>	E0	74	89	4	1	.	.	.	.	7	.	.	.	.	.	.
<i>Aster bellidiastrum</i>	E1	58	43	85	45	19	88	7	20	93	83	43	60	100	.	50
<i>Tofieldia calyculata</i>	E1	58	54	37	16	6	38	4	40	20	17	14	60	43	.	33
<i>Astrantia carniolica</i>	E1	58	88	67	.	.	38	.	.	7	.	.	.	.	.	67
<i>Orthothecium rufescens</i>	E0	47	84	70	56	56	38	50	40	100	50	29	.	.	.	33
<i>Paederota lutea</i>	E1	26	39	100	74	94	100	100	100	20	67	29	80	86	100	83
<i>Saxifraga aizoides</i>	E1	21	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Carex brachystachys</i>	E1	16	32	48	45	50	.	4	50	47	33	7	20	43	.	33
<i>Preissia quadrata</i>	E0	16	29	4	12	19	.	.	.	.	.	.	.	.	.	.
<i>Barbula crocea</i>	E0	16	9	7	10	6	.	.	.	.	.	.	.	.	.	.
<i>Pellia endiviifolia</i>	E0	16	5	11	3	6	.	.	.	.	7	.	.	.	.	.
<i>Valeriana saxatilis</i>	E1	5	43	81	32	56	75	29	70	7	.	.	.	.	33	83
<i>Fissidens dubius</i>	E0	5	9	22	27	25	38	29	10	7	.	36	20	.	.	.
<i>Eucladium verticillatum</i>	E0	5	7	.	.	6	.	.	.	.	.	.	.	.	.	.
<i>Selaginella helvetica</i>	E1	5	.	.	3	.	.	.	.	.	.	.	.	.	.	.
<i>Primula carniolica</i>	E1	.	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<i>Asplenium viride</i>	E1	.	21	59	40	6	13	11	70	60	50	36	80	29	.	.
<i>Valeriana tripteris</i>	E1	.	11	37	49	.	.	18	30	53	83	64	80	71	.	17
<i>Viola biflora</i>	E1	.	7	93	16	.	.	.	.	100	.	.	.	14	.	67
<i>Soldanella minima</i>	E1	.	2	11	.	.	.	.	.	.	.	.	.	.	.	17
<i>Moebria muscosa</i>	E1	.	2	.	8	.	.	.	.	7	33	36	20	29	.	.
<i>Cystopteris fragilis</i>	E1	.	.	26	12	.	.	.	.	53	33	14	60	.	.	17
<i>Cystopteris regia</i>	E1	.	.	11	.	.	.	.	.	.	.	.	.	.	.	.
<i>Heliosperma pusillum</i>	E1	.	.	4	.	.	.	.	.	.	.	.	.	.	.	.
<i>Solorina saccata</i>	E0	.	.	4	.	.	.	7	.	.	.	.	.	.	.	.
<i>Primula x venusta</i>	E1	.	.	.	4	19	.	.	.	.	.	.	.	.	.	17
<i>Heliosperma veselskyi</i> subsp. <i>veselskyi</i>	E1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Collema fuscovirens</i>	E0	.	.	.	.	.	.	21	.	.	.	.	.	.	56	.
<i>Ranunculus traunfellneri</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17
<i>Physoplexido comosae-Saxifragion petraeae</i>																
<i>Campanula cespitosa</i>	E1	47	27	7	15	25	.	.	10	20	.	29	20	.	.	.
<i>Phyteuma scheuchzeri</i> subsp. <i>columnnae</i>	E1	11	48	81	100	100	88	.	.	7	.	.	.	.	.	50
<i>Micromeria thymifolia</i>	E1	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Hieracium pospichalii</i>	E1	.	4	.	.	.	.	.	.	.	.	20	.	.	.	.
<i>Athamanta turbith</i>	E1	.	.	.	5	6	38	.	.	.	.	.	.	.	.	.
<i>Saxifraga squarrosa</i>	E1	.	.	.	.	.	25	.	.	.	.	.	.	.	.	33
<i>Silene hayekiana</i>	E1	.	.	.	.	.	.	.	.	.	.	20	.	.	.	.

Successive number (Zaporedna številka)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Potentilletalia caulescentis															
<i>Potentilla caulescens</i>	E1	16	21	15	10	75	88	14	.	.	.	100	.	100	.
<i>Kernera saxatilis</i>	E1	.	4	4	7	19	.	.	.	.	.	.	.	22	.
<i>Primula auricula</i>	E1	.	.	.	1	25	.	.	.	.	.	.	.	.	17
<i>Rhamnus pumilus</i>	E1	.	.	.		6	13	.	10	.	.	7	.	29	78
<i>Campanula cochleariifolia</i>	E1	.	.	.		6	25	.	.	.	.	.	.	.	83
<i>Asplenium seelosii</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	33	.
<i>Potentilla clusiana</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	100
<i>Bupleurum petraeum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	33
Asplenetea trichomanis															
<i>Asplenium trichomanes</i>	E1	11	14	37	56	63	25	25	50	60	83	64	20	57	22
<i>Asplenium ruta-muraria</i>	E1	.	11	41	67	50	38	25	80	73	100	71	60	71	56
<i>Hieracium glaucum</i>	E1	.	.	.	3	13	.	.	.	.	.	.	.	.	.
