

Two new pioneer communities of *Sorbus aucuparia* and *Sorbus aria* in the southern Julian Alps

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Key words: phytosociology, syndynamics, successional stage, *Sorbus aucuparia*, *Sorbus aria*, Natura 2000, Julian Alps, western Slovenia.

Ključne besede: fitocenologija, sindinamika, sukcesijski stadij, *Sorbus aucuparia*, *Sorbus aria*, Natura 2000, Julijske Alpe, zahodna Slovenija.

Abstract

In the southern Julian Alps we described two communities whose tree layer is dominated by species from the genus *Sorbus* and noted two successional stages in the overgrowing of abandoned agricultural land (pastures, hay meadows). In the secondary succession on former subalpine pastures above the alp Planina Razor und under the Breginjnski Stol ridge, where potential natural vegetation consists of subalpine beech forest, dwarf pine has been overgrown with mountain ash (*Sorbus aucuparia*) whose stands are classified into the new association *Rhododendro hirsuti-Sorbetum aucupariae*. Whitebeam (*Sorbus aria*) has established itself on steep former hay meadows in the belt of altimontane beech forests under Mts. Jalovnik and Krikov Vrh, on gullied slopes on mixed geological bedrock dominated by chert, and these stands are classified into the association *Calamagrostio arundinaceae-Sorbetum ariae*. While occupying only small areas these two pioneer stages, as the sites of some rare or protected species, are nevertheless important biotopes and play a vital role in protection against avalanches.

Izvleček

V južnih Julijskih Alpah smo opisali dve združbi, v katerih sta v drevesni plasti dominantni vrsti iz rodu *Sorbus* in opozorili na dva sukcesijska niza v zaraščanju opuščenih kmetijskih površin (pašnikov, senožeti). V drugotni sukcesiji na nekdanjih subalpinskih pašnikih nad planino Razor in pod grebenom Breginjnskega Stola, kjer je potencialno naravna vegetacija subalpinski bukovo gozd, je rušje prerasla jerebika (*Sorbus aucuparia*) in njene sestoje uvrščamo v novo asociacijo *Rhododendro hirsuti-Sorbetum aucupariae*. Na strmih nekdanjih senožetih v pasu altimontanskih bukovih gozdov pod Jalovnikom in Krikovim vrhom pa se na mešani geološki podlagi, kjer prevladuje roženec, v užlebljenih pobočjih uveljavi mokovec (*Sorbus aria*) in njegove sestoje uvrščamo v asociacijo *Calamagrostio arundinaceae-Sorbetum ariae*. Opisana pionirska stadija imata kljub majhnim površinam pomembno varovalno vlogo pred snežnimi plazovi in biotopski pomen, kot rastišča nekaterih redkih ali zavarovanih vrst.

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Introduction

Several years ago we described a pioneer community of mountain ash (*Sorbus aucuparia*) and green alder (*Alnus viridis*) – *Alno viridis-Sorbetum aucupariae* on former grazing areas and abandoned mountain pastures in the belt of altimontane and subalpine beech forests in the southern Julian Alps and their foothills (Dakskobler et al. 2013). In 2014 and 2015 we observed a similar forest type in these mountains, with dominating mountain ash in the tree layer and dominating dwarf pine (*Pinus mugo*) in the shrub layer. Such stands, also of pioneer origin, were found in the level ground Na Polju above the alp Planina Razor and under the ridge of Breginjski Stol. Presumably, there used to be beech forest that was later burned and turned into pastures. These were abandoned decades ago and subsequently dwarf pine was the first to establish itself in the succession, followed by mountain ash. Another form of pioneer forest on former agricultural areas was observed on sunny slopes of Mt. Jalovnik above the village Sela nad Podmelcem and un-

der Mt. Krikov Vrh above the alp Kuk (Podkuk). Steep hay meadows here have been overgrown with mixed forest whose tree layer is dominated by whitebeam (*Sorbus aria*). Potential natural vegetation on these sites as well is altimontane beech forest. Given that both mountain ash and whitebeam only rarely form forest stands in the Julian Alps we decided to phytosociologically describe their communities.

Methods

Applying the Central-European phytosociological method (Braun-Blanquet 1964) we studied the pioneer forest stands of mountain ash and dwarf pine above the alp Planina Razor, under the Breginjski Stol ridge as well as grasslands and whitebeam stands under Mts. Jalovnik and Krikov Vrh (Figures 1, 2, 6, 7, 8, 9, 10 and 11). Relevés were entered into the FloVegSi database (Seliškar & al. 2003). Combined cover-abundance values were transformed into numerical values 1–9 (van der Maarel 1979).

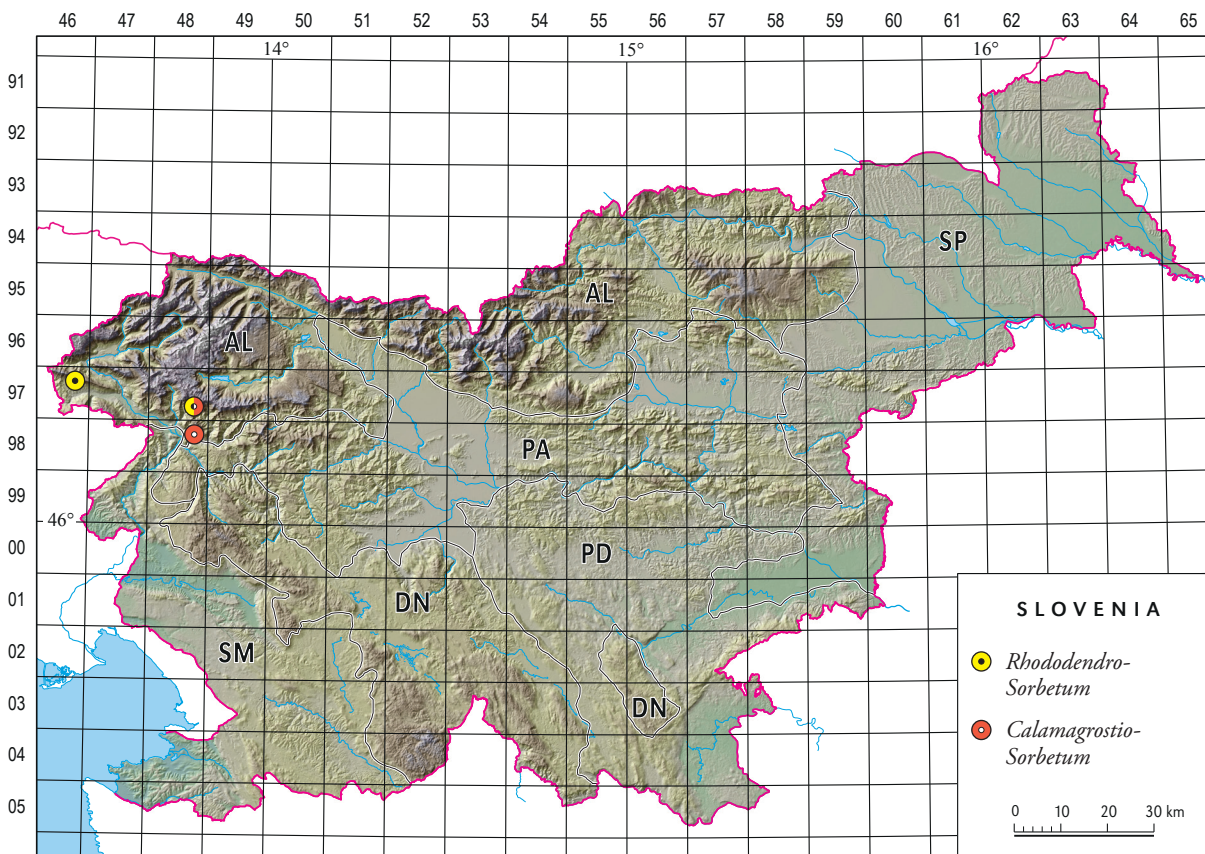


Figure 1: Research area on the map of Slovenia (AL – Alpine phytogeographical region, PA – pre-Alpine phytogeographical region, SM – sub-Mediterranean phytogeographical region, DN – Dinaric phytogeographical region, PD – pre-Dinaric phytogeographical region, SP – sub-Pannonian phytogeographical region).

Slika 1: Raziskovano območje na zemljevidu Slovenije.

Numerical comparisons were conducted with the software package SYN-TAX (Podani 2001). The relevés were arranged in three analytical tables by means of hierarchical classification. The nomenclature source for the names of vascular plants is the Mala flora Slovenije (Martinčič et al. 2007), Martinčič (2003, 2011) is the nomenclature source for the names of mosses, Suppan et al. (2000) for the names of lichens. The nomenclature sources for the names of syntaxa are Šilc & Čarni (2012), Dakskobler et al. (2013) and Zupančič (2013).

Results and Discussion

Sorbus aucuparia community above the alp Planina Razor and under the Breginjski Stol ridge

Table 1 comprises nine relevés made under the ridge of the Breginjski Stol above the Učja valley and at the karstified plateau (level ground) Na Polju above the alp Planina Razor (Figure 2). One of the relevés under Stol

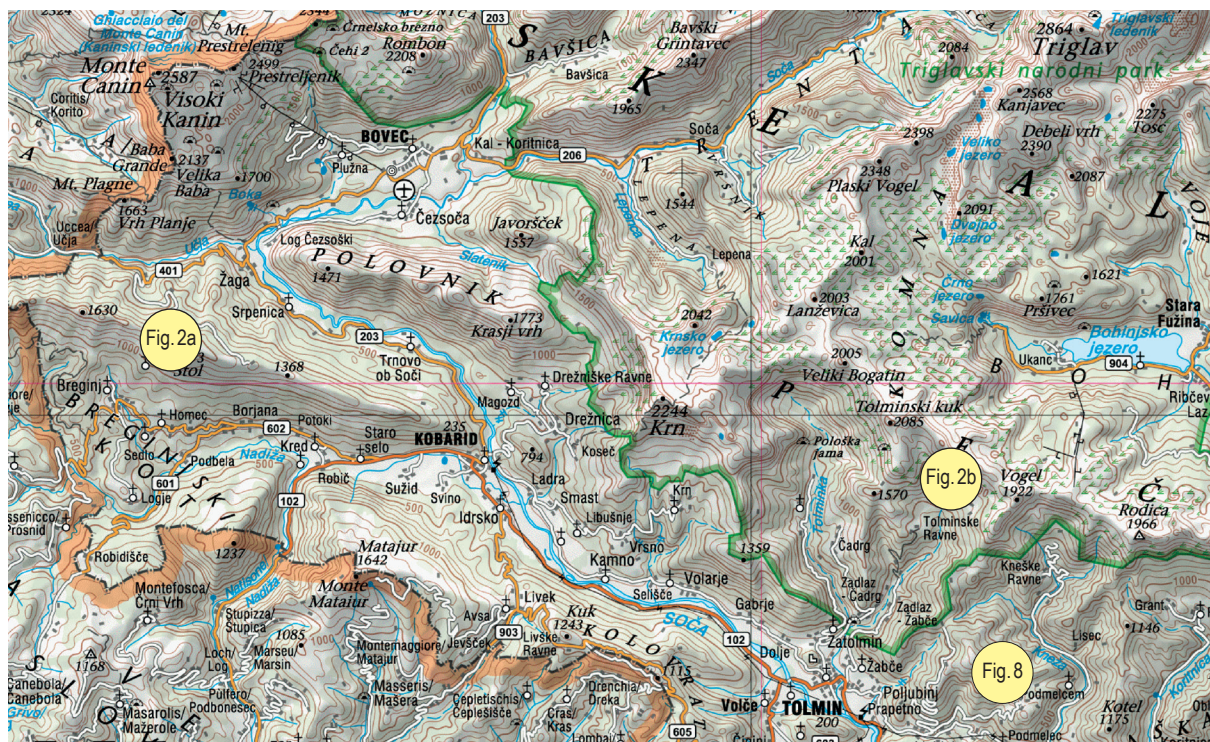


Figure 2: Localities of *Sorbus aucuparia* (figures 2a and 2b) and *Sorbus aria* (figure 8, p. 73) stands in the southern Julian Alps (western Slovenia).
Slika 2: Nahajališča popisanih sestojev jerebike (sliki 2a in 2b) in mokovca (slika 8 na strani 73) v južnih Julijskih Alpah (zahodna Slovenija).

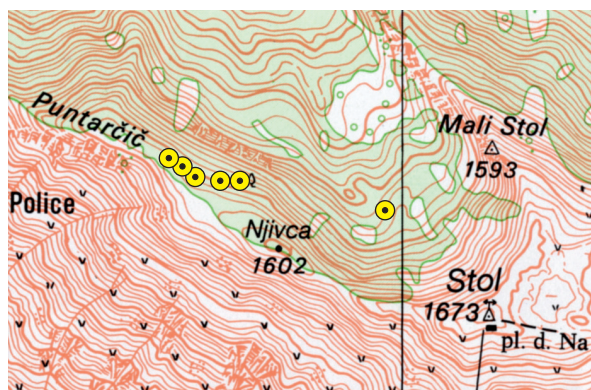


Figure 2a: Localities of *Sorbus aucuparia* stands under the Breginjski Stol ridge.
Slika 2a: Nahajališča popisanih sestojev jerebike pod grebenom Breginjkega Stola.

