

# SITES OF RARE FORM OF AURICULA (*PRIMULA AURICULA* VAR. *TOLMINENSIS* NOM. PROV.) IN THE SOUTHERN JULIAN ALPS

## RASTIŠČA REDKE OBLIKE LEPEGA JEGLIČA (*PRIMULA AURICULA* VAR. *TOLMINENSIS* NOM. PROV.) V JUŽNIH JULIJSKIH ALPAH

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### ABSTRACT

Sites of rare form of auricula (*Primula auricula* var. *tolminensis* nom. prov.) in the southern Julian Alps

In the southern Julian Alps under the northwestern ridge of Kobilja Glava above the pasture of Lom and on the slopes of Krikov Vrh between pastures of Lom and Kuk (Podkuk), on stony shady pasturelands and in limestone and dolomite rocks at elevations ranging between 1,100 and 1,200 m, two forms of auricula (*Primula auricula*) occur side by side. The more common specimens with bright (deep) yellow flowers are accompanied and outnumbered by plants with slightly smaller stems and distinctly pale, lemon-coloured flowers. Although *Primula auricula* as a species boasts impressive variability in the size and shape of leaves and their meal covering, as well as in the size and colour of flowers, we have not observed populations with such distinctly pale yellow flowers anywhere else in Slovenia. The taxa described elsewhere in the distribution area of *Primula auricula* s. lat. (including those that supposedly belong to *Primula lutea*) are distinctly different from the studied auriculas, at least in terms of flower colour. We infer that they are a new variety, *Primula auricula* var. *tolminensis* (the Tolmin auricula), but will have to conduct further research to corroborate this conclusion. In this paper we describe its sites and current distribution.

**Key words:** flora, taxonomy, infraspecies variability, phytosociology, *Primula auricula*, Kobilja Glava, Julian Alps, Slovenia

### IZVLEČEK

Rastišča redke oblike lepega jegliča (*Primula auricula* var. *tolminensis* nom. prov.) v južnih Julijskih Alpah

V južnih Julijskih Alpah, pod severozahodnim grebenom Kobilje glave nad planino Lom in na pobočjih Krikovega vrha med to planino in planino Kuk (Podkuk) na kamnitih osojnih pašnikih in v apnenčastem in dolomitnem skalovju na nadmorski višini med 1100 m in 1200 m skupaj rasteta dve obliki lepega jegliča (*Primula auricula*). Poleg običajno živo (temno) rumeno cvetočih primerkov, ki so v manjšini, prevladujejo rastline z nekoliko manjšimi stebli in cvetovi, ki imajo izrazito svetlorumeno, limonasto barvo. Čeprav je za vrsto *Primula auricula* značilna velika variabilnost glede velikosti in oblike listov in njihovega poprha, kot tudi glede velikosti in barve cvetov, takih izrazito svetlorumeno cvetočih populacij drugje v Sloveniji do zdaj nismo opazili. Tudi taksoni, ki so opisani drugod v območju areala vrste *Primula auricula* s. lat. (tudi tisti, ki naj bi pripadali vrsti *Primula lutea*) se vsaj v barvnem odtenku cvetov od preučenih avrikljev očitno razlikujejo. Sklepamo, da gre za novo varieteto *Primula auricula* var. *tolminensis*, slovensko jo imenujemo tolminski jeglič, kar pa bomo morali v nadaljnjih raziskavah še potrditi. V prispevku opisujemo njena rastišča in do zdaj znano razširjenost.

**Ključne besede:** flora, taksonomija, znotrajvrstna variabilnost, fiteconeologija, *Primula auricula*, Kobilja glava, Julijske Alpe, Slovenija