<i>Erysimum sylvestre</i>	E1	.	.	.	.	.	.	.	.	.	.	7	.	.	.
Thlaspietea rotundifolii															
<i>Petasites paradoxus</i>	E1	37	2	.	.	.	.	.	.	.	.	.	.	.	.
<i>Achnatherum calamagrostis</i>	E1	11	2	.	.	.	.	.	.	.	.	.	.	.	.
<i>Adenostyles glabra</i>	E1	11	13	33	3	.	25	4	10	.	.	.	.	.	17
<i>Hieracium bifidum</i>	E1	11	18	26	48	38	50	.	10	40	33	57	60	57	17
<i>Hieracium porrifolium</i>	E1	5	2	.	5	6	25	.	.	.	.	7	.	.	.
<i>Gymnocarpium robertianum</i>	E1	.	9	4	12	19	.	.	.	7	33	14	40	.	.
<i>Aquilegia iulia</i>	E1	.	.	4	1	6	13	.	.	.	.	.	.	.	50
<i>Dryopteris villarii</i>	E1	.	.	7	1	.	.	.	.	.	.	.	.	.	.
<i>Saxifraga caesia</i>	E1	.	.	.	.	.	13	.	.	.	.	.	.	.	.
<i>Hladnikia pastinacifolia</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	50
Caricetalia davallianae															
<i>Carex lepidocarpa</i>	E1	21	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Parnassia palustris</i>	E1	.	5	4	.	.	.	.	.	.	.	.	.	.	.
<i>Schoenus nigricans</i>	E1	.	5	.	.	.	.	.	.	.	.	.	.	.	.
Montio-Cardaminetea															
<i>Conocephalum conicum</i>	E0	11	32	48	25	.	13	.	.	80	67	14	.	.	.
<i>Bryum pseudotriquetrum</i>	E0	11	4	.	.	6	.	.	.	.	.	.	.	.	.
<i>Cratoneuron filicinum</i>	E0	5	4	.	.	6	.	.	.	.	.	.	.	.	.
<i>Campylium stellatum</i>	E0	.	7	4	1	13	.	.	.	13	.	.	.	.	.
<i>Distichium capillaceum</i>	E0	.	2	4	7	.	.	.	.	.	.	.	.	.	17
<i>Ditrichum flexicaule</i>	E0	.	2	.	1	.	.	.	.	.	.	.	.	.	.
<i>Campylium calcareum</i>	E0	.	2	.	.	.	.	.	.	.	.	.	.	.	.
<i>Campylium elodes</i>	E0	.	2	.	.	.	.	.	.	.	.	.	.	.	.
<i>Cololejeunea calcarea</i>	E0	.	.	.	1	6	.	.	.	.	.	.	.	.	.
<i>Oxyrrhynchium hians</i>	E0	.	.	.	.	6	.	.	.	20	.	.	.	.	.
<i>Oxyrrhynchium schleicheri</i>	E0	.	.	.	.	.	.	.	.	13	.	.	.	.	.
Elhyno-Seslerietea															
<i>Sesleria caerulea</i>	E1	68	61	59	53	94	100	75	100	20	33	29	40	43	89
<i>Carex mucronata</i>	E1	11	38	11	14	56	75	11	100	.	.	.	20	.	100
<i>Phyteuma orbiculare</i>	E1	.	9	4		19	.	4	10	.	17	.	.	14	.
<i>Carex ferruginea</i>	E1	.	7	11	3	.	13	.	.	.	.	.	.	.	.
<i>Carex firma</i>	E1	.	4	7		6	38	.	.	.	.	.	.	.	100
<i>Betonica alopecuroides</i>	E1	.	2	.	5	25	.	7	10	.	.	.	.	14	.
<i>Laserpitium peucedanoides</i>	E1	.	2	15	1	.	38	11	10	.	.	.	.	29	50
<i>Campanula witasekiana</i>	E1	.	.	4	.	.	.	.	.	.	.	.	.	.	.

Successive number (Zaporedna številka)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<i>Carduus crassifolius</i>	E1	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.
<i>Gentiana clusii</i>	E1	.	.	.	1	19	.	.	.	.	.	.	.	.	.	17
<i>Hieracium villosum</i>	E1	.	.	.		13	.	.	.	.	17	.	.	.	.	17
<i>Leontopodium alpinum</i>	E1	.	.	.	.	.	13	.	.	.	.	.	.	.	.	17
<i>Dryas octopetala</i>	E1	.	.	.	.	.	13	.	.	.	.	.	.	.	.	17
<i>Ranunculus carinthiacus?</i>	E1	.	.	.	.	.	13	.	.	.	.	.	.	.	.	.
<i>Hieracium pillosum</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	50
Festuco-Brometea																
<i>Bupthalmum salicifolium</i>	E1	.	4	.	3	6	.	.	10	13	.	7	20	29	11	.
<i>Galium lucidum</i>	E1	.	2	.	1	.	.	.	10	.	.	14	.	.	.	.
<i>Carex humilis</i>	E1	.	.	.	4	13	.	4	10	.	.	.	.	.	.	.
<i>Brachypodium rupestre</i>	E1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Linum catharticum</i>	E1	.	.	.	.	.	13	.	.	.	.	.	.	.	.	.