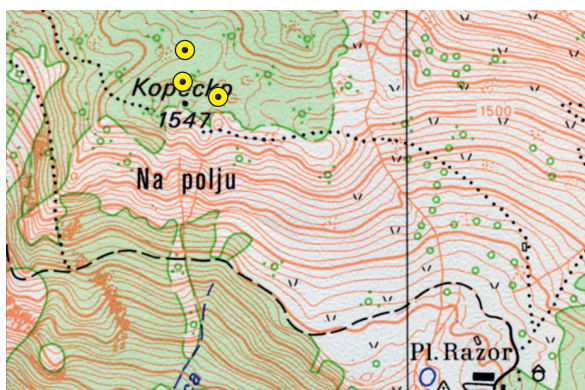


Figure 2b: Localities of *Sorbus aucuparia* stands above the alp Planina Razor.
Slika 2b: Nahajališča popisanih sestojev jerebike nad pl. Razor.

was made above the cirque Dol at the elevation of around 1460 m and five under the ridge Puntračič–Njivca, on the location of a former pasture, at the elevation of 1540 m to 1550 m. The geological bedrock is Triassic Dachstein limestone (Buser 1986, 1987). These are potentially the sites of subalpine beech forest (*Polysticho lonchitis-Fagetum*) that continues into dwarf pine stands (*Rhodothamno-Pinetum mugo*) on the ridge.

Na Polju is a rectangular level terrain at the elevation of about 1530 m, measuring 700 m × 300 m (Kunaver 1993: 38). We made three relevés here. The geological bedrock is Triassic Dachstein limestone and in the western part of the level also breccia (Buser 1986, 1987, Kunaver, *ibid.*). Previously occupied by pastures, this level ground is now mainly overgrown with dwarf pine stands. Especially prominent in the northwestern part of this level ground, which is also the most basin-shaped, is the *Sorbus aucuparia* forest, which can be seen from afar.

The floristic composition of these nine relevés was compared to ten relevés of similar *Sorbus aucuparia* stands that were recorded under Mt. Matajur and above the upper Bača Valley and classified into the association *Alno viridis-Sorbetum aucupariae*, namely into two subassociations: *-luzuletosum sylvaticae* on deep, slightly acid soil, and *-adenostyletosum glabrae* on moist stony sites (Dakskobler et al. 2013). We determined that these mountain ash stands are a stage in the secondary succession on potential sites of altimontane or subalpine beech forest. The successional sere proceeds in the following manner:

Beech forest (*Ranunculo plataniifolii-Fagetum*, *Polysticho lonchitis-Fagetum*) – pasture (hay meadow) – green alder stands (*Rhododendro hirsuti-Alnetum viridis*, *Alnetum viridis*) – mountain ash stands (*Alno viridis-Sorbetum aucupariae*) – beech forest.

We compared cover values of species (Figure 3) and presence or absence of species separately (Figure 4). The results indicate that relevés from Table 1 (RhSa) group separately from the relevés of the association *Alno viridis-Sorbetum aucupariae* (AvSa) and therefore cannot be classified into this association. Three relevés of the association *Alno viridis-Sorbetum aucupariae* that belong to the subassociation *luzuletosum sylvaticae* stand out somewhat in terms of floristic composition.

Similar conclusions can be made based on the synthetic table (Table 2), where we took into account the rank of the subassociation. The first two columns in this table show the composition of two subassociations of *Alno viridis-Sorbetum aucupariae* (AvSals = subass. *luzuletosum sylvaticae*; AvSaag = subass. *adenostyletosum glabrae*) and columns 3 and 4 comprise the relevés under the Breginjski Stol (RhSadc) and from the plateau Na Polju (RhSacv). These four syntaxa (columns) were

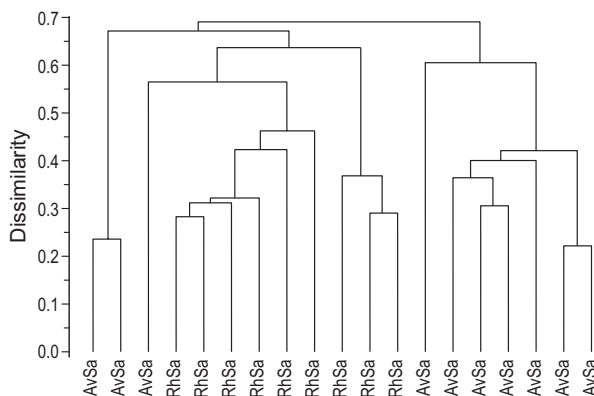


Figure 3: Dendrogram of *Sorbus aucuparia* communities in the southern Julian Alps (AvSa = *Alno viridis-Sorbetum aucupariae*; RhSa = *Rhododendro hirsuti-Sorbetum aucupariae*), UPGMA, similarity ratio.

Slika 3: Dendrogram jerebikovih združb v južnih Julijskih Alpah (AvSa = *Alno viridis-Sorbetum aucupariae*; RhSa = *Rhododendro hirsuti-Sorbetum aucupariae*), UPGMA, similarity ratio.

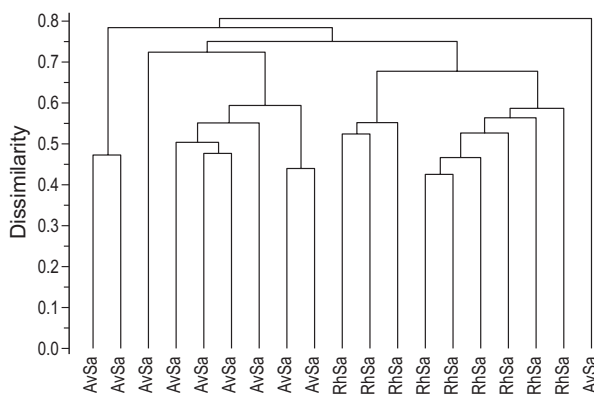


Figure 4: Dendrogram of *Sorbus aucuparia* communities in the southern Julian Alps (AvSa = *Alno viridis-Sorbetum aucupariae*; RhSa = *Rhododendro hirsuti-Sorbetum aucupariae*), UPGMA, Jaccard.

Slika 4: Dendrogram jerebikovih združb v južnih Julijskih Alpah (AvSa = *Alno viridis-Sorbetum aucupariae*; RhSa = *Rhododendro hirsuti-Sorbetum aucupariae*), UPGMA, Jaccard.

compared with hierarchical classification and the results are in Figure 5.

Despite certain similarities – the stands of the subassociation *Alno-Sorbetum luzuletosum* also comprise the shrub species *Sorbus chamaemespilus* and in places *Pinus mugo*, in some spots within the stands of the subassociation *Alno-Sorbetum adenostyletosum* we can observe also *Rhododendron hirsutum* and many species of stony montane forests – it is clear that the mountain ash stands under the Breginjski Stol ridge and above the alp Planina Razor cannot be classified into the association *Alno viridis-Sorbetum*, in the first place because green alder does not even occur within them. The composition by

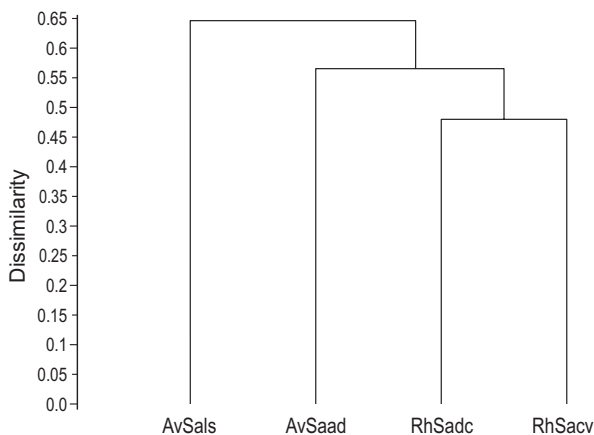


Figure 5: Dendrogram of *Sorbus aucuparia* communities in the southern Julian Alps (AvSals = *Alno viridis*-*Sorbetum aucupariae luzuletosum sylvaticae*; AvSaad = *Alno viridis*-*Sorbetum aucupariae adenostyletosum glabrae*; RhSadc = *Rhododendro hirsuti*-*Sorbetum aucupariae deschampsietosum cespitosae*; RhSacv = *Rhododendro hirsuti*-*Sorbetum aucupariae calamagrostietosum variae*), UPGMA, similarity ratio.

Slika 5: Dendrogram jerebikovih združb v južnih Julijskih Alpah (AvSals = *Alno viridis*-*Sorbetum aucupariae luzuletosum sylvaticae*; AvSaad = *Alno viridis*-*Sorbetum aucupariae adenostyletosum glabrae*; RhSadc = *Rhododendro hirsuti*-*Sorbetum aucupariae deschampsietosum cespitosae*; RhSacv = *Rhododendro hirsuti*-*Sorbetum aucupariae calamagrostietosum variae*), UPGMA, similarity ratio.

groups of diagnostic species (Table 3) indicates differences within subassociations rather than differences at the level of associations. In terms of proportion the researched stands (columns 3 and 4 in Table 3) are clearly dominated by species of the classes *Vaccinio-Piceetea* and *Erico-Pinetea*, so they should be classified into the class *Vaccinio-Piceetea* or, if considering also their physiognomy (the structure of stands), also to the class *Rosopendulinae-Pinetea mugo*.

The successional sere is different as well and can be described as follows:

Subalpine beech forest (*Polysticho lonchitis-Fagetum*) – pasture, grassland (*Ranunculo hybridi-Caricetum sempervirentis*) – dwarf pine stands (*Rhodothamno-Pinetum mugo*) – mountain ash stands (*Rhododendro hirsuti-Sorbetum aucupariae*) – subalpine beech stands.

This successional sere indicates the sequence in secondary succession when a former subalpine pasture becomes overgrown through dwarf pine into a forest whose final stage will be beech. This mountain ash community is therefore classified into a new association *Rhododendro hirsuti-Sorbetum aucupariae* ass. nov. hoc loco. Its nomenclature type, *holotypus*, is relevé No. 1 in Table 1. Diagnostic species of the new association are *Sorbus au-*



Figure 6: Level ground Na Polju with *Pinus mugo* and *Sorbus aucuparia* stands.

Slika 6: Uravnava Na Polju s ruševjem in jerebikovjem.

cuparia subsp. *aucuparia*, *Lycopodium annotinum*, *Pinus mugo*, *Salix waldsteiniana* and *Rhododendron hirsutum*. The listed species well differentiate the studied community against the physiognomically similar community *Alno viridis-Sorbetum aucupariae* and indicate its close syndynamic relationship with dwarf pine stands from the association *Rhodothamno-Pinetum mugo*. However, it cannot be classified within this association as we should consider the dominant species of the highest stand layer – the tree layer, which is obviously mountain ash. The syntaxonomical rank of the subassociation *Rhodothamno-Pinetum mugo sorbetosum aucupariae* is therefore inappropriate in the case of mountain ash forest. For now, the new association is classified into the alliance *Erico-Pinion mugo*, order *Junipero-Pinetalia* and class *Vaccinio-Piceetea*. In terms of physiognomy it could also be classified into the alliance *Erico-Pinion mugo*, order *Junipero-Pinetalia* and class *Roso pendulinae-Pinetea mugo*.

Stands under the Breginjski Stol ridge are classified into the new subassociation *Rhododendro hirsuti-Sorbetum aucupariae deschampsietusum cespitosae*. Its differential species are *Deschampsia cespitosa*, *Lonicera nigra*, *Myosotis sylvatica* agg. *Molopospermum peloponesiacum* subsp. *baubini*, *Primula elatior* and *Calamagrostis arundinacea*. They indicate fresher sites with deeper and slightly acidic soils, as well as a certain similarity with the stands of the association *Alno viridis-Sorbetum aucupariae*. Its nomenclature type, *holotypus*, is relevé No. 1 in Table 1.



Figure 7: Stand of the subassociation *Rhododendro hirsuti-Sorbetum aucupariae calamagrostietosum variae*.

Slika 7: Sestoj subasociacije *Rhododendro hirsuti-Sorbetum aucupariae calamagrostietosum variae*.

Stands above the alp Planina Razor are classified into the new subassociation *Rhododendro hirsuti-Sorbetum aucupariae calamagrostietosum variae*. Its differential species are *Calamagrostis varia*, *Rhodothamnus chamaecistus* and *Horminum pyrenaicum*. They indicate stony calcareous sites in cold Alpine climate, and *Horminum pyrenaicum* also a connection with former pastures. Its nomenclature type, *holotypus*, is relevé No. 8 in Table 1.