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# 1 INTRODUCTION

*Primula auricula* L. is a south-European montane species, a character species of rock crevices occurring from the colline to the alpine belt in most regions of the Alps, the Jura Mountains, the Black Forest (Schwarzwald), the Apennines, the northern part of the Dinaric Alps, the Tatra Mountains and the Carpathians. It is a very diverse species and several of its subspecies, e.g. subsp. *bauhini*, subsp. *balbisii* (syn. subsp. *ciliata*), subsp. *hungarica*, subsp. *serratifolia* (MARHOLD 2011), as well as several lower syntaxonomic units, varieties and forms have already been described. They differ mainly in the shape of basal leaves and in how serrated and glandular they are, partly also in the size and colour of flowers. Populations of bright (deep) yellow auriculas growing in Slovenia supposedly belong to the subspecies *P. auricula* subsp. *balbisii* (ZHANG & KADEREIT 2004), but more recently ZHANG & KADEREIT (2005) all above mentioned subspecies subordinated to the taxon *P. auricula* as a typical form, and a separate species was rediscovered, namely *P. lutea* Vill., which comprises auricula populations from the northern Alps, the Tatra Mountains, western Austria, France, Germany, Poland, Slovakia and Switzerland. Three subspecies have been described within this species, subsp. *lutea*, *widmerae* and *tatriaca* (ZHANG & KADEREIT 2005).

On 17 May 2009 the first author of this paper (Anka Rudolf) came across a non-typical form of *Primula auricula* on the pasturelands of the mountain

pasture Lom under the summit of Vrh Klonic (a peak in the northwestern ridge of Mt. Kobilja Glava) in the Tolmin part of the foothills of the Julian Alps. She identified it by very pale flowers that are rather small and not fully opened. It is abundant in the pasture and only 10% of the plants have the characteristic, bright yellow flowers. After having examined her locality we were able to corroborate her findings. The colour of the flowers is distinctly pale, lemon-coloured and the flowers usually smaller. The more common, bright (deep) yellow flowers are rare in this population. Even though other auriculas occur individually in the wider vicinity (*Primula vulgaris*, *P. veris* subsp. *columnae*, *P. elatior*), there is little likelihood that the pale colour is a result of cross-pollination. With photographs, flower and leaf measurements and an inventory of sites we wanted to taxonomically evaluate this unusual auricula population. We therefore conducted comparative measurements also on other localities, including Mt. Porezen, on the southern margin of the Trnovo Forest Plateau, in the valley of the Reka River at the Škocjan Caves, on Donačka Gora and other. Data processing and comparisons with other known forms or varieties of *Primula auricula* s. lat. are ongoing (VREŠ et al. 2018). This article offers the first findings, and above all the characteristics of sites in which this unusual form of auricula occurs. For the time being, we have assigned it a provisional name *P. auricula* var. *tolminensis* (the Tolmin auricula).

# 2 METHODS

On the localities of the Tolmin auricula we made phytosociological relevés applying the Central-European method (BRAUN-BLANQUET 1964) and entered them into the FloVegSi database (T. SELIŠKAR, VREŠ, A. SELIŠKAR 2003). The relevés were arranged into a table based on hierarchical classification. We used the “(Unweighted) average linkage” – UPGMA method based on Wishart’s similarity ratio. Combined cover-abundance values were transformed into numerical values 1– 9 (van der MAAREL 1979). The numerical analysis of relevés was performed using the program package SYN-TAX (PODANI 2001). Plants were assigned to groups of diagnostic species based on the Flora alpina (AESCHIMANN et al. 2004), which also

served as the source for the chorological characterisation of *Primula auricula* s. lat. The nomenclatural source for the names of vascular plants is the Mala flora Slovenije (MARTINČIČ et al. 2007), but the name *Sesleria caerulea* (L.) Ard. is used for the taxon *Sesleria caerulea* subsp. *calcaria*. MARTINČIČ (2003, 2011) is the nomenclatural source for the names of mosses and SUPPAN et al. (2000) for the names of lichens. The nomenclatural sources for the names of syntaxa are THEURILLAT (2004) and ŠILC & ČARNI (2012). Geographic coordinates of relevés are determined according to the Slovenian geographic coordinate system D 48 (zone 5) on the Bessel ellipsoid and with Gauss-Krüger projection.