<i>Globularia punctata</i>	E1	.	.	.	.	.	.	4	.	.	.	.	.	.	.	.
<i>Campanula rotundifolia</i>	E1	.	.	.	.	.	.	.	10	.	.	.	.	.	.	.
<i>Sanguisorba minor</i>	E1	.	.	.	.	.	.	.	.	.	.	.	20	.	.	.
Molinio-Arrhenatheretea, Calthion																
<i>Angelica sylvestris</i>	E1	5	.	.	4	.	.	.	.	.	.	.	.	.	.	.
<i>Pimpinella major</i>	E1	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Caltha palustris</i>	E1	.	2	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Cirsium oleraceum</i>	E1	.	2	.	.	.	.	.	.	.	.	.	.	14	.	.
<i>Taraxacum x Ruderalia</i>	E1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Euphorbia villosa</i>	E1	.	.	.	.	.	.	.	.	.	.	.	.	14	.	.
Trifolio-Geranietea																
<i>Laserpitium siler</i>	E1	.	4	.	3	25	.	.	.	.	.	7	.	14	11	.
<i>Laserpitium latifolium</i>	E1	.	2	.	1	.	.	.	.	.	.	7	20	14	.	.
<i>Digitalis grandiflora</i>	E1	.	.	4	.	.	.	.	.	.	.	.	.	14	.	.
<i>Viola hirta</i>	E1	.	.	.	3	6	.	.	10	.	17	.	.	.	.	.
<i>Anthericum ramosum</i>	E1	.	.	.	1	.	.	.	.	.	.	7	.	.	.	.
<i>Thalictrum minus</i>	E1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Thesium bavarum</i>	E1	.	.	.		6	.	.	.	.	.	.	.	.	.	.
<i>Vincetoxicum hirundinaria</i>	E1	.	.	.	.	.	.	.	.	.	.	14	.	.	11	.
Betulo-Alnetea																
<i>Salix appendiculata</i>	E1	21	13	7	7	44	25	4	10	13	17	21	40	43	.	33
<i>Salix glabra</i>	E1	.	11	.	3	13	63	.	.	.	.	.	.	.	.	33
Mulgedio-Aconitetea																
<i>Chaerophyllum hirsutum</i>	E1	5	4	7	.	.	.	.	.	.	.	.	.	.	.	.
<i>Crepis paludosa</i>	E1	5	2	4	.	.	.	.	.	.	.	14	.	.	.	.
<i>Petasites hybridus</i>	E1	5	.	.	.	.	.	.	.	7	.	.	.	14	.	.
<i>Veratrum album</i>	E1	.	.	4	.	.	.	.	.	.	.	.	20	.	.	.
<i>Senecio ovatus</i>	E1	.	.	.	5	.	.	.	.	.	.	7	40	.	.	.
<i>Aconitum degenii</i> subsp. <i>paniculatum</i>	E1	.	.	.	1	.	.	.	.	.	17	7	.	.	.	.
<i>Ranunculus platanifolius</i>	E1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Saxifraga rotundifolia</i>	E1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Athyrium filix-femina</i>	E1	.	.	.	.	.	.	.	.	.	17	.	20	.	.	.
<i>Centaurea montana</i>	E1	.	.	.	.	.	.	.	.	.	.	.	20	.	.	.
Epilobietea angustifolii																
<i>Eupatorium cannabinum</i>	E1	5	5	.	.	.	.	.	.	.	.	.	.	14	.	.
<i>Urtica dioica</i>	E1	.	.	.	.	.	.	.	.	.	17	.	.	.	.	.

Successive number (Zaporedna številka)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Sambuco-Salicion capreae, Rhamno-Prunetea															
<i>Rubus idaeus</i>	E1	.	.	4	1	.	.	.	.	.	.	.	.	.	.
<i>Juniperus communis</i> (inc. <i>J. intermedia</i>)	E2a	.	.	.	.	6	.	.	20	.	.	14	.	.	.
<i>Salix caprea</i>	E1	.	.	.	.	.	.	.	.	.	.	20	.	.	.
<i>Sorbus aucuparia</i>	E2a	.	.	.	.	.	.	.	.	.	.	20	.	.	.
<i>Viburnum lantana</i>	E2a	.	.	.	.	.	.	.	.	.	.	.	14	.	.
Erico-Pinetea															
<i>Molinia arundinacea</i>	E1	58	43	4	1	6	.	4	.	7	.	.	29	.	.
<i>Calamagrostis varia</i>	E1	37	32	33	32	50	13	.	.	67	50	50	.	29	.
<i>Erica carnea</i>	E1	16	21	4	14	69	25	36	70	7	17	36	60	.	11
<i>Carex ornithopoda</i>	E1	11	5	.	5	.	.	11	20	.	.	29	.	.	11
<i>Leontodon incanus</i>	E1	11	.	.	1	19	.	.	.	.	7	.	14	.	.
<i>Gymnadenia odoratissima</i>	E1	5	.	.	.	.	13	.	.	.	.	.	.	.	.
<i>Rhododendron hirsutum</i>	E1	.	11	33	26	56	38	21	40	13	.	14	20	43	.