Sorbus aria community on abandoned hay-fields under Mts. Jalovnik and Krikov Vrh

Krikov Vrh is a 1298 m-high mountain in the lateral ridge of the southern Julian Alps in direction from Žabjiški Kuk towards Tolminski Triglav. The parent material is mixed, dominated by platy limestone with marl and chert, and Bača dolomite with chert (Buser 1986, 1987). Its shady and partly also sunny slopes are overgrown with montane-altimontane forests from the associations *Homogyno sylvestris-Fagetum*, *Saxifrago cuneifolii-Fagetum*, *Fraxinio orni-Ostryetum* and *Amelanchiero ovalis-Pinetum mugo* (Dakskobler 2002, 2014, 2015). There are some abandoned hay meadow on the shady side under the peak, and to the north of the peak there is alp Kuk (Podkuk), which is still being used as a pasture. The phytosociological composition of the pioneer *Sorbus aria* stand on an abandoned hay meadow under Krikov Vrh is shown in relevé 5 in Table 5.

Jalovnik is a 1452 m-high mountain in the foothills of the southern Julian Alps. The shady slopes above the Kneža valley are forested with predominantly beech forests from the associations *Ranunculo platanifolii-Fagetum* and *Homogyno sylvestris-Fagetum*, only the former pastures under the peak of the mountain are now becoming overgrown with green alder (*Alnus viridis*). Except for the rockiest parts (dominated by the stands of the associations *Ostryo-Fagetum* and *Fraxino orni-Ostryetum*), the sunny slopes have been cleared (or burned) for pastures and hay meadows. Most of them have been abandoned for a long time. The species composition of these former hay meadows is presented in Table 4. Because of the mixed geological bedrock (limestone mixed with marlstone and chert, with the latter completely dominating some areas – Buser 1986, 1987) and slightly acid soil the character species of dry grasslands (class *Festuco-Brometea*), thermophilous forest edges (class *Trifolio-Geranietea*) and subalpine grasslands on calcareous bedrock (class

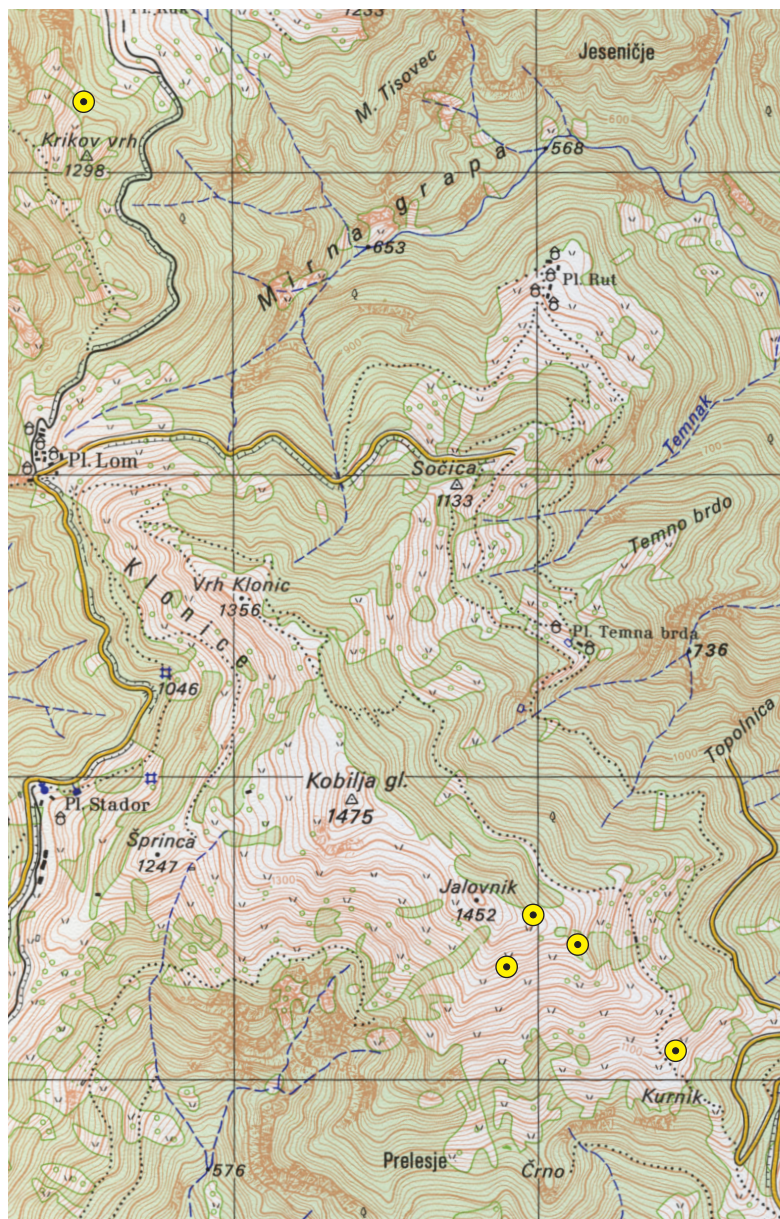


Figure 8: Localities of *Sorbus aria* stands under Mts. Jalovnik and Krikov Vrh.

Slika 8: Nahajališča sestojev mokovca pod Jalovnikom in Krikovim vrhom.

Elyno-Seslerietea) are frequently accompanied by some acidophilous species from the classes *Calluno-Ulicetea*, *Vaccinio-Piceetea* and *Mulgedio-Aconitetea*, and order *Poo alpinae-Trisetetalia*. These former hay meadows are temporarily classified into the following syntaxa: *Homogyno alpinae-Nardetum* (relevé 1 in Table 4, very similar is also relevé 2 in the same table, but for the time being it cannot be synsystematically classified), *Molinio arundinaceae-Iridetum erirrhizae* nom. prov., tall herbs with *Iris sibirica* subsp. *erirrhiza* (relevé 3 in Table 4),

and *Centaureo julici-Geranium sanguinei* nom. prov. (relevés 4 to 7 in Table 4). The presence of shrub and tree species (*Rosa canina*, *R. glauca*, *R. villosa*, *Sorbus aria*, *Berberis vulgaris*, *Juniperus communis*, *Rubus idaeus*, *Sorbus aria* and *S. chamaemespilus*) indicates delayed overgrowing and gradual re-establishment of the forest. In some, especially gullied parts with predominating chert and deep, slightly acid soil, former hay meadows have already become overgrown with forest (its phytosociological structure is presented in Table 5, relevés 1–4, relevé 5 represents the stand from Mt. Krikov Vrh). The tree layer of these pioneer stands is dominated by *Sorbus aria*, individual specimens of *Sorbus aucuparia*, *Picea abies*, *Acer pseudoplatanus*, *Salix caprea*, *Betula pendula* and, very rarely, also *Larix decidua*, *Tilia platyphyllos* and *Fagus sylvatica*. *Rubus idaeus* is very frequent in the shrub layer, while *Calamagrostis arundinacea*, *Veratrum album* subsp. *lobelianum*, *Athyrium filix femina*, *Luzula luzuloides* and *Senecio ovatus* frequently occur in the herb layer. These stands were recorded at the elevation between 1150 m to 1400 m, on potential sites of the altimontane beech forest from the association *Ranunculo platanifolii-Fagetum* and partly from the association *Saxifrago cuneifolii-Fagetum* (Dakskobler 2015). The successional stage with the dominating *Sorbus aria* in the tree layer under Mts. Jalovnik and Krikov Vrh is classified into the new association *Calamagrostio arundinaceae-Sorbetum ariae* ass. nov. hoc loco. Diagnostic

species of the new association are *Sorbus aria*, *Calamagrostis arundinacea*, *Veratrum album* subsp. *lobelianum*, *Luzula luzuloides* and *Convallaria majalis*. They indicate a special site ecology – frequently steep, sunny and shady gullied slopes in the altimontane belt on mixed geological bedrock with dominating chert and shallow, slightly acid and fresh (dystric or eutric) brown soil, with sites gradually changing back into the beech forest. *Sorbus aria* is a character species of the order *Quercetalia pubescenti-petraeae* and in Slovenia it occurs mainly in hop



Figure 9: *Sorbus aria* stand on the sunny slopes of Mt. Jalovnik.
Slika 9: Sestoj mokovca na prisojnih pobočjih Jalovnika.



Figure 10: Stand of the association *Calamagrostio arundinaceae-Sorbetum ariae*.

Slika 10: Sestoj asociacije *Calamagrostio arundinaceae-Sorbetum ariae*.



Figure 11: Former hay-fields on the sunny slopes of Mt. Jalovnik with *Iris sibirica* subsp. *erirrhiza*.

Slika 11: Nekdanje senožeti pod Jalovnikom s taksonom *Iris sibirica* subsp. *erirrhiza*.

hornbeam, beech and pine forests. The nomenclature type of the new association, *holotypus*, is relevé No. 2 in Table 5. The new association is classified into the alliance *Sambuco-Salicion capreae*, order *Sambucetalia* and class *Rhamno-Prunetea*. The studied *Sorbus aria* stands under

Mts. Jalovnik and Krikov Vrh can still be characterised as a pioneer forest on fresh sites in the montane belt, where the tree layer is dominated by *Salix caprea*, *Populus tremula*, *Betula pendula* and (or) *Sorbus aucuparia* (Exner & Willner 2007).

Conclusions

Stands with the tree layer dominated by *Sorbus aucuparia* and (or) *Sorbus aria* are rare in Slovenia. These two species usually occur in the lower tree layer of oak, hop-hornbeam, pine, larch, beech and (or) spruce communities. Both heliophilous pioneers can, in special site conditions in certain successional stages, dominate in the upper stand layer. We conducted a phytosociological study into two such examples from the southern Julian Alps. In the first, on former subalpine pastures on the level Na Polju above the alp Planina Razor and under the Breginjski Stol ridge, mountain ash (*Sorbus aucuparia*) has overgrown dwarf pine (*Pinus mugo*). In the second, on former hay meadows on chert under Mt. Jalovnik above the village Sela nad Podmelcem and under Mt. Krikov Vrh, turf species such as *Calamagrostis arundinacea* and *Molinia caerulea* subsp. *arundinacea* have been overgrown by *Sorbus aria*. Even though such pioneer forests tend to be relatively quickly (but not earlier than in half a century) replaced by climax species, in our case beech, they should not be overlooked, especially given their protective function (protection against avalanches) as well as their role as the sites of some endemic, rare or protected species (Anon. 2002, 2004). Stands of the association *Rhododendro hirsuti-Sorbetum aucupariae* belong to the habitat type of Community interest 4070* Bushes with *Pinus mugo* and *Rhododendretum hirsutum* and comprise also protected or rare species such as *Lycopodium annotinum*, *Huperzia selago*, *Horminum pyrenaicum*, *Athyrium distentifolium*, *Gentiana pannonica*, *Cyclamen purpurascens*, *Lilium martagon*, and *Aconitum angustifolium*. *Iris sibirica* subsp. *erirrhiza* is an example of such species in the stands of the association *Calamagrostio arundinaceae-Sorbetum ariae*. This south-eastern-Alpine-Illyrian taxon is more frequent on former, contact hay meadows that comprise also protected or rare species and endemics like *Arnica montana*, *Gymnadenia conopsea*, *Dianthus hyssopifolius*, *Traunsteinera globosa*, *Lilium martagon*, *L. carniolicum*, *Aconitum angustifolium*, *Platanthera bifolia*, *Veratrum nigrum*, *Rosa villosa*, *Helleborus odoratus* and *Centaurea haynaldii* subsp. *julica*.

Synsystematic classification of the studied communities into higher units is as follows:

Vaccinio-Piceetea Br.-Bl. et al. 1939 em. Zupančič (1976) 1980

Junipero-Pinetalia Boşcaiu 1971

Erico-Pinion mugo Leibundgut 1948

Rhodothamno-Pinenion mugo Zupančič 2013

Rhododendro hirsuti-Sorbetum aucupariae ass. nov.

Possible is also classification according to Šilc & Čarni (2012):

Roso pendulinae-Pinetea mugo Theurillat in Theurillat et al. 1995

Junipero-Pinetalia Boşcaiu 1971

Erico-Pinion mugo Leibundgut 1948

Rhododendro hirsuti-Sorbetum aucupariae ass. nov.

Calluno-Ulicetea Br.-Bl. et Tx. ex Klika 1948

Nardetalia strictae Preising 1950

Nardo-Agrostion tenuis Sillinger 1933

Homogyno alpinae-Nardetum Mráz 1956

Festuco-Brometea Br.-Bl. & Tx. ex Soó 1947

Brometalia erecti Koch 1926

Bromion erecti Koch 1926

Centaureo julici-Geranietum sanguinei nom. prov.

Molinio arundinaceae-Iridetum erirrhizae nom. prov.

Rhamno-Prunetea Rivas Goday et Borja Carbonell ex Tx. 1962

Sambucetalia racemosae Oberd. ex Doing 1962

Sambuco-Salicion caprae Tx. et Neumann ex Oberd. 1957

Calamagrostio arundinaceae-Sorbetum ariae ass. nov.