### 3 RESULTS AND DISCUSSION

#### 3.1 *Primula auricula* var. *tolminensis*—description

*Primula auricula* var. *tolminensis* is distinguished from the more common populations of the taxon *Primula auricula* s. lat. in that it is smaller in size, has shorter and narrower flowers and, most distinctly, by its pale, lemon-coloured corolla. In our previous research into auricula populations on other localities in Slovenia we observed other specimens with low habit and flowers that were shorter and narrower from the usual, but nowhere have we seen specimens with a distinctly pale, lemon-coloured corolla. The colour is therefore the

morphological trait that allows us to provisionally treat the plants from the northwestern slopes of Kobilja Glava and the vicinity of mountain pasture Lom in the southern foothills of the Julian Alps as a special variety. However, given the considerable infraspecies variability of the taxon *Primula auricula* s. lat. and the complexity of its evaluation, it is impossible to provide a valid description of the new variety based on our current knowledge of populations in Slovenia and other Alpine regions before we have conducted and completed all measurements and other analyses. The new variety is therefore presented only with selected photographs and site descriptions.



Figure 1: *Primula auricula* var. *tolminensis*. Author of all photos: I. Dakksobler  
Slika 1: Tolminski jeglič (*Primula auricula* var. *tolminensis*). Avtor vseh fotografij: I. Dakskobler

#### 3.2 Ecological and phytosociological characteristics of sites with taxon *Primula auricula* var. *tolminensis*

The populations of *Primula auricula* with pale yellow (lemon-coloured) flowers have so far been found only

on the northwestern slopes of Kobilja Glava or its preceding summit of Vrh Klonic above the mountain pasture Lom and above the road leading from Lom to the mountain pasture Podkuk below the summit of Krikov Vrh, in two quadrants of the Central-European flora mapping (Figures 5 and 6).





Figure 2: A group of *Primula auricula* var. *tolminensis*  
Slika 2: Tolminski jeglič (*Primula auricula* var. *tolminensis*), skupina



Figure 3: *Primula auricula* s. str. and its variety with lemon-coloured flowers (*P. auricula* var. *tolminensis*) growing together above the mountain pasture Lom  
Slika 3: Skupno uspevanje tolminskega jegliča (*Primula auricula* var. *tolminensis*) in lepega jegliča (*Primula auricula* s. str.) nad pl. Lom





Figure 4: *Primula auricula* s. str. on Kobilja Glava  
Slika 4: Lepi jeglič (*Primula auricula* s. str.) na Kobilji glavi

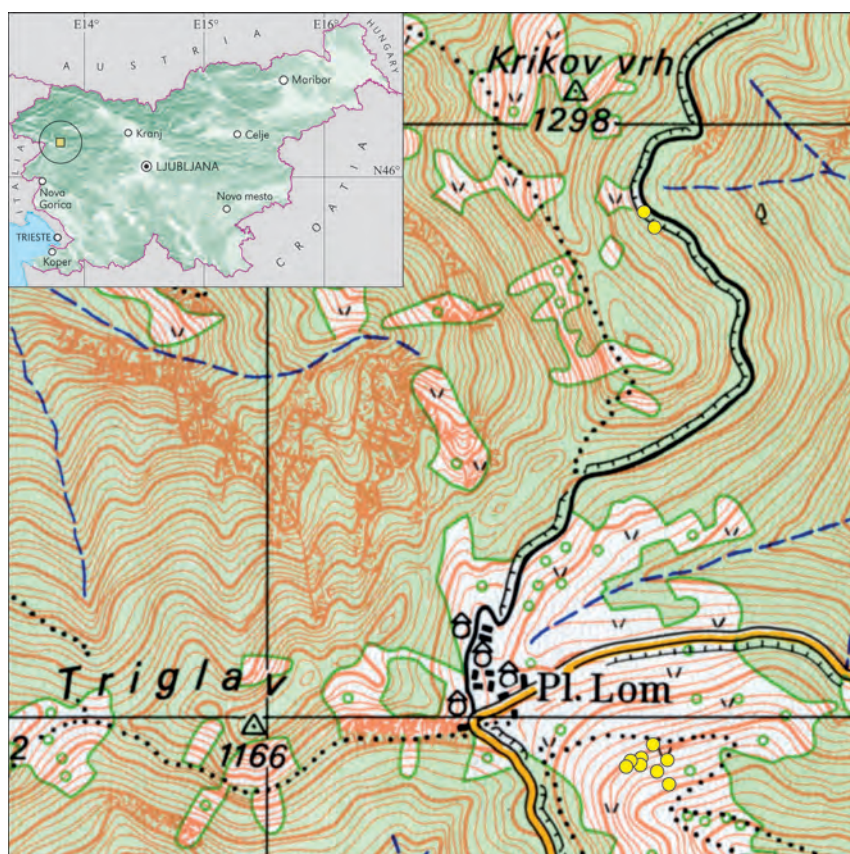


Figure 5: Localities of *Primula auricula* var. *tolminensis*  
Slika 5: Nahajališča taksona *P. auricula* var. *tolminensis*