<i>Rhodothamnus chamaecistus</i>	E1	.	7	19	1	13	75	.	.	.	.	.	.	.	100
<i>Aquilegia nigricans</i>	E1	.	4	4	1	6	.	.	.	.	7	20	.	.	.
<i>Cirsium erisithales</i>	E1	.	2	4	3	.	.	.	.	.	.	.	14	.	.
<i>Polygala chamaebuxus</i>	E1	.	2	4	5	50	13	7	30	.	.	.	.	22	.
<i>Pinus nigra</i>	E1	.	.	4	.	6	.	.	10	.	.	.	.	.	17
<i>Rubus saxatilis</i>	E1	.	.	.	5	.	.	.	.	.	.	.	29	.	.
<i>Carex alba</i>	E1	.	.	.	4	.	.	7	.	.	17	29	.	.	.
<i>Amelanchier ovalis</i>	E1	.	.	.	1	6	25	.	40	.	.	.	20	.	11
<i>Pinus sylvestris</i>	E2a	.	.	.	1	.	.	.	.	.	.	.	.	14	.
<i>Aster amellus</i>	E1	.	.	.	1	.	.	.	.	.	.	.	.	.	.
<i>Asperula aristata</i>	E1	.	.	.	.	19	13	.	.	.	.	.	.	.	.
<i>Globularia cordifolia</i>	E1	.	.	.	.	6	13	4	10	.	17	.	.	.	11
<i>Genista janauensis</i>	E1	.	.	.	.	6	.	.	.	.	.	.	.	.	.
<i>Allium ericetorum</i>	E1	.	.	.	.	.	.	.	10	.	.	.	.	.	.
<i>Cotoneaster tomentosus</i>	E1	.	.	.	.	.	.	.	10	.	.	.	.	.	.
<i>Chamaecytisus hirsutus</i>	E1	.	.	.	.	.	.	.	.	.	7	.	.	.	.
<i>Euphrasia cuspidata</i> ?	E1	.	.	.	.	.	.	.	.	.	.	.	.	22	.
Vaccinio-Piceetea															
<i>Picea abies</i>	E1	5	2	.	3	.	13	18	.	.	17	21	40	71	.
<i>Veronica urticifolia</i>	E1	5	7	4	18	6	.	.	.	73	50	.	.	.	.
<i>Solidago virgaurea</i>	E1	.	4	.	4	.	.	.	.	.	.	.	.	.	.
<i>Aposeris foetida</i>	E1	.	2	.	1	.	.	.	.	7	.	.	20	.	.
<i>Gentiana asclepiadea</i>	E1	.	2	.	3	.	.	4	.	.	.	.	.	.	.
<i>Homogyne sylvestris</i>	E1	.	2	15	15	.	.	21	40	13	17	14	60	.	.
<i>Oxalis acetosella</i>	E1	.	2	.	3	.	.	.	.	13	17	.	.	.	.
<i>Clematis alpina</i>	E1	.	.	15	4	13	.	.	.	7	17	.	.	.	.
<i>Hieracium murorum</i>	E1	.	.	.	4	13	.	.	10	.	50	.	20	.	.
<i>Polystichum lonchitis</i>	E1	.	.	.	1	.	.	.	.	.	.	.	.	.	.
<i>Rosa pendulina</i>	E1	.	.	.	1	.	.	4	10	.	.	7	.	.	.
<i>Abies alba</i>	E1	.	.	.	.	.	.	4	30	.	.	14	20	.	.
<i>Rhytidadelphus triquetrus</i>	E0	.	.	.	.	.	.	.	.	.	.	.	40	.	.
Aremonio-Fagion															
<i>Cyclamen purpurascens</i>	E1	.	13	7	23	19	.	14	60	13	33	7	20	.	.
<i>Euphorbia carniolica</i>	E1	.	9	.	3	.	.	.	.	7	.	.	20	.	.
<i>Primula vulgaris</i>	E1	.	5	.	4	6	.	7	.	.	.	.	.	.	.

Successive number (Zaporedna številka)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<i>Cardamine trifolia</i>	E1	.	4	4	4	.	.	.	7	.	.	20	.	.	.
<i>Helleborus niger</i>	E1	.	4	.	7	6	13	14	40	7	33	21	.	14	.
<i>Knautia drymeia</i>	E1	.	4	.	1	.	.	.	.	.	.	.	.	14	.
<i>Potentilla carniolica</i>	E1	.	4	.	4	.	.	.	.	.	.	.	.	.	.
<i>Anemone trifolia</i>	E1	.	2	7	4	.	13	.	.	.	.	.	.	.	.
<i>Hemerocallis lilioasphodelus</i>	E1	.	2	.	4	.	25	.	.	.	7	.	.	.	.
<i>Lamium orvala</i>	E1	.	2	.	1	.	.	.	.	.	.	.	.	.	.
<i>Dentaria enneaphyllos</i>	E1	.	.	4	.	.	.	.	7	33	.	.	.	.	.
<i>Laserpitium krapfi</i>	E1	.	.	.	1	.	.	.	10	.	.	.	.	.	.
<i>Rhamnus fallax</i>	E1	.	.	.	1	.	.	.	10	.	.	.	.	.	.
<i>Omphalodes verna</i>	E1	.	.	.	1	.	.	.	.	17	.	.	14	.	.