Povzetek

Dve novi pionirski združbi drevesnih vrst *Sorbus aucuparia* in *Sorbus aria* v južnih Julijskih Alpah

Sestoji, v katerih v drevesni plasti prevladujeta vrsti *Sorbus aucuparia* in (ali) *Sorbus aria*, so v Sloveniji precejšnja redkost. Navadno sta ti dve vrsti primešani v spodnji drevesni plasti hrastovih, črnogabrovih, borovih, macesnovih, bukovih in (ali) smrekovih združb. Oba svetloljubna pionirja v posebnih rastiščnih razmerah v nekaterih sukcesijskih stadijih lahko prevladata v zgornji sestojni plasti. Fitocenološko smo preučili dva taka primera iz južnih Julijskih Alp. V prvem, na nekdanjih visokogorskih pašnikih na potencialnih rastiščih subalpinskega bukvoja (*Polysticho lonchitis-Fagetum*) na uravnani Na polju nad pl. Razor in pod grebenom Breginjskega Stola, je jerebika (*Sorbus aucuparia*) prerasla rušje (*Pinus mugo*) in njene sestoje uvrščamo v novo asociacijo *Rhododendro hirsuti-Sorbetum aucupariae*. V drugem primeru, na nekdanjih senožetih na rožencu pod Jalovnikom nad Selmi nad Podmelcem in pod Krikovim vrhom pri planini Kuk (na potencialnih rastiščih altimontanskega bukvoja) pa je travno rušo vrst kot sta *Calamagrostis arundinacea* in *Molinia caerulea*

subsp. *arundinacea* zarasel mokovec in njegova sestoje uvrščamo v novo asociacijo *Calamagrostio arundinaceae-Sorbetum ariae*. Kljub temu, da takšne pionirske gozdove navadno razmeroma hitro (a ne prej kot v pol stoletja) nadomesti klimaksna vrsta, v našem primeru bukev, je nanje smiselno opozoriti, predvsem zaradi varovalne vloge, ki jo opravljajo (zaščita pred snežnimi plazovi), a tudi kot rastišča nekaterih endemičnih, redkih ali zavarovanih vrst (Anon. 2002, 2004). Sestoji asociacije *Rhododendro hirsuti-Sorbetum aucupariae* sodijo v evropsko varstveno pomembno habitatni tip 4070* Ruševje z dlakavim slečem (*Mugo-Rhododendretum hirsuti*) in v njih uspevajo tudi zavarovane ali redke vrste, kot so *Lycopodium annotinum*, *Huperzia selago*, *Horminum pyrenaicum*, *Athyrium distentifolium*, *Gentiana pannonica*, *Lilium martagon*, *Cyclamen purpurascens* in *Aconitum angustifolium*. V sestojih asociacije *Calamagrostio arundinaceae-Sorbetum ariae* je taka vrsta *Iris sibirica* subsp. *erirrhiza*. Ta jugovzhodno-alpsko-ilirski takson je sicer bolj pogost na stičnih nekdanjih senožetih, na katerih rastejo tudi zavarovane ali redke vrste ter endemiti *Arnica montana*, *Gymnadenia conopsea*, *Dianthus hyssopifolius*, *Traunsteinera globosa*, *Lilium martagon*, *L. carnolicum*, *Aconitum angustifolium*, *Platanthera bifolia*, *Veratrum nigrum*, *Rosa villosa*, *Helleborus odorus* in *Centaurea haynaldii* subsp. *julica*.

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Table 1: *Rhododendro hirsuti-Sorbetum aucupariae*.

Tabela 1: *Rhododendro hirsuti-Sorbetum aucupariae*.

Number of relevé (Zaporedna številka popisa)	1	2	3	4	5	6	7	8	9		
Database number of relevé (Delovna številka popisa)	258710	258711	258712	258713	258714	258716	254118	254149	254117		
Elevation in m (Nadmorska višina v m)	1550	1550	1550	1540	1540	1460	1530	1520	1530		
Aspect (Lega)	NE	NE	NE	NNE	NE	NW	NE	SW	N		
Slope in degrees (Nagib v stopinjah)	20	20	25	25	20	30	10	10	15		
Parent material (Matična podlaga)	A	A	A	A	A	A	A	A	A		
Soil (Tla)	Re	Re	Re	Re	Re	Re	Re	Re	Re		
Stoniness in % (Kamnitost v %)	5	5	0	5	5	20	20	20	20		
Cover of tree layer in % (Zastiranje drevesne plasti v %)	E3	70	80	70	80	70	60	60	70		
Cover of upper shrub layer in % (Zastiranje zgornje grmovne plasti v %): E2b	30	40	30	15	15	10	70	80	60		
Cover of lower shrub layer in % (Zastiranje spodnje grmovne plasti v %): E2a	40	30	40	40	50	20	30	40	30		
Cover of herb layer in % (Zastiranje zeliščne plasti v %): E1	80	80	80	80	80	80	60	80	70		
Cover of moss layer in % (Zastiranje mahovne plasti v %): E0	5	5	5	5	5	10	10	10	10		
Maximum diameter of trees (Največji prsni premer dreves)	cm	25	20	20	35	30	25	20	25		
Maximum height of trees (Največja drevesna višina)	m	10	10	8	10	10	8	10	14		
Number of species (Število vrst)	56	53	48	57	48	75	46	64	78		
Relevé area (Velikost popisne ploskve)	m ²	400	400	400	400	400	400	400	400		
Date of taking relevé (Datum popisa)	9/21/2015	9/21/2015	9/21/2015	9/21/2015	9/21/2015	6/11/2015	8/30/2014	9/2/2014	8/30/2014		
Quadrant (Kvadrant)	9746/2	9746/2	9746/2	9746/2	9746/2	9746/2	9748/4	9748/4	9748/4		
Coordinate GK X (D-48)	m	380483	380461	380409	380579	380542	380960	406537	406453		
Coordinate GK X (D-48)	m	5127556	5127572	5127596	5127531	5127542	5127470	5122776	5122884		
Diagnostic species of the association (Diagnostične vrste asociacije)											
SSC <i>Sorbus aucuparia</i>	E3	4	4	4	5	4	4	4	4	Pr.	Fr.
SSC <i>Sorbus aucuparia</i>	E2b	1	+	1	.	.	1	1	1	7	78
SSC <i>Sorbus aucuparia</i>	E2a	.	+	+	.	+	1	.	+	6	67
SSC <i>Sorbus aucuparia</i>	E1	.	.	.	+	.	.	.	+	3	33
EP <i>Pinus mugo</i>	E2b	2	3	2	1	1	3	4	4	9	100
VP <i>Lycopodium annotinum</i>	E1	+	1	+	+	+	+	1	+	3	33
EP <i>Rhododendron hirsutum</i>	E2a	+	.	.	+	+	1	3	4	7	78
BA <i>Salix waldesteiniana</i>	E2a	+	+	.	1	2	+	+	r	7	78
Geographical differential species (Geografske razlikovalne vrste)											
AF <i>Anemone trifolia</i>	E1	+	+	.	+	.	+	.	.	4	44
MuA <i>Aconitum angustifolium</i>	E1	+	1	11
Differential species of the subassociations (Razlikovalne vrste subasociacij)											
MA <i>Deschampsia cespitosa</i>	E1	2	3	2	3	1	2	.	.	6	67
FS <i>Myosotis sylvatica</i> agg.	E1	1	+	1	+	+	+	.	.	6	67
VP <i>Lonicera nigra</i>	E2a	+	1	+	+	+	+	.	.	6	67
MuA <i>Primula elatior</i>	E1	+	+	+	+	4	44
VP <i>Calamagrostis arundinacea</i>	E1	+	+	.	.	1	1	.	.	4	44
TR <i>Molopospermum peloponnesiacum</i> subsp. <i>baubini</i>	E1	.	+	.	.	+	+	.	.	3	33

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	8	9	Pr.	Fr.	
EP	<i>Calamagrostis varia</i>	E1	.	.	.	.	.	1	1	+	3	33	
ES	<i>Horminum pyrenaicum</i>	E1	.	.	.	.	.	+	1	+	3	33	
EP	<i>Rhodothamnus chamaecistus</i>	E1	.	.	.	.	.	.	+	+	2	22	
VP	Vaccinio-Piceetea												
	<i>Vaccinium myrtillus</i>	E1	1	1	+	1	2	1	4	3	2	9	100
	<i>Dryopteris dilatata</i>	E1	2	2	2	2	2	1	1	1	1	9	100
	<i>Dryopteris expansa</i>	E1	+	.	.	+	+	+	2	2	2	7	78
	<i>Homogyne alpina</i>	E1	+	1	+	+	.	1	1	1	1	8	89
	<i>Luzula sylvatica</i>	E1	1	3	2	2	2	1	.	.	+	7	78
	<i>Oxalis acetosella</i>	E1	1	1	1	1	+	1	.	.	1	7	78
	<i>Phegopteris connectilis</i>	E1	+	+	+	+	.	1	.	+	+	7	78
	<i>Polystichum lonchitis</i>	E1	+	.	.	+	+	+	+	1	1	7	78
	<i>Gymnocarpium dryopteris</i>	E1	.	+	+	+	+	1	.	+	+	7	78
	<i>Maianthemum bifolium</i>	E1	.	1	+	+	+	+	+	.	+	7	78
	<i>Vaccinium vitis-idaea</i>	E1	.	+	+	+	+	1	1	.	1	7	78
	<i>Gentiana asclepiadea</i>	E1	+	+	+	.	+	+	.	+	.	6	67
	<i>Solidago virgaurea</i>	E1	.	+	+	+	1	1	.	+	.	6	67
	<i>Lonicera caerulea</i>	E2a	.	+	+	1	+	+	.	.	r	6	67
	<i>Rosa pendulina</i>	E2a	+	.	.	+	.	.	1	.	+	4	44
	<i>Clematis alpina</i>	E2a	.	.	.	+	.	1	+	+	.	4	44
	<i>Picea abies</i>	E3	.	.	.	.	r	+	.	r	r	4	44
	<i>Picea abies</i>	E2b	.	.	.	.	.	+	.	.	.	1	11
	<i>Picea abies</i>	E2a	.	.	.	.	+	.	.	r	.	2	22
	<i>Luzula pilosa</i>	E1	.	.	.	.	.	+	+	+	+	4	44
	<i>Valeriana tripteris</i>	E1	+	.	.	.	.	+	.	.	+	3	33
	<i>Calamagrostis villosa</i>	E1	.	.	+	.	.	.	.	+	+	3	33
	<i>Luzula luzulina</i>	E1	.	.	.	.	.	+	.	+	+	3	33
	<i>Luzula luzuloides</i>	E1	.	.	.	.	.	+	.	.	+	2	22
	<i>Saxifraga cuneifolia</i>	E1	.	.	.	.	.	+	.	.	+	2	22
	<i>Huperzia selago</i>	E1	.	.	.	+	.	.	.	.	.	1	11
EP	Erico-Pinetea												
	<i>Rubus saxatilis</i>	E1	+	.	.	+	.	1	2	2	1	6	67
	<i>Cirsium erisithales</i>	E1	+	+	.	.	.	+	.	.	+	4	44
	<i>Erica carnea</i>	E1	.	.	.	.	.	+	+	+	+	4	44
	<i>Carex ornithopoda</i>	E1	.	.	.	.	.	.	.	.	+	1	11
SSC	Sambuco-Salicion capreae												
	<i>Rubus idaeus</i>	E2a	3	3	3	3	3	1	.	1	+	8	89
	<i>Fragaria vesca</i>	E1	+	1	.	+	+	+	.	.	+	6	67
	<i>Urtica dioica</i>	E1	.	.	+	.	.	.	.	+	.	2	22
AF	Aremonio-Fagion												
	<i>Cardamine enneaphyllos</i>	E1	+	+	.	+	+	+	.	.	+	6	67
	<i>Cardamine trifolia</i>	E1	.	.	.	.	2	.	.	.	2	2	22
	<i>Cyclamen purpurascens</i>	E1	.	.	.	.	.	.	+	.	.	1	11
FS	Fagetalia sylvaticae												
	<i>Dryopteris filix-mas</i>	E1	+	+	+	+	+	1	+	+	+	9	100
	<i>Paris quadrifolia</i>	E1	+	.	+	+	+	+	1	1	1	8	89
	<i>Prenanthes purpurea</i>	E1	+	+	+	.	.	.	+	.	+	5	56
	<i>Acer pseudoplatanus</i>	E3	+	.	.	r	.	.	.	.	.	2	22
	<i>Acer pseudoplatanus</i>	E2	+	+	.	+	.	.	+	+	.	5	56
	<i>Acer pseudoplatanus</i>	E1	.	1	.	.	.	.	.	.	.	1	11
	<i>Petasites albus</i>	E1	+	+	.	+	.	+	.	.	+	5	56
	<i>Epilobium montanum</i>	E1	.	1	+	.	+	+	.	+	.	5	56
	<i>Melica nutans</i>	E1	.	.	.	.	.	+	+	1	1	4	44