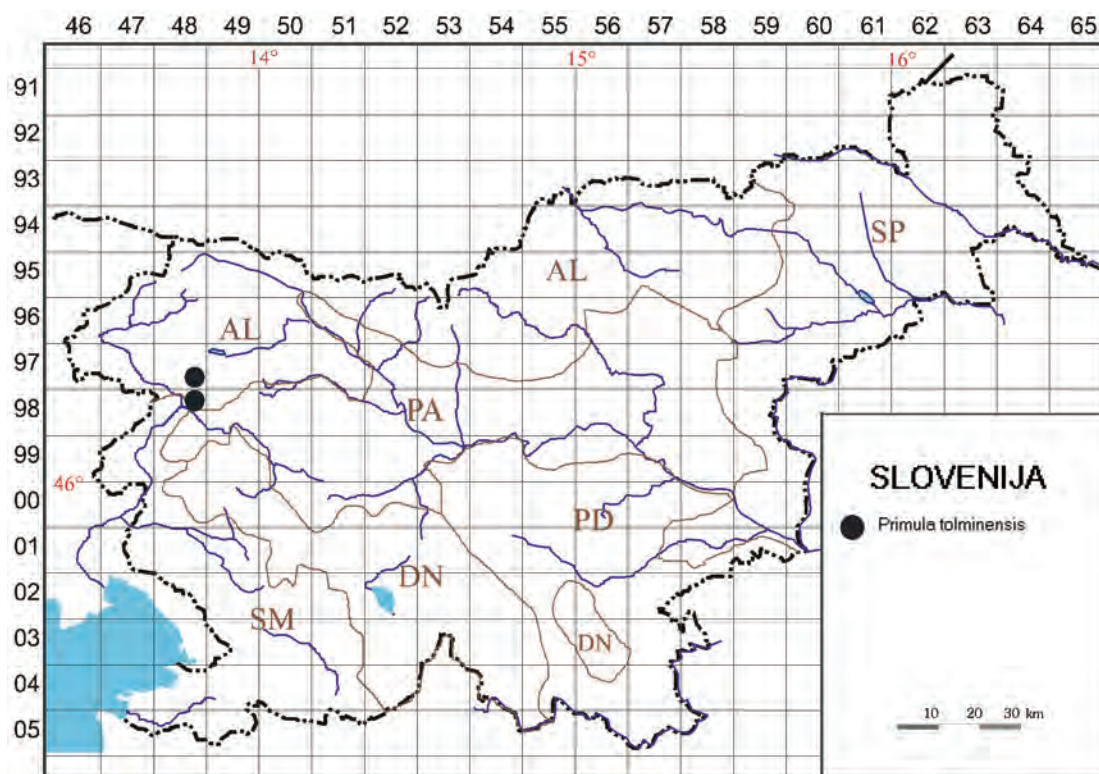


Figure 6: Distribution of *Primula auricula* var. *tolminensis* in Slovenia

Slika 6: Razširjenost tolminskega jegliča v Sloveniji

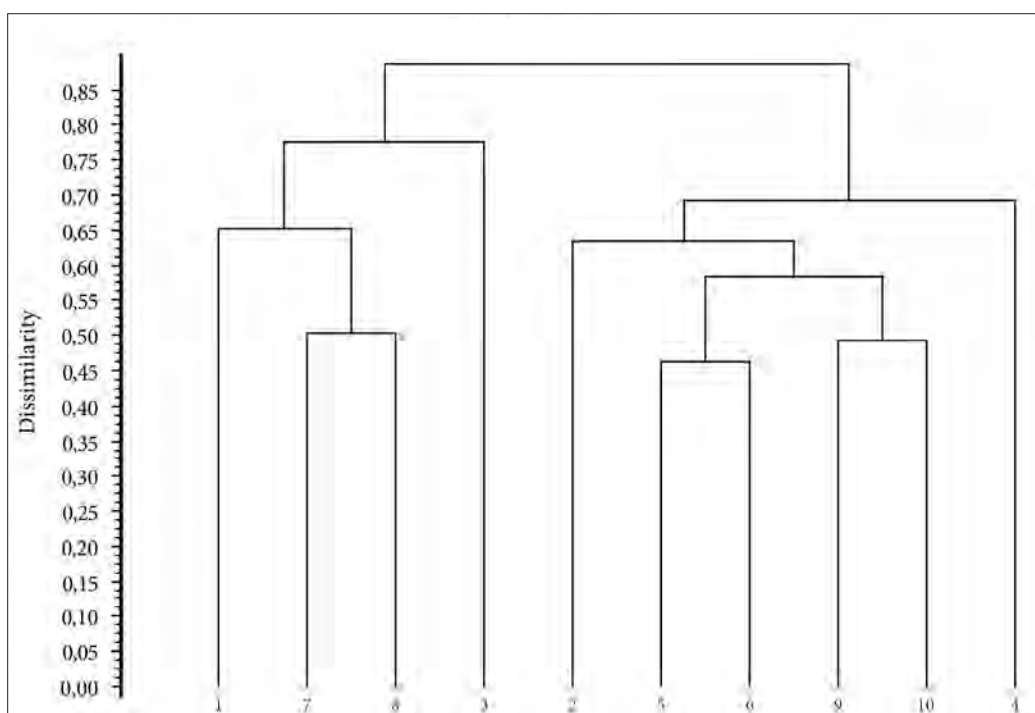


Figure 7: Dendrogram of stands with *Primula auricula* var. *tolminensis*, UPGMA, 1- similarity ratio

Slika 7: Dendrogram popisov sestojev s taksonom *Primula auricula* var. *tolminensis* UPGMA, 1- similarity ratio



The localities are situated between 1,130 and 1,200 m a.s.l., on distinctly shady, predominantly northern aspects. The parent material is Cretaceous Volče limestone with cherts, in places intercalated with marlstone, and partly limestone breccia; below Krikov Vrh also Triassic Bača dolomite (BUSER 1986, 1987). The climate is humid, montane, with the average annual precipitation between 2,000 and 2,500 mm (B. ZUPANČIČ 1998) and mean annual temperature of 4 – 6°C (CEGNAR 1998). *Primula auricula* var. *tolminensis* localities have a local climate that is colder from the regional average for this altitude, which means that snow here persists for longer periods than on the sunny slopes of Kobilja Glava and that the phenological stages (beginning of flowering) are slightly delayed. Land has been cleared for pastures in the belt of altimontane beech forests (*Ranunculo platanifolii-Fagetum*); the rocky sites under Krikov Vrh are in the area of azonal beech community classified into the subassociation *Saxifraga cuneifoliai-Fagetum aruncetosum* (DAKSKOB-

LER 2015). The pastures are extensively managed, with cattle occasionally grazing there in the summer.

*Primula auricula* var. *tolminensis* occurs within two vegetation types (Figure 7, Table 1). The first four relevés (relevés 1 to 4 in Table 1), i.e. the group of four relevés in the left part of the dendrogram in Figure 7, represent montane grasslands used as pastures. Usually, but not always, they are dominated by *Sesleria caerulea*. As a result of grazing these pastures comprise many species of managed meadows from the class *Molinio-Arrhenatheretea*, whereas intercalations of chert and marlstone enabled the establishment of acidophilous species (such as *Antennaria dioica*, *Saxifraga cuneifolia*, *Luzula luzuloides*). Due to the distinctly shady aspect and relatively fresh soils there are also species of tall herbs (e.g. *Hypericum maculatum*, *Veratrum album*, *Aconitum angustifolium*, saplings of *Alnus viridis* and *Salix appendiculata*). Groups of diagnostic species comprise equal proportions of diagnostic species