<i>Scopolia carniolica</i>	E1	.	.	.	.	.	.	.	13	33	7	20	.	.	.
Tilio-Acerion															
<i>Aruncus dioicus</i>	E1	.	4	4	11	.	.	.	.	33	33	14	20	14	.
<i>Phyllitis scolopendrium</i>	E1	.	4	.	8	.	.	.	.	33	.	.	.	.	.
<i>Acer pseudoplatanus</i>	E1	.	2	7	7	.	.	11	.	7	.	14	20	.	.
<i>Polystichum aculeatum</i>	E1	.	2	.	8	.	.	.	13	33	7	40	.	.	.
<i>Thalictrum aquilegifolium</i>	E1	.	.	4	4	.	.	7	20	27	.	21	40	.	.
<i>Geranium robertianum</i>	E1	.	.	.	5	.	.	.	.	.	21	20	29	.	.
<i>Tephrosia pseudocrispa</i>	E1	.	.	.	4	.	.	.	.	.	.	.	.	.	.
<i>Acer platanooides</i>	E2a	.	.	.	1	.	.	.	.	.	.	.	.	.	.
<i>Ulmus glabra</i>	E2a	.	.	.	1	.	.	.	.	13	.	.	.	.	.
Fagetalia sylvaticae															
<i>Galium laevigatum</i>	E1	11	4	7	7	.	.	7	.	13	.	14	20	.	.
<i>Fagus sylvatica</i>	E1	5	.	7	7	13	13	4	20	7	17	14	60	29	.
<i>Laburnum alpinum</i>	E2a	5	.	.	.	.	25	.	.	.	.	.	.	.	.
<i>Salvia glutinosa</i>	E1	5	9	4	14	.	.	7	.	.	.	20	.	.	.
<i>Mycelis muralis</i>	E1	.	20	7	8	6	.	4	.	7	50	14	.	.	.
<i>Galeobdolon flavidum</i>	E1	.	5	11	11	.	13	.	.	47	.	20	.	.	.
<i>Brachypodium sylvaticum</i>	E1	.	4	.	.	.	.	.	.	.	.	.	.	.	.
<i>Melica nutans</i>	E1	.	4	.	3	.	.	.	.	.	29	20	.	.	.
<i>Asarum europaeum</i> subsp. <i>caucasicum</i>	E1	.	2	.	1	.	.	.	.	.	.	.	.	.	.
<i>Dentaria pentaphyllos</i>	E1	.	2	.	1	.	.	.	.	27	50	.	.	.	.
<i>Prenanthes purpurea</i>	E1	.	2	.	.	.	.	.	7	.	7	40	.	.	.
<i>Mercurialis perennis</i>	E1	.	.	.	10	.	.	7	30	7	.	21	20	14	.
<i>Symphytum tuberosum</i>	E1	.	.	.	3	.	.	.	.	.	.	.	.	.	.
<i>Campanula trachelium</i>	E1	.	.	.	1	.	.	.	.	20	67	7	.	.	.
<i>Lathyrus vernus</i>	E1	.	.	.	1	.	.	.	.	13	.	.	.	.	.
<i>Petasites albus</i>	E1	.	.	.	1	.	.	.	.	.	.	20	.	.	.
<i>Sambucus nigra</i>	E2a	.	.	.	1	.	.	.	.	.	.	.	.	.	.
<i>Viola reichenbachiana</i>	E1	.	.	.	.	.	.	4	.	.	.	.	.	.	.
<i>Daphne mezereum</i>	E2a	.	.	.	.	.	.	.	10	7	.	20	.	.	.
<i>Lonicera alpigena</i>	E2a	.	.	.	.	.	.	.	.	.	17	.	.	.	.
<i>Myosotis sylvatica</i> agg.	E1	.	.	.	.	.	.	.	.	33	.	.	.	.	.
<i>Heracleum sphondylium</i>	E1	.	.	.	.	.	.	.	.	.	7	.	.	.	.
<i>Poa nemoralis</i>	E1	.	.	.	.	.	.	.	.	.	.	20	.	.	.
<i>Polygonatum multiflorum</i>	E1	.	.	.	.	.	.	.	.	.	.	20	.	.	.
Quercetalia pubescenti-petraeae															
<i>Carex flacca</i>	E1	21	5	.	.	.	.	.	.	.	.	.	14	.	.
<i>Ostrya carpinifolia</i>	E1	11	2	4	10	50	13	21	60	.	.	14	.	29	33

Successive number (Zaporedna številka)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
<i>Fraxinus ornus</i>	E1	.	5	7	15	38	38	14	20	.	.	21	20	.	18	.
<i>Mercurialis ovata</i>	E1	.	.	.	7	25	.	.	.	.	.	.	.	.	.	.
<i>Clematis recta</i>	E1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Euonymus verrucosa</i>	E2a	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Melittis melissophyllum</i>	E1	.	.	.	.	6	.	.	.	.	.	.	.	.	.	.
<i>Sorbus aria</i>	E2a	.	.	.	.	.	.	.	30	.	.	7	.	29	.	.
Quercus-Fagetea																
<i>Potentilla erecta</i>	E1	5	.	.	.	.	.	.	.	.	.	.	.	14	.	.
<i>Carex digitata</i>	E1	.	32	33	38	19	13	.	.	60	33	21	40	.	.	.