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	8	9	Pr.	Fr.	
	<i>Galeobdolon flavidum</i>	E1	.	+	.	.	.	.	1	1	3	33	
	<i>Lonicera alpigena</i>	E2a	.	.	+	+	+	.	.	.	3	33	
	<i>Lathyrus vernus</i> subsp. <i>vernus</i>	E1	.	.	.	+	+	.	.	.	2	22	
	<i>Galium laevigatum</i>	E1	.	+	.	.	.	.	.	.	1	11	
	<i>Lilium martagon</i>	E1	.	.	+	.	.	.	.	.	1	11	
	<i>Polystichum aculeatum</i>	E1	.	.	+	.	.	.	.	.	1	11	
	<i>Actaea spicata</i>	E1	.	.	+	.	.	.	.	.	1	11	
	<i>Fagus sylvatica</i>	E2	.	.	.	.	.	+	.	.	1	11	
	<i>Fagus sylvatica</i>	E1	.	.	.	.	+	.	.	.	1	11	
	<i>Luzula nivea</i>	E1	.	.	.	.	.	+	.	.	1	11	
	<i>Poa nemoralis</i>	E1	.	.	.	.	.	+	.	.	1	11	
	<i>Festuca heterophylla</i>	E1	.	.	.	.	.	.	+	.	1	11	
QF	Quercus-Fagetea												
	<i>Anemone nemorosa</i>	E1	.	.	.	.	.	1	1	1	3	33	
	<i>Sorbus aria</i>	E3	r	+	.	.	.	.	.	.	2	22	
QP	<i>Sorbus aria</i>	E2b	.	.	.	.	.	.	.	+	1	11	
QP	<i>Sorbus aria</i>	E2a	.	.	.	.	.	.	.	+	1	11	
BA	Betulo-Alnetea												
	<i>Salix appendiculata</i>	E3a	r	.	+	.	.	+	.	+	4	44	
	<i>Salix appendiculata</i>	E2b	+	+	1	+	+	1	.	+	1	89	
	<i>Salix appendiculata</i>	E2a	.	.	.	.	.	.	.	+	1	11	
	<i>Sorbus chamaemespilus</i>	E2	+	.	.	.	+	+	+	+	1	67	
MuA	Mulgedio-Aconitetea												
	<i>Athyrium filix-femina</i>	E1	2	2	1	1	2	1	1	1	2	9	100
	<i>Polygonatum verticillatum</i>	E1	2	2	2	+	.	+	1	1	+	8	89
	<i>Veratrum album</i>	E1	+	.	+	+	+	+	1	1	1	8	89
	<i>Chaerophyllum hirsutum</i>	E1	2	1	2	1	+	1	.	1	+	8	89
	<i>Senecio cacaliaster</i>	E1	+	+	1	+	+	.	.	+	+	7	78
	<i>Viola biflora</i>	E1	+	+	.	.	.	+	+	1	1	6	67
	<i>Aconitum lycoctonum</i> subsp. <i>ranunculifolium</i> (<i>A. lupicida</i> ?)	E1	.	.	+	+	.	+	+	1	+	6	67
	<i>Saxifraga rotundifolia</i>	E1	+	+	+	+	.	.	.	+	.	5	56
	<i>Senecio ovatus</i>	E1	+	+	+	+	.	.	.	+	.	5	56
	<i>Stellaria nemorum</i>	E1	1	+	+	+	.	.	.	.	.	4	44
	<i>Ranunculus platanifolius</i>	E1	+	.	+	+	+	.	.	.	.	4	44
	<i>Geum rivale</i>	E1	+	.	+	.	.	+	.	.	+	4	44
	<i>Rumex arifolius</i>	E1	+	.	+	.	.	+	.	.	.	3	33
	<i>Hypericum maculatum</i>	E1	.	.	+	.	.	.	.	+	+	3	33
	<i>Athyrium distentifolium</i>	E1	.	.	1	.	.	.	.	.	.	1	11
	<i>Allium victorialis</i>	E1	.	.	.	.	+	.	.	.	.	1	11
	<i>Grafia golaka</i>	E1	.	.	.	.	+	.	.	.	.	1	11
	<i>Thalictrum aquilegifolium</i>	E1	.	.	.	.	.	+	.	.	.	1	11
ES	Elyno-Seslerietea												
	<i>Betonica alopecuros</i>	E1	+	+	+	.	.	.	+	+	+	6	67
	<i>Sesleria caerulea</i> subsp. <i>calcaria</i>	E1	+	+	.	.	+	+	+	.	+	6	67
	<i>Campanula witasekiana</i>	E1	.	.	.	.	.	+	.	+	+	3	33
	<i>Soldanella alpina</i>	E1	.	.	.	.	.	.	1	+	+	3	33
	<i>Carex ferruginea</i>	E1	.	.	.	.	.	+	.	.	1	2	22
	<i>Aster bellidiastrum</i>	E1	.	.	.	.	.	.	+	.	+	2	22
	<i>Koeleria eriostachya</i>	E1	.	.	.	.	.	.	.	+	+	2	22
	<i>Festuca calva</i>	E1	.	.	.	.	.	+	.	.	.	1	11
	<i>Koeleria pyramidata</i>	E1	.	.	.	.	.	.	+	.	.	1	11
	<i>Helianthemum nummularium</i> subsp. <i>grandiflorum</i>	E1	.	.	.	.	.	.	.	+	.	1	11
	<i>Laserpitium peucedanoides</i>	E1	.	.	.	.	.	.	.	+	.	1	11

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	8	9	Pr.	Fr.
	<i>Alchemilla alpigena</i>	E1	.	.	.	.	.	.	.	+	1	11
	<i>Astrantia bavarica</i>	E1	.	.	.	.	.	.	.	+	1	11
	<i>Carex firma</i>	E1	.	.	.	.	.	.	.	+	1	11
	<i>Carex sempervirens</i>	E1	.	.	.	.	.	.	.	+	1	11
	<i>Galium anisophyllum</i>	E1	.	.	.	.	.	.	.	+	1	11
CU	Calluno-Ulicetea											
	<i>Potentilla erecta</i>	E1	.	.	.	.	.	.	+	+	2	22
	<i>Gentiana pannonica</i>	E1	.	+	.	.	.	.	.	.	1	11
	<i>Anthoxanthum odoratum</i>	E1	.	.	.	.	.	+	.	.	1	11
	<i>Agrostis capillaris</i>	E1	.	.	.	.	.	.	.	+	1	11
MA	Molinio-Arrhenatheretea											
	<i>Taraxacum officinale</i>	E1	.	.	.	.	.	+	.	.	1	11
	<i>Festuca rubra</i>	E1	.	.	.	.	.	.	+	.	1	11
SCF	Scheuchzerio-Caricetea fuscae											
	<i>Parnassia palustris</i>	E1	.	.	.	.	.	.	+	.	1	11
	<i>Selaginella selaginoides</i>	E1	.	.	.	.	.	.	.	+	1	11
TR	Thlaspietea rotundifolii											
	<i>Adenostyles glabra</i>	E1	.	.	.	.	.	+	+	+	4	44
	<i>Festuca nitida</i>	E1	.	.	.	.	.	.	+	1	3	33
	<i>Campanula cespitosa</i>	E1	.	.	.	.	.	.	.	+	1	11
	<i>Dryopteris villarii</i>	E1	.	.	.	.	.	.	.	+	1	11
AT	Asplenietea trichomanis											
	<i>Asplenium viride</i>	E1	.	.	.	+	.	1	+	1	1	56
	<i>Cystopteris fragilis</i>	E1	.	.	.	+	.	.	.	.	1	11
O	Other species (Druge vrste)											
	<i>Alchemilla</i> sp.	E1	.	.	.	.	.	+	.	.	1	11
ML	Mosses and lichens (Mahovi in lišaji)											
	<i>Dicranum scoparium</i>	E0	+	+	.	+	+	+	+	.	7	78
	<i>Ctenidium molluscum</i>	E0	+	+	.	.	.	+	1	+	1	67
	<i>Rhytidiadelphus triquetrus</i>	E0	1	.	+	1	1	+	.	.	6	67
	<i>Polytrichum formosum</i>	E0	+	+	.	+	+	.	+	.	6	67
	<i>Tortella tortuosa</i>	E0	.	+	.	+	.	+	+	.	5	56
	<i>Rhytidiadelphus loreus</i>	E0	1	+	+	+	.	.	.	.	4	44
	<i>Fissidens dubius</i>	E0	.	.	.	.	.	+	+	+	4	44
	<i>Plagiothecium undulatum</i>	E0	.	.	.	+	+	.	.	.	2	22
	<i>Marchantia polymorpha</i>	E0	.	.	.	+	.	.	.	.	2	22
	<i>Mnium thomsonii</i>	E0	.	.	.	.	+	.	.	.	1	11
	<i>Peltigera leucophlebia</i>	E0	.	.	.	.	.	+	.	.	1	11
	<i>Rhizomnium punctatum</i>	E0	.	.	.	.	.	+	.	.	1	11
	<i>Bryum capillare</i>	E0	.	.	.	.	.	+	.	.	1	11
	<i>Cladonia pyxidata</i>	E0	.	.	.	.	.	.	.	+	1	11

Legend - Legenda

- A Limestone – apnenec
- Re Rendzina – rendzina

Table 2: Synoptic table of syntaxa *Alno viridis-Sorbetum aucupariae* and *Rhododendro hirsuti-Sorbetum aucupariae*.

Tabela 2: Sintezna preglednica sintaksonov *Alno viridis-Sorbetum aucupariae* in *Rhododendro hirsuti-Sorbetum aucupariae*.

Successive number (Zaporedna številka)		1	2	3	4
Sign for syntaxa (Oznaka sintaksonov)		AvSals	AvSaad	RhSadc	RhSacy
Number of relevé (Število popisov)		3	7	6	3
Diagnostic species of the association <i>Alno viridis-Sorbetum aucupariae</i> (Diagnostične vrste asociacije)					
BA	<i>Alnus viridis</i>	E2b	100 86	.	.
MA	<i>Veratrum album</i> subsp. <i>lobelianum</i>	E1	100 100	83	100
MA	<i>Senecio cacaliaster</i>	E1	67 100	83	67
BA	<i>Salix appendiculata</i>	E3	.	50	.
BA	<i>Salix appendiculata</i>	E2b	33 100	100	67
BA	<i>Salix appendiculata</i>	E2a	33 57	.	33
Diagnostic species of the association <i>Rhododendro hirsuti-Sorbetum aucupariae</i> (Diagnostične vrste asociacije)					
EP	<i>Pinus mugo</i>	E2	33	100 100	
EP	<i>Rhododendron hirsutum</i>	E2a	.	29 67 100	
BA	<i>Salix waldesteiniana</i>	E2a	.	29 83 67	
VP	<i>Lycopodium annotinum</i>	E1	.	100 100	
Differential species of the subassociations (Razlikovalnice subasociacij)					
VP	<i>Luzula sylvatica</i>	E1	100 14	100 33	
BA	<i>Sorbus chamaemespilus</i>	E2	100	50 100	
CU	<i>Carex pilulifera</i>	E1	67	.	.
TR	<i>Adenostyles glabra</i>	E1	.	100 17 100	
AT	<i>Asplenium viride</i>	E1	.	100 33 100	
MA	<i>Angelica sylvestris</i>	E1	.	100	.
AT	<i>Cystopteris fragilis</i>	E1	.	86 17	.
JT	<i>Soldanella alpina</i>	E1	.	71	100
MA	<i>Deschampsia cespitosa</i>	E1	33 86	100	.
FS	<i>Myosotis sylvatica</i> agg.	E1	33	100	.
VP	<i>Lonicera nigra</i>	E1	.	100	.
VP	<i>Calamagrostis arundinacea</i>	E1	100 100	67	.
MuA	<i>Primula elatior</i>	E1	.	67	.
TR	<i>Molopospermum peloponnesiacum</i> subsp. <i>baubini</i>	E1	.	71 50	.
ES	<i>Horminium pyrenaicum</i>	E1	.	.	100
EP	<i>Calamagrostis varia</i>	E1	.	.	100
EP	<i>Rhodothamnus chamaecistus</i>	E1	.	.	67
SSC	<i>Sambuco-Salicion capreae</i>				
	<i>Sorbus aucuparia</i>	E3	100 100	100 100	
	<i>Sorbus aucuparia</i>	E2b	33 29	67 100	
	<i>Sorbus aucuparia</i>	E2a	100 57	67 67	
	<i>Sorbus aucuparia</i>	E1	33 29	17 67	
	<i>Rubus idaeus</i>	E2a	100 100	100 67	
	<i>Salix caprea</i>	E3	33	.	.
	<i>Salix caprea</i>	E2b	33	.	.
	<i>Fragaria vesca</i>	E1	.	43 83 33	
	<i>Urtica dioica</i>	E1	.	29 17 33	
MuA	<i>Mulgedio-Aconitetea</i>				
	<i>Athyrium filix-femina</i>	E1	100 100	100 100	
	<i>Polygonatum verticillatum</i>	E1	100 86	83 100	
	<i>Saxifraga rotundifolia</i>	E1	33 71	67 33	
	<i>Ranunculus platanifolius</i>	E1	33 86	67	.
	<i>Rumex arifolius</i>	E1	33 57	50	.
	<i>Adenostyles alliariae</i>	E1	33 43	.	.
	<i>Streptopus amplexifolius</i>	E1	33 14	.	.
	<i>Athyrium distentifolium</i>	E1	33 14	17	.
	<i>Stellaria nemorum</i>	E1	33 14	67	.
	<i>Allium victorialis</i>	E1	33	17	.

Successive number (Zaporedna številka)		1	2	3	4
	<i>Millium effusum</i>	E1	33	.	.
	<i>Geum rivale</i>	E1	.	100	50 33
	<i>Thalictrum aquilegifolium</i>	E1	.	100	17 .
	<i>Aconitum lycoctonum</i> s. lat. (<i>A. lupicida</i>)	E1	.	86	50 100
	<i>Geranium sylvaticum</i>	E1	.	86	. .
	<i>Chaerophyllum hirsutum</i>	E1	.	71	100 67
	<i>Viola biflora</i>	E1	.	71	50 100
	<i>Alchemilla xanthochlora</i>	E1	.	71	. .
	<i>Hypericum maculatum</i>	E1	.	57	17 67
	<i>Pleurospermum austriacum</i>	E1	.	57	. .
	<i>Heraclium montanum</i> (inc. <i>H. pollinianum</i>)	E1	.	43	. .
	<i>Phyteuma ovatum</i>	E1	.	43	. .
	<i>Myrrhis odorata</i>	E1	.	43	. .
	<i>Doronicum austriacum</i>	E1	.	29	. .
	<i>Lathyrus occidentalis</i> var. <i>montanus</i>	E1	.	29	. .
	<i>Senecio ovatus</i>	E1	.	14	67 33
	<i>Aconitum degenii</i> subsp. <i>paniculatum</i>	E1	.	14	. .
	<i>Agropyron caninum</i>	E1	.	14	. .
	<i>Crepis paludosa</i>	E1	.	14	. .
	<i>Poa hybrida</i>	E1	.	14	. .
	<i>Senecio rivularis</i>	E1	.	14	. .
	<i>Silene dioica</i>	E1	.	14	. .
	<i>Chaerophyllum aureum</i>	E1	.	14	. .
	<i>Tanacetum corymbosum</i> subsp. <i>clusii</i>	E1	.	14	. .
	<i>Grafia golaka</i>	E1	.	.	17 .
VP	Vaccinio-Piceetea				
	<i>Dryopteris dilatata</i>	E1	100	57	100 100
	<i>Gentiana asclepiadea</i>	E1	67	86	83 33
	<i>Oxalis acetosella</i>	E1	67	86	100 33
	<i>Rosa pendulina</i>	E2a	67	86	33 67
	<i>Maianthemum bifolium</i>	E1	67	29	83 67
	<i>Vaccinium myrtillus</i>	E1	67	29	100 100
	<i>Phegopteris connectilis</i>	E1	67	29	83 67
	<i>Luzula luzuloides</i> subsp. <i>luzuloides</i>	E1	67	14	17 33
	<i>Picea abies</i>	E3	67	.	33 67
	<i>Picea abies</i>	E2b	67	14	17 .
	<i>Picea abies</i>	E2a	67	14	. 33
	<i>Blechnum spicant</i>	E1	67	.	. .
	<i>Solidago virgaurea</i>	E1	33	86	83 33
	<i>Veronica urticifolia</i>	E1	33	14	. .
	<i>Luzula luzulina</i>	E1	33	.	17 67
	<i>Thelypteris limbosperma</i>	E1	33	.	. .
	<i>Luzula luzuloides</i> subsp. <i>rubella</i>	E1	33	.	. .
	<i>Valeriana tripteris</i>	E1	.	86	33 33
	<i>Polystichum lonchitis</i>	E1	.	57	67 100
	<i>Dryopteris expansa</i>	E1	.	29	67 100
	<i>Homogyne alpina</i>	E1	.	14	83 100
	<i>Gymnocarpium dryopteris</i>	E1	.	14	83 67
	<i>Lonicera caerulea</i>	E2a	.	14	83 33
	<i>Saxifraga cuneifolia</i>	E1	.	14	17 33
	<i>Abies alba</i>	E1	.	14	. .
	<i>Homogyne sylvestris</i>	E1	.	14	. .
	<i>Pyrola minor</i>	E1	.	14	. .
	<i>Vaccinium vitis-idaea</i>	E1	.	.	83 67
	<i>Clematis alpina</i>	E1	.	.	33 67
	<i>Luzula pilosa</i>	E1	.	.	17 100
	<i>Calamagrostis villosa</i>	E1	.	.	17 67
	<i>Huperzia selago</i>	E1	.	.	17 .

Successive number (Zaporedna številka)		1	2	3	4
EP	Erico-Pinetea				
	<i>Rubus saxatilis</i>	E1	33	86	50 100
	<i>Cirsium erisithales</i>	E1	.	43	50 33
	<i>Carex ornithopoda</i>	E1	.	29	. 33
	<i>Molinia caerulea</i> subsp. <i>arundinacea</i>	E1	.	29	. .
	<i>Aquilegia nigricans</i>	E1	.	14	. .
	<i>Erica carnea</i>	E1	.	.	17 100
AF	Aremonio-Fagion				
	<i>Cardamine trifolia</i>	E1	33	.	17 33
	<i>Knautia drymeia</i>	E1	.	14	. .
	<i>Rhamnus fallax</i>	E2b	.	14	. .
	<i>Cardamine enneaphyllos</i>	E1	.	14	83 33
	<i>Anemone trifolia</i>	E1	.	.	67 .
	<i>Cyclamen purpurascens</i>	E1	.	.	. 33
TA	Tilio-Acerion				
	<i>Acer pseudoplatanus</i>	E3	67	57	33 .
	<i>Acer pseudoplatanus</i>	E2	.	14	50 67
	<i>Acer pseudoplatanus</i>	E1	67	43	17 .
	<i>Polystichum braunii</i>	E1	33	.	33 .
	<i>Polystichum x luerssenii</i>	E1	.	.	33 .
	<i>Hesperis candida</i>	E1	.	14	. .
	<i>Lunaria rediviva</i>	E1	.	14	. .
	<i>Adoxa moschatellina</i>	E1	.	14	17 .
FS	Fagetalia sylvaticae				
	<i>Fagus sylvatica</i>	E3	33	.	. .
	<i>Fagus sylvatica</i>	E2	67	.	17 .
	<i>Fagus sylvatica</i>	E1	33	14	17 .
	<i>Paris quadrifolia</i>	E1	67	100	83 100
	<i>Prenanthes purpurea</i>	E1	67	.	50 67
	<i>Dryopteris filix-mas</i>	E1	33	100	100 100
	<i>Galium laevigatum</i>	E1	33	71	17 .
	<i>Lilium martagon</i>	E1	33	71	17 .
	<i>Laburnum alpinum</i>	E3	33	29	. .
	<i>Laburnum alpinum</i>	E2a	.	14	. .
	<i>Laburnum alpinum</i>	E1	.	14	. .
	<i>Scrophularia nodosa</i>	E1	33	14	. .
	<i>Polystichum aculeatum</i>	E1	.	57	17 .
	<i>Symphytum tuberosum</i>	E1	.	57	. .
	<i>Actaea spicata</i>	E1	.	43	17 .
	<i>Lathyrus vernus</i> subsp. <i>vernus</i>	E1	.	43	33 .
	<i>Epilobium montanum</i>	E1	.	29	67 33
	<i>Daphne mezereum</i>	E2a	.	29	. .
	<i>Phyllitis scolopendrium</i>	E1	.	29	. .
	<i>Aruncus dioicus</i>	E1	.	29	. .
	<i>Galeobdolon flavidum</i>	E1	.	14	17 67
	<i>Lonicera alpigena</i>	E2a	.	14	50 .
	<i>Luzula nivea</i>	E1	.	14	17 .
	<i>Mercurialis perennis</i>	E1	.	14	. .
	<i>Carex sylvatica</i>	E1	.	14	. .
	<i>Ranunculus lanuginosus</i>	E1	.	14	. .
	<i>Campanula trachelium</i>	E1	.	14	. .
	<i>Lathyrus vernus</i> subsp. <i>flaccidus</i>	E1	.	14	. .
	<i>Melica nutans</i>	E1	.	.	17 100
	<i>Petasites albus</i>	E1	.	.	67 33
	<i>Poa nemoralis</i>	E1	.	.	17 .
	<i>Festuca heterophylla</i>	E1	.	.	. 33
QF	Quercu-Fagetea				
	<i>Anemone nemorosa</i>	E1	67	86	. 100

Successive number (Zaporedna številka)		1	2	3	4
QP	<i>Sorbus aria</i>	E3	.	.	33
QP	<i>Sorbus aria</i>	E2b	67	14	.
	<i>Dactylorhiza fuchsii</i>	E1	.	43	.
ES	<i>Elyno-Seslerietea</i>				
	<i>Sesleria caerulea</i> subsp. <i>calcaria</i>	E1	.	71	67
	<i>Campanula witasekiana</i>	E1	.	29	17
	<i>Festuca calva</i>	E1	.	29	17
	<i>Hieracium pilosum</i>	E1	.	29	.
	<i>Carex ferruginea</i>	E1	.	29	17
	<i>Betonica alopecuroides</i>	E1	.	14	50
	<i>Aster bellidiflorus</i>	E1	.	14	.
	<i>Carex sempervirens</i>	E1	.	14	.
FB	<i>Koeleria pyramidata</i>	E1	.	14	.
	<i>Heliosperma alpestre</i>	E1	.	14	.
	<i>Koeleria eryostachia</i>	E1	.	.	.
	<i>Helianthemum grandiflorum</i>	E1	.	.	.
	<i>Laserpitium peucedanoides</i>	E1	.	.	.
	<i>Astrantia bavarica</i>	E1	.	.	.
	<i>Carex firma</i>	E1	.	.	.
	<i>Galium anisophyllum</i>	E1	.	.	.
SC	<i>Scheuchzerio-Caricetea fuscae</i>				
	<i>Parnassia palustris</i>	E1	.	.	.
	<i>Selaginella selaginoides</i>	E1	.	.	.
CU	<i>Calluno-Ulicetea</i>				
	<i>Anthoxanthum odoratum</i>	E1	.	.	.
	<i>Gentiana pannonica</i>	E1	.	.	.
PaT	<i>Poa alpinae-Trisetetalia</i>				
	<i>Poa alpina</i>	E1	.	43	.
	<i>Trollius europaeus</i>	E1	.	43	.
	<i>Pimpinella major</i> subsp. <i>rubra</i>	E1	.	29	.
	<i>Potentilla erecta</i>	E1	.	.	.
	<i>Agrostis capillaris</i>	E1	.	.	.
MA	<i>Molinio-Arrhenatheretea</i>				
	<i>Taraxacum officinale</i>	E1	.	14	17
	<i>Festuca rubra</i>	E1	.	.	.
TR	<i>Thlaspietea rotundifolii</i>				
	<i>Alchemilla alpigena</i>	E1	.	57	.
	<i>Rhodiola rosea</i>	E1	.	57	.
	<i>Festuca nitida</i>	E1	.	43	.
	<i>Dryopteris villarii</i>	E1	.	29	.
	<i>Arabis alpina</i>	E1	.	14	.
	<i>Cystopteris montana</i>	E1	.	14	.
	<i>Hieracium bifidum</i>	E1	.	14	.
	<i>Campanula cespitosa</i>	E1	.	.	.
AT	<i>Asplenieta trichomanis</i>				
	<i>Paederota lutea</i>	E1	.	57	.
	<i>Campanula carnica</i>	E1	.	29	.
	<i>Asplenium trichomanes</i>	E1	.	29	.
	<i>Sedum maximum</i>	E1	.	14	.
	<i>Festuca stenantha</i>	E1	.	14	.
	<i>Primula auricula</i>	E1	.	14	.
	<i>Asplenium ruta-muraria</i>	E1	.	14	.
	<i>Cerastium subtriflorum</i>	E1	.	14	.
	<i>Saxifraga crustata</i>	E1	.	14	.
O	Other species (Druge vrste)				
	<i>Alchemilla</i> sp.	E1	.	14	17
ML	Mosses and lichens (Mahovi in lišaji)				
	<i>Polytrichum formosum</i>	E0	67	43	67

Successive number (Zaporedna številka)	1	2	3	4	
<i>Rhytidiadelphus triquetrus</i>	E0	33	86	83	33
<i>Eurhynchium striatum</i>	E0	33	.	.	.
<i>Pseudoleskeella catenulata</i>	E0	33	.	.	.
<i>Ctenidium molluscum</i>	E0	.	100	50	100
<i>Tortella tortuosa</i>	E0	.	43	50	67
<i>Isothecium alopecuroides</i>	E0	.	29	.	.
<i>Schistidium apocarpum</i>	E0	.	29	.	.
<i>Mnium thomsonii</i>	E0	.	29	17	.
<i>Hylocomium splendens</i>	E0	.	14	.	.
<i>Rhytidiadelphus loreus</i>	E0	.	14	67	.
<i>Cladonia pyxidata</i>	E0	.	14	.	33
<i>Dicranum scoparium</i>	E0	.	14	83	67
<i>Marchantia polymorpha</i>	E0	.	14	17	33
<i>Peltigera canina</i>	E0	.	14	.	.
<i>Atrichum undulatum</i>	E0	.	14	.	.
<i>Fisidens dubius</i>	E0	.	.	17	100
<i>Plagiothecium undulatum</i>	E0	.	.	33	.
<i>Peltigera leucophlebia</i>	E0	.	.	17	.
<i>Rhizomnium punctatum</i>	E0	.	.	17	.
<i>Bryum capillare</i>	E0	.	.	17	.