<i>Hedera helix</i>	E1	.	9	.	8	6	.	.	.	.	.	7	.	.	.	.
<i>Clematis vitalba</i>	E1	.	7	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Carex umbrosa</i>	E1	.	5	4	.	.	.	.	.	.	.	.	.	.	.	.
<i>Hepatica nobilis</i>	E1	.	5	7	22	6	.	11	10	33	33	7	20	.	.	.
<i>Frangula alnus</i>	E2a	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Taxus baccata</i>	E1	.	2	.	.	.	.	.	.	7	.	7	.	.	.	.
<i>Veratrum nigrum</i>	E1	.	.	.	5	.	.	.	.	.	.	.	.	.	.	.
<i>Acer campestre</i>	E1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Cardamine impatiens</i>	E1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Lonicera xylosteum</i>	E1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Quercus petraea</i>	E1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Anemone nemorosa</i>	E1	.	.	.	.	.	.	.	.	17	7	20	.	.	.	.
<i>Corylus avellana</i>	E1	.	.	.	.	.	.	.	.	.	.	20	.	.	.	.
Salicetea purpureae																
<i>Salix eleagnos</i>	E2a	21	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Mosses and lichens (Mahovi in lišaji)																
<i>Brachythecium rutabulum</i>	E0	5	2	11	1	.	.	.	.	.	.	.	.	.	.	.
<i>Ctenidium molluscum</i>	E0	5	14	52	58	50	25	21	60	33	83	64	40	.	.	33
<i>Neckera crispa</i>	E0	5	27	41	73	25	38	54	70	40	100	71	100	.	22	50
<i>Tortella tortuosa</i>	E0	5	11	33	40	38	25	57	50	20	33	7	.	.	.	83
<i>Leiocolea collaris</i>	E0	5	.	.	3	.	.	.	.	.	.	.	.	.	.	.
<i>Reboulia hemisphaerica</i>	E0	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Marchantia polymorpha</i>	E0	.	4	4	3	.	.	4	.	7	.	.	40	.	.	.
<i>Heterocladium heteropterum</i>	E0	.	4	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Mnium thomsonii</i>	E0	.	4	.	8	.	.	.	.	27	.	.	.	.	.	.
<i>Bryum</i> sp.	E0	.	2	4	.	.	.	.	.	.	.	.	.	.	.	.
<i>Mnium marginatum</i>	E0	.	2	.	1	.	.	.	.	20	.	.	.	.	.	.
<i>Dichodontium pellucidum</i>	E0	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Encalypta vulgaris</i>	E0	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Lophozia</i> sp.	E0	.	2	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Rhynchostegium murale</i>	E0	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Schistidium apocarpum</i>	E0	.	.	4	5	6	.	.	30	.	.	.	.	.	33	.
<i>Pedinophyllum interruptum</i>	E0	.	.	4	3	6	.	.	.	20	.	.	.	.	.	.
<i>Plagiochila porelloides</i>	E0	.	.	4	4	.	.	.	.	.	.	.	.	.	.	.
<i>Plagiopus oederi</i>	E0	.	.	7	.	.	.	.	.	.	.	.	.	.	.	.
<i>Lescuraea plicata</i>	E0	.	.	4	.	.	.	.	.	.	.	.	.	.	.	.
<i>Dicranum scoparium</i>	E0	.	.	4	.	.	.	.	.	.	.	.	.	.	.	.
<i>Encalypta streptocarpa</i>	E0	.	.	.	4	6	.	7	.	.	.	.	.	.	.	.
<i>Isothecium alopecuroides</i>	E0	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.
<i>Mnium stellare</i>	E0	.	.	.	3	.	.	.	.	.	7	.	.	.	.	.
<i>Bryum capillare</i>	E0	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.

Successive number (Zaporedna številka)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<i>Plagiomnium rostratum</i>	E0	.	.	.	1	6	.	.	.	.	.	.	.	.	.	.
<i>Dichodontium pellucidum</i> subsp. <i>flavescens</i>	E0	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Didymodon ferrugineus</i>	E0	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Plagiobryum zierii</i>	E0	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Lejeunea cavifolia</i>	E0	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Myurella sibirica</i>	E0	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Neckera complanata</i>	E0	.	.	.	1	6	.	.	.	.	.	.	.	.	.	.
<i>Trichostomum brachydontium</i>	E0	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
<i>Myurella julacea</i>	E0	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
Lichenes div.	E0	.	.	.	1	6	13	.	.	.	.	.	.	.	.	.
<i>Homalothecium sericeum</i>	E0	.	.	.	.	6	.	.	.	.	.	7	.	.	33	.
<i>Dicranodontium denudatum</i>	E0	.	.	.	.	6	.	.	.	.	.	.	.	.	.	.
<i>Trichostomum crispulum</i>	E0	.	.	.	.	6	.	.	.	.	.	.	.	.	.	.
<i>Anomodon attenuatus</i>	E0	.	.	.	.	6	.	.	.	.	.	.	.	.	.	.
<i>Anomodon viticulosus</i>	E0	.	.	.	.	6	.	.	.	.	.	.	.	.	.	.
<i>Musci</i> sp.	E0	.	.	.	.	.	13	.	.	.	.	.	.	.	.	.