Legend – Legenada

- AvSals *Alno viridis-Sorbetum aucupariae luzuletosum sylvaticae*
 AvSaad *Alno viridis-Sorbetum aucupariae adenostyletosum glabrae*
 RhSadc *Rhododendro hirsuti-Sorbetum aucupariae deschampsietosum cespitosae*
 RhSacr *Rhododendro hirsuti-Sorbetum aucupariae calamagrostietosum variae*

Table 3: Phytosociological groups of the associations *Alno viridis-Sorbetum aucupariae* and *Rhododendro hirsuti-Sorbetum aucupariae*.

Tabela 3: Phytosociological groups of the associations *Alno viridis-Sorbetum aucupariae* in *Rhododendro hirsuti-Sorbetum aucupariae*.

Successive number (Zaporedna številka)	1	2	3	4
Sign for syntaxa (Oznaka sintaktonov)	AvSals	AvSaad	RhSadc	RhSacr
Number of relevé (Število popisov)	3	7	6	3
<i>Sambuco-Salicetum capreae</i>	10.5	5.4	6.9	6.4
<i>Betulo-Alnetea</i>	6.5	3.8	4.3	3.7
<i>Mulgedio-Aconitetea</i>	16.2	23.8	16.3	11.0
<i>Vaccinio-Piceetea</i>	29.4	13.0	26.2	22.0
<i>Erico-Pinetea</i>	1.6	3.2	4.3	8.7
<i>Aremonio-Fagion</i>	2.4	3.8	6.9	10.1
<i>Tilio-Acerion</i>	4.1	2.2	2.8	0.9
<i>Fagetalia sylvaticae</i>	19.5	16.4	16.6	9.2
<i>Quercu-Fagetea</i>	3.3	2.0	0.5	1.8
<i>Elymo-Seslerietea. Scheuchzerio-Caricetea fuscae</i>	0	4.6	2.6	12.4
<i>Calluno-Ulicetea. Poo alpinae-Trisetetalia</i>	1.6	1.6	0.5	0.9
<i>Molinio-Arrhenatheretea</i>	0.8	2.8	1.8	0.5
<i>Thlaspietea rotundifolii</i>	0	5.6	1.0	4.1
<i>Asplenieta trichomanis</i>	0	5.4	0.8	1.4
Other species (Druge vrste)	0	0.2	0.3	0
Mosses and lichens (Mahovi in lišaji)	4.1	6.4	8.2	6.9
Total (Skupaj)	100	100.0	100	100

Legend – Legenada

- AvSals *Alno viridis-Sorbetum aucupariae luzuletosum sylvaticae*
 AvSaad *Alno viridis-Sorbetum aucupariae adenostyletosum glabrae*
 RhSadc *Rhododendro hirsuti-Sorbetum aucupariae deschampsietosum cespitosae*
 RhSacr *Rhododendro hirsuti-Sorbetum aucupariae calamagrostietosum variae*

Table 4: Floristic composition and phytosociological structure of abandoned hay meadows under the Mt. Jalovnik.

Tabela 4: Floristična sestava in fitocenološka zgradba nekdanjih senožeti pod Jalovnikom.

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	
Database number of relevé (Delovna številka popisa)		245392	255859	245390	245391	255862	255860	255861	
Elevation in m (Nadmorska višina v m)		1400	1400	1375	1190	1150	1220	1090	
Aspect (Lega)		SE	SE	S	NEE	S	SE	SE	
Slope in degrees (Nagib v stopinjah)		10	25	40	35	30	30	25	
Parent material (Matična podlaga)		R	ALR	R	AR	ALR	AR	ALR	
Soil (Tla)		Dy	Eu	Dy	Eu	Eu	Re	Eu	
Cover of shrub layer in % (Zastiranje grmovne plasti v %):		E2	.	20	5	.	10	5	
Cover of herb layer in % (Zastiranje zeliščne plasti v %):		E1	100	90	95	100	100	100	
Number of species (Število vrst)			21	28	20	44	57	72	76
Relevé area (Velikost popisne ploskve)		m ²	20	40	20	20	40	40	40
Date of taking relevé (Datum popisa)			6/15/2012	6/23/1999	6/15/2012	6/15/2012	6/23/1999	6/23/1999	
Quadrant (Kvadrant)			9848/2	9848/2	9848/2	9848/2	9848/2	9848/2	
Coordinate GK X (D-48)		m	407996	408014	407926	408444	408385	408357	
Coordinate GK X (D-48)		m	5116514	5116506	5116445	5116273	5116145	5116246	
			5116514	5116506	5116445	5116273	5116145	5116246	
			5116514	5116506	5116445	5116273	5116145	5116246	
Diagnostic species of syntaxa (Diagnostične vrste sintaksonov)									
CU	<i>Nardus stricta</i>	E1	2	.	.	.	.	.	Pr. 1
VP	<i>Homogyne alpina</i>	E1	1	.	.	.	.	.	1
CU	<i>Carex pallescens</i>	E1	+	+	.	.	.	.	2
CU	<i>Arnica montana</i>	E1	.	+	.	.	.	.	1
EP	<i>Molinia caerulea</i> subsp. <i>arundinacea</i>	E1	4	2	3	4	1	+	7
FB	<i>Iris sibirica</i> subsp. <i>erirrhiza</i>	E1	+	1	4	2	1	1	7
Calluno-Ulicetea									
CU	<i>Potentilla erecta</i>	E1	1	1	1	+	+	+	7
	<i>Phyteuma zahlbruckneri</i>	E1	.	.	.	.	1	.	2
	<i>Polygala vulgaris</i>	E1	.	.	.	.	.	+	1
Festuco-Brometea									
	<i>Cirsium erisithales</i>	E1	.	+	.	+	1	+	5
	<i>Carlina acaulis</i>	E1	.	+	.	.	+	+	4
	<i>Galium verum</i>	E1	.	.	.	+	1	1	4
	<i>Bromopsis transilvanica</i>	E1	.	.	.	1	+	1	4
	<i>Euphorbia verrucosa</i>	E1	.	.	.	1	1	+	4
	<i>Salvia pratensis</i>	E1	.	.	.	+	+	1	4
	<i>Ranunculus polyanthemophyllus</i>	E1	.	.	.	+	+	+	4
	<i>Trifolium montanum</i>	E1	.	.	.	+	+	1	4
	<i>Koeleria pyramidata</i>	E1	.	.	.	+	.	1	3
	<i>Peucedanum oreoselinum</i>	E1	.	.	.	+	.	+	3
	<i>Buphthalmum salicifolium</i>	E1	.	.	.	+	.	1	3
	<i>Cirsium pannonicum</i>	E1	.	.	.	+	.	1	3
	<i>Cirsium x linkianum</i>	E1	.	.	.	+	.	+	3
	<i>Brachypodium rupestre</i>	E1	.	.	.	.	1	1	3
	<i>Gymnadenia conopsea</i>	E1	.	.	.	.	+	+	3
	<i>Helictotrichon praeustum</i>	E1	.	.	.	.	+	+	3

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	Pr.	
	<i>Hypochoeris maculata</i>	E1	.	.	.	.	+	+	+	3
	<i>Dianthus hyssopifolius</i>	E1	.	.	.	.	+	+	.	2
	<i>Briza media</i>	E1	.	.	.	.	.	+	+	2
	<i>Carex humilis</i>	E1	.	.	.	+	.	.	.	1
	<i>Genista tinctoria</i>	E1	.	.	.	.	+	.	.	1
	<i>Euphorbia cyparissias</i>	E1	.	.	.	.	.	+	.	1
	<i>Teucrium chamaedrys</i>	E1	.	.	.	.	.	+	.	1
	<i>Anthyllis vulneraria</i>	E1	.	.	.	.	.	.	+	1
	<i>Filipendula vulgaris</i>	E1	.	.	.	.	.	.	+	1
	<i>Stachys recta</i>	E1	.	.	.	.	.	.	+	1
	<i>Thymus pulegioides</i>	E1	.	.	.	.	.	.	+	1
PaT	<i>Poo alpinae-Trisetetalia</i>									
	<i>Astrantia major</i>	E1	.	.	.	+	+	1	1	4
	<i>Trollius europaeus</i>	E1	.	.	.	+	+	+	+	4
	<i>Traunsteinera globosa</i>	E1	.	.	.	+	.	+	+	3
	<i>Festuca nigrescens</i>	E1	1	+	.	.	.	.	.	2
	<i>Pimpinella major</i> subsp. <i>rubra</i>	E1	.	.	.	+	.	+	.	2
	<i>Anthoxanthum odoratum</i>	E1	.	.	.	.	+	.	.	1
MA	<i>Molinio-Arrbenatberetea</i>									
	<i>Vicia cracca</i>	E1	.	.	.	+	+	+	1	4
	<i>Lathyrus pratensis</i>	E1	.	.	.	+	+	.	+	3
	<i>Lotus corniculatus</i>	E1	.	.	.	.	+	+	+	3
	<i>Tragopogon orientalis</i>	E1	.	.	.	.	.	+	1	2
	<i>Dactylis glomerata</i>	E1	.	.	.	.	.	+	+	2
	<i>Galium album</i>	E1	.	.	.	.	.	+	+	2
	<i>Deschampsia cespitosa</i>	E1	.	+	.	.	.	.	.	1
	<i>Leontodon hispidus</i>	E1	.	.	.	.	.	+	.	1
	<i>Colchicum autumnale</i>	E1	.	.	.	.	.	.	+	1
	<i>Trifolium pratense</i>	E1	.	.	.	.	.	.	+	1
ES	<i>Elyno-Seslerietea</i>									
	<i>Betonica alopecurus</i>	E1	.	.	.	1	1	1	1	4
	<i>Carduus crassifolius</i>	E1	.	.	.	+	+	1	1	4
	<i>Centaurea haynaldii</i> subsp. <i>julica</i>	E1	.	.	.	+	+	+	+	4
	<i>Leucanthemum heterophyllum</i>	E1	.	.	.	.	.	+	+	2
	<i>Phyteuma orbiculare</i>	E1	.	.	.	.	.	+	+	2
	<i>Festuca calva</i>	E1	.	.	+	.	.	.	.	1
	<i>Biscutella laevigata</i>	E1	.	.	.	.	.	+	.	1
	<i>Phleum hirsutum</i>	E1	.	.	.	.	.	+	.	1
	<i>Sesleria caerulea</i> subsp. <i>calcaria</i>	E1	.	.	.	.	.	+	.	1
TG	<i>Trifolio-Geranietea</i>									
	<i>Verbascum lanatum</i>	E1	.	.	+	.	+	+	+	4
	<i>Genanium sanguineum</i>	E1	.	.	.	1	1	1	1	4
	<i>Achillea distans</i>	E1	.	.	.	+	1	1	1	4
	<i>Iris graminea</i>	E1	.	.	.	1	+	1	+	4
	<i>Thalictrum minus</i>	E1	.	.	.	+	1	1	+	4
	<i>Vicia sylvatica</i>	E1	.	.	.	+	1	+	+	4
	<i>Vincetoxicum hirundinaria</i>	E1	.	.	.	1	+	1	.	3
	<i>Valeriana collina</i> (<i>V. wallrothii</i>)	E1	.	.	.	+	+	+	.	3
	<i>Inula hirta</i>	E1	.	.	.	1	.	1	+	3
	<i>Lilium carniolicum</i>	E1	.	.	.	.	+	1	+	3
	<i>Polygonatum odoratum</i>	E1	.	.	.	.	1	1	.	2
	<i>Laserpitium latifolium</i>	E1	.	.	.	.	+	+	.	2
	<i>Trifolium medium</i>	E1	.	.	.	.	1	.	.	1

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	Pr.
	<i>Silene nutans</i>	E1	.	.	.	.	+	.	1
	<i>Veronica teucrium</i>	E1	.	.	.	.	.	1	1
	<i>Hypericum perforatum</i>	E1	.	.	.	.	.	+	1
SSC	<i>Sambuco-Salicion capreae</i>								
	<i>Rubus idaeus</i>	E2a	2	2	1	.	+	+	6
RP	<i>Rhamno-Prunetea</i>								
	<i>Juniperus communis</i>	E2	.	.	.	.	1	+	2
	<i>Rosa canina</i>	E2	.	.	.	.	+	+	2
	<i>Rosa glauca</i>	E2	.	.	+	.	.	.	1
	<i>Rosa villosa</i>	E2a	.	.	.	+	.	.	1
	<i>Berberis vulgaris</i>	E2a	.	.	.	.	+	.	1
MuA	<i>Mulgedio-Aconitetea, Betulo-Alnetea</i>								
	<i>Veratrum album</i> subsp. <i>lobelianum</i>	E1	1	1	2	+	1	+	7
	<i>Rumex arifolius</i>	E1	+	+	+	.	+	.	4
BA	<i>Sorbus chamaemespilus</i>	E2	+	+	+	.	.	.	3
	<i>Polygonatum verticillatum</i>	E1	1	1	+	.	.	.	3
	<i>Silene vulgaris</i> subsp. <i>antelopum</i>	E1	.	.	.	.	+	+	3
	<i>Genanium sylvaticum</i>	E1	.	+	+	.	.	.	2
	<i>Chaerophyllum aureum</i>	E1	.	+	.	.	.	+	2
	<i>Senecio ovatus</i>	E1	.	+	.	.	.	r	2
	<i>Hypericum maculatum</i>	E1	.	+	.	.	.	.	1
	<i>Aconitum lycoctonum</i>	E1	.	.	.	.	+	.	1
	<i>Aconitum angustifolium</i>	E1	.	.	.	.	.	+	1
FS	<i>Fagetalia sylvaticae</i>								
	<i>Knautia drymeia</i>	E1	.	+	.	.	1	1	4
	<i>Lilium martagon</i>	E1	.	.	1	.	1	+	3
QP	<i>Quercetalia pubescenti-petraeae</i>								
	<i>Sorbus aria</i>	E2	+	+	+	+	+	+	7
	<i>Convallaria majalis</i>	E1	1	+	+	1	+	+	6
	<i>Carex flacca</i>	E1	.	.	.	+	+	1	4
	<i>Tanacetum corymbosum</i>	E1	.	.	.	.	+	1	3
	<i>Mercurialis ovata</i>	E1	.	.	.	+	+	.	2
	<i>Cornus mas</i>	E2a	.	.	.	.	.	+	1
QR	<i>Quercetalia roboris</i>								
	<i>Serratula tinctoria</i>	E1	.	.	.	1	+	+	4
	<i>Chamaecytisus supinus</i>	E1	.	.	.	+	+	+	3
	<i>Betonica officinalis</i>	E1	.	.	.	.	+	+	2
	<i>Hieracium sabaudum</i>	E1	.	+	.	.	.	.	1
	<i>Betula pendula</i>	E2a	.	.	.	.	.	+	1
QF	<i>Quercu-Fagetea</i>								
	<i>Anemone nemorosa</i>	E1	+	+	1	.	.	.	3
	<i>Ornithogalum pyrenaicum</i>	E1	.	.	.	.	+	+	2
	<i>Veratrum nigrum</i>	E1	.	.	.	.	1	r	2
	<i>Carex montana</i>	E1	.	.	.	+	.	.	1
	<i>Platanthera bifolia</i>	E1	.	.	.	+	.	.	1
	<i>Cruciata glabra</i>	E1	.	.	.	.	+	.	1
	<i>Helleborus odorus</i>	E1	.	.	.	.	+	.	1
	<i>Primula vulgaris</i>	E1	.	.	.	.	.	+	1
	<i>Pyrus pyrastrer</i>	E2a	.	.	.	.	.	+	1
VP	<i>Vaccinio-Piceetea</i>								
	<i>Calamagrostis arundinacea</i>	E1	1	1	2	+	2	+	6
	<i>Luzula luzuloides</i> subsp. <i>rubella</i>	E1	3	1	2	.	+	+	5
	<i>Gentiana asclepiadea</i>	E1	1	1	r	.	.	.	3

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	6	7	Pr.
<i>Vaccinium myrtillus</i>	E1	2	+	+	.	.	.	.	3
<i>Avenella flexuosa</i>	E1	.	+	.	.	.	.	.	1
<i>Larix decidua</i>	E2b	.	.	.	.	r	.	.	1
<i>Maianthemum bifolium</i>	E1	+	.	.	.	.	.	.	1
<i>Vaccinium vitis-idaea</i>	E1	+	.	.	.	.	.	.	1

Legend – Legenada

- R Chert – roženec
- A Limestone – apneenc
- L Marl – lapor
- Eu Eutric brown soil – evtrična rjava tla
- Dy Dystric brown soil – distrična rjava tla
- Re Rendzina – rendzina

Relevé 1: *Homogyno alpinae-Nardetum*

Relevé 2: similar to *Homogyno alpinae-Nardetum*

Relevé 3: *Molinio arundinaceae-Iridetum erirrhizae* nom. prov.

Relevé 4–7: *Centaureo julici-Geranietum sanguinei* nom. prov.

Table 5: *Calamagrostis arundinaceae-Sorbetum ariae* under Mts. Jalovnik and Krikov Vrh.

Tabela 5: *Calamagrostis arundinaceae-Sorbetum ariae* pod Jalovnikom in Krikovim vrhom.

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5
Database number of relevé (Delovna številka popisa)		245419	245423	245421	245422	257571
Elevation in m (Nadmorska višina v m)		1340	1150	1400	1330	1220
Aspect (Lega)		SE	SE	NE	E	NW
Slope in degrees (Nagib v stopinjah)		35	35	30	30	10
Parent material (Matična podlaga)		R	R	R	R	RA
Soil (Tla)		Eu	Dy	Dy	Dy	Dy
Stoniness in % (Kamnitost v %)		10	1	10	1	5
Cover of tree layer in % (Zastiranje drevesne plasti v %)	E3	80	80	80	80	80
Cover of shrub layer in % (Zastiranje grmovne plasti v %):	E2	5	20	20	30	10
Cover of herb layer in % (Zastiranje zeliščne plasti v %):	E1	80	90	90	90	60
Cover of moss layer in % (Zastiranje mahovne plasti v %)	E0	.	5	1	10	1
Maximum diameter of trees (Največji prsni premer dreves)	cm	20	35	30	25	30
Maximum height of tress (Največja drevesna višina)	m	10	18	15	12	10
Number of species (Število vrst)		25	37	29	25	25
Relevé area (Velikost popisne ploskve)	m ²	200	400	400	200	200
Date of taking relevé (Datum popisa)		6/15/2012	6/15/2012	6/15/2012	6/15/2012	5/10/2015
Quadrant (Kvadrant)		9848/2	9848/2	9848/2	9848/2	9748/4
Coordinate GK Y (D-48)	m	407895	408424	407975	408123	406498
Coordinate GK X (D-48)	m	5116376	5116175	5116548	5116451	5119246

Diagnostic species of the association (Diagnostične vrste asociacije)

							Pr.	Fr.
QP	<i>Sorbus aria</i>	E3	5	4	5	3	5	5 100
VP	<i>Calamagrostis arundinacea</i>	E1	4	4	4	4	3	5 100
VP	<i>Luzula luzuloides</i>	E1	2	1	+	+	2	5 100
MuA	<i>Venarium album</i> subsp. <i>lobelianum</i>	E1	2	2	2	3	1	5 100
SSC	<i>Sorbus aucuparia</i>	E3	.	+	+	1	.	3 60
SSC	<i>Sorbus aucuparia</i>	E1	r	.	.	+	+	3 60
QP	<i>Convallaria majalis</i>	E1	+	1	.	+	.	3 60
SSC	<i>Sambuco-Salicion capreae</i>							
	<i>Rubus idaeus</i>	E2a	+	2	2	3	+	4 100
	<i>Rubus idaeus</i>	E1	1	1	2	.	.	3 60
	<i>Urtica dioica</i>	E1	+	+	+	+	1	4 100
	<i>Galeopsis speciosa</i>	E1	1	+	+	.	.	3 60
	<i>Salix caprea</i>	E3	r	+	.	.	.	2 40

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	Pr.	Fr.	
RP	Rhamno-Prunetea								
	<i>Rosa glauca</i>	E2a	r	.	.	.	1	20	
	<i>Rosa canina</i>	E2b	.	+	.	.	1	20	
QP	Quercetalia pubescenti-petraeae								
	<i>Melittis melisophyllum</i>	E1	.	+	.	.	1	20	
	<i>Tanacetum corymbosum</i>	E1	.	+	.	.	1	20	
QR	Quercetalia roboris								
	<i>Betula pendula</i>	E3	.	+	r	.	2	40	
	<i>Betonica officinalis</i>	E1	.	+	.	.	1	20	
TA	Tilio-Acerion								
	<i>Acer pseudoplatanus</i>	E3	r	+	.	+	3	60	
	<i>Acer pseudoplatanus</i>	E2b	.	.	.	+	1	20	
	<i>Acer pseudoplatanus</i>	E2a	r	1	.	1	3	60	
	<i>Acer pseudoplatanus</i>	E1	+	1	+	1	4	80	
	<i>Tilia platyphyllos</i>	E3b	.	+	.	.	1	20	
	<i>Thalictrum aquilegifolium</i>	E1	.	.	.	+	1	20	
	<i>Dryopteris affinis</i>	E1	.	.	.	+	1	20	
	<i>Lamium orvala</i>	E1	.	.	.	.	1	20
	<i>Adoxa moschatellina</i>	E1	.	.	.	.	1	20
FS	Fagetalia sylvaticae								
	<i>Lilium martagon</i>	E1	1	.	+	+	4	80	
	<i>Fraxinus excelsior</i>	E2a	r	+	.	.	2	40	
	<i>Dryopteris filix-mas</i>	E1	.	+	.	1	2	40	
	<i>Symphytum tuberosum</i>	E1	1	.	.	.	1	20	
	<i>Fagus sylvatica</i>	E3	.	+	.	.	1	20	
	<i>Fagus sylvatica</i>	E2	+	1	20
	<i>Fagus sylvatica</i>	E1	.	.	+	.	1	2	40
	<i>Scrophularia nodosa</i>	E1	.	+	.	.	1	20	
	<i>Epilobium montanum</i>	E1	.	+	.	.	1	20	
	<i>Paris quadrifolia</i>	E1	.	.	+	.	1	20	
	<i>Cardamine bulbifera</i>	E1	.	.	.	.	1	20
QF	Quercio-Fagetae								
	<i>Anemone nemorosa</i>	E1	1	+	1	1	2	5	100
	<i>Ornithogalum pyrenaicum</i>	E1	.	+	.	.	1	20	
	<i>Pyrus pyraster</i>	E2b	.	+	.	.	1	20	
	<i>Stellaria holostea</i>	E1	.	.	1	.	1	20	
	Erico-Pinetea								
	<i>Molinia caerulea</i> subsp. <i>arundinacea</i>	E1	+	1	20
VP	Vaccinio-Piceetea								
	<i>Picea abies</i>	E3	r	+	+	r	4	80	
	<i>Picea abies</i>	E2a	.	+	.	.	1	20	
	<i>Picea abies</i>	E1	.	.	.	+	1	20	
	<i>Gentiana asclepiadea</i>	E1	.	+	1	1	3	60	
	<i>Dryopteris dilatata</i>	E1	.	.	3	1	1	3	60
	<i>Maianthemum bifolium</i>	E1	.	.	1	+	+	3	60
	<i>Phegopteris connectilis</i>	E1	.	.	+	.	+	2	40
	<i>Oxalis acetosella</i>	E1	.	.	1	.	1	2	40
	<i>Larix decidua</i>	E3b	.	r	.	.	1	20	
	<i>Rosa pendulina</i>	E1	.	.	+	.	1	20	
	<i>Vaccinium myrtillus</i>	E1	.	.	r	.	1	20	
TG	Trifolio-Geranietea								
	<i>Verbascum lanatum</i>	E1	+	+	.	.	2	40	
	<i>Valeriana collina</i> (<i>V. wallrothii</i>)	E1	.	+	.	.	1	20	

Number of relevé (Zaporedna številka popisa)		1	2	3	4	5	Pr.	Fr.
MuA	Mulgedio-Aconitetea							
	<i>Athyrium filix-femina</i>	E1	1	1	2	2	1	5 100
	<i>Senecio ovatus</i>	E1	1	2	+	1	+	5 100
	<i>Polygonatum verticillatum</i>	E1	+	.	+	1	.	3 60
	<i>Aconitum lycoctonum</i> s. lat.	E1	.	+	.	r	.	2 40
	<i>Stellaria nemorum</i> agg.	E1	.	.	1	.	+	2 40
	<i>Geranium sylvaticum</i>	E1	+	.	.	.	.	1 20
	<i>Salix appendiculata</i>	E2	.	.	.	.	+	1 20
FB	Festuco-Brometea, Elyno-Seslerietea							
	<i>Cirsium erisithales</i>	E1	r	+	.	.	.	2 40
	<i>Iris sibirica</i> subsp. <i>erirrhiza</i>	E1	r	.	.	.	.	1 20
ES	<i>Betonica alopecurus</i>	E1	.	+	.	.	.	1 20
CU	Calluno-Ulicetea							
	<i>Carex pallescens</i>	E1	.	+	.	r	.	2 40
M	Mosses (Mahovi)							
	<i>Atrichum undulatum</i>	E0	+	1	+	1	.	4 80
	<i>Hypnum cupressiforme</i>	E0	.	.	+	.	+	2 40
	<i>Polytrichum formosum</i>	E0	.	.	.	+	.	1 20
	<i>Ctenidium molluscum</i>	E0	.	.	.	.	1	1 20
	<i>Isothecium alopecuroides</i>	E0	.	.	.	.	+	1 20

Legend – Legenada

R Chert – roženec

A Limestone – apnenec

Eu Eutric brown soil – evtrična rjava tla

Dy Dystric brown soil – distrična rjava tla