<i>Lepraria crassissima</i>	E0	.	.	.	.	.	.	32	70	.	.	.	.	.	22	.
<i>Collema polycarpon</i>	E0	.	.	.	.	.	.	18	.	.	.	.	.	.	.	.
<i>Trentepohlia aurea</i>	E0	.	.	.	.	.	.	4	10	.	.	.	.	.	.	.
<i>Brachythecium</i> sp.	E0	.	.	.	.	.	.	.	10	.	.	.	.	.	.	.
<i>Brachythecium starkei</i>	E0	.	.	.	.	.	.	.	.	7	.	.	.	.	.	.
<i>Cirriphyllum cirrhosum</i>	E0	.	.	.	.	.	.	.	.	7	.	.	.	.	.	.
<i>Plagiomnium undulatum</i>	E0	.	.	.	.	.	.	.	.	.	17	.	60	.	.	.
<i>Tortella</i> sp.	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	33	.
<i>Caloplaca</i> sp.	E0	.	.	.	.	.	.	.	.	.	.	.	.	.	22	.

Legend (Legenda)

- 1 AcPa *Astrantio carniolicae-Pinguiculetum alpinae*, this article, Table 2.
- 2 AcPc *Astrantio carniolicae-Primuletum carniolicae*, this article, Table 1.
- 3 PhcPc-ac *Phyteumato columnnae-Primuletum carniolicae astrantietosum carniolicae*, this article, Table 6.
- 4 PhcPc-ty *Phyteumato columnnae-Primuletum carniolicae typicum*, this article, Table 5.
- 5 PcPcl-CT *Phyteumato columnnae-Primuletum carniolicae potentilletosum caulescentis*, this article, Table 7.
- 6 PcPcl-TG *Phyteumato columnnae-Primuletum carniolicae potentilletosum carniolicae (Primulo carniolicae-Potentilletum caulescentis)*, Dakskobler (1998, Table 1, pp. 286–287).
- 7 Pcty *Primuletum carniolicae*, Accetto (2008, Table 1, pp. 42–44).
- 8 Pccb *Primuletum carniolicae caricetosum brachystachyos*, Accetto (2015, Table 27, pp. 98–99).
- 9 Pcvb *Primuletum carniolicae violetosum biflorae*, this article, Table 4.
- 10 Pc-No *Primuletum carniolicae* s. lat., Dolinar et al. (2017, Table 1, pp. 30–32).
- 11 Pc-Do *Primuletum carniolicae* s. lat., Dolinar et al. (2013, Table 1, pp. 13–16).
- 12 Pc-Npr *Primuletum carniolicae* s. lat., Dolinar et al. (2015, Table 1, pp. 40–43).
- 13 Pc-Iv *Primuletum carniolicae* s. lat., Dolinar et al. (2013: Table 2, pp. 17–18).
- 14 PcPcl-As *Paederoto luteae-Potentilletum caulescentis (Primulo carniolicae-Potentilletum caulescentis var. Asplenium seelosii)*, Accetto (2008, Table 5, pp. 49–50).
- 15 PcPcl *Primulo carniolicae-Potentilletum clusianae*, this article, Table 8.

ID Igor Dakskobler BV Branko Vreš
AM Andrej Martinčič MA Marko Accetto
BD Branko Dolinar

Table 10: Phytosociological groups in the researched rock crevice communities in the western and central Slovenia (relative frequencies).
Tabela 10: Skupine diagnostičnih vrst v preučenihi združbah skalnih razpok v zahodni in osrednji Sloveniji (relativne frekvence).

Successive number (Zaporedna številka)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Author (Avtor)	AcPa	AcPc	PhcAca	PhcAcy	PcPc-CT	PcPc-TG	Pcy	Pcb	Pcb	Pc-No	Pc-Do	PC-NPp	Pc-Iv	PcPc-As	PhcPc-pc
Number of relevés (Število popisov)	19	56	27	73	16	8	28	10	15	6	14	5	7	9	6
<i>Cystopteridion</i> s. lat. (<i>Astrantio carniolicae-Paederotium luteae</i>)	50.2	50.1	50.2	32.1	22.7	29.2	37.0	27.0	39.1	27.5	27.8	25.4	38.0	25.7	33.1
<i>Physoplexido comosae-Saxifragion petraeae</i>	5.32	4.76	4.79	7.03	6.78	7.62	0	0.51	1.4	0	1.85	2.46	0	0	4.22
<i>Potentilletalia caulescentis</i>	1.35	1.51	1.03	1.04	6.78	6.36	1.34	0.51	0	0	0.45	4.1	1.88	20.7	12.7
<i>Asplenietea trichomanis</i>	0.93	1.51	4.25	7.35	6.52	3.18	4.78	6.63	6.89	8.64	9.06	3.28	8.31	6.93	0
<i>Thlaspietea rotundifolii</i>	6.33	2.77	4.03	4.15	3.57	6.36	0.38	1.02	2.44	3.12	4.97	4.1	3.7	0	6.81
<i>Montio-Cardaminetea, Cavicetalia davallianae</i>	3.63	3.8	3.05	1.6	0.31	0.66	0	0	5.18	3.16	0.89	0	0	0	0
<i>Elyno-Seslerietea</i>	6.67	7.41	6.04	4.71	12	15.3	10.3	11.73	1.04	3.16	1.85	2.46	6.49	16.8	21.2
<i>Festuco-Brometea</i>	0.00	0.36	0	0.56	0.98	0.66	0.77	2.04	0.67	0	1.34	1.64	1.88	0.98	0
<i>Molinio-Arrhenatheretea, Calibion</i>	0.84	0.24	0	0.4	0	0	0	0	0	0	0	0	1.82	0	0
<i>Trifolio-Geranietea</i>	0	0.36	0.22	0.56	1.91	0	0	0.51	0	0.8	2.23	0.82	2.73	1.95	0
<i>Betulo-Alnetea</i>	1.77	1.45	0.38	0.56	2.95	4.44	0.38	0.51	0.67	0.8	1.34	1.64	2.79	0	3.35
<i>Mulgedio-Aconitetea</i>	1.27	0.36	0.82	0.56	0	0	0	0	0.36	1.61	1.79	4.1	0.91	0	0
<i>Sambuco-Salicion capreae, Rhamno-Prunetea, Epilobietea</i>	0.42	0.3	0.22	0.08	0.31	0	0	1.02	0	0.8	0.89	1.64	1.82	0	0
<i>Erico-Pinetea</i>	11.7	7.66	5.93	6.07	16.1	11.5	8.61	12.2	4.87	4.77	11.4	4.92	11.2	7.82	9.34
<i>Vaccinio-Piceetea</i>	0.84	1.27	1.85	3.35	1.66	0.66	4.88	4.59	5.85	7.94	3.57	8.2	4.61	0	0
<i>Aremonio-Fagion</i>	0	2.95	1.2	3.51	1.6	2.57	3.35	6.12	2.8	7.04	2.68	3.28	2.73	0	0
<i>Tilio-Acerion</i>	0	0.72	0.82	2.96	0	0	1.72	1.02	4.82	4.68	4.91	5.74	2.79	0	0
<i>Fagetalia sylvaticae</i>	2.2	3.13	1.96	4.07	0.98	2.57	3.16	3.06	8.03	11.05	7.21	11.5	2.79	0	0
<i>Quercetalia pubescens-petraeae</i>	2.7	0.72	0.6	2	6.16	2.57	3.35	5.61	0	0	2.68	0.82	4.67	4.53	0
<i>Quercio-Fagetea, Salicetea purpureae</i>	2.2	3.74	2.4	4.71	1.6	0.66	1.05	0.51	5.18	3.92	3.13	4.1	0.91	0	0
Mosses and lichens (Mahovi in lišaji)	1.69	4.88	10.2	12.6	7.09	5.75	18.9	15.3	10.7	11	9.95	9.84	0	14.7	9.29
Total (Skupaj)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Legend – see Table 9 (Legenda – glej tabelo 9)

Table 11: List of species in rock crevice communities with *Primula carniolica*, stored in the FLOVegSi database, with frequency more than 10%.

Tabela 11: Seznam vrst v združbah skalnih razpok z vrsto *Primula carniolica* s frekvenco več kot 10 %.

	Number of relevés	Frequency
Vascular plants (Cevnice)		
<i>Primula carniolica</i>	348	100
<i>Paederota lutea</i>	209	60
<i>Phyteuma scheuchzeri</i> subsp. <i>columnae</i>	196	56
<i>Sesleria caerulea</i>	187	54
<i>Aster bellidiastrum</i>	178	51
<i>Astrantia carniolica</i>	147	42
<i>Asplenium ruta-muraria</i>	147	42
<i>Valeriana saxatilis</i>	142	41
<i>Asplenium trichomanes</i>	141	41
<i>Calamagrostis varia</i>	139	40
<i>Carex brachystachys</i>	132	38
<i>Carex digitata</i>	126	36
<i>Pinguicula alpina</i>	120	34
<i>Valeriana tripteris</i>	118	34
<i>Asplenium viride</i>	114	33
<i>Tofieldia calyculata</i>	109	31
<i>Hieracium bifidum</i>	105	30
<i>Carex mucronata</i>	77	22
<i>Rhododendron hirsutum</i>	76	22
<i>Erica carnea</i>	75	22
<i>Cyclamen purpurascens</i>	63	18
<i>Viola biflora</i>	60	17
<i>Campanula cespitosa</i>	55	16
<i>Veronica urticifolia</i>	55	16
<i>Potentilla caulescens</i>	52	15
<i>Salix appendiculata</i>	47	14
<i>Molinia arundinacea</i>	45	13
<i>Galeobdolon flavidum</i>	44	13
<i>Hepatica nobilis</i>	44	13
<i>Ostrya carpinifolia</i>	43	12
<i>Cystopteris fragilis</i>	41	12
<i>Fraxinus ornus</i>	39	11
<i>Aruncus dioicus</i>	37	11
<i>Salvia glutinosa</i>	35	10
Mosses (Mahovi)		
<i>Orthothecium rufescens</i>	221	64
<i>Neckera crispa</i>	166	48
<i>Ctenidium molluscum</i>	143	41
<i>Conocephalum conicum</i>	110	32
<i>Tortella tortuosa</i>	101	29
<i>Palustriella commutata</i>	62	18
<i>Fissidens dubius</i>	56	16
<i>Hymenostylium recurvirostre</i>	48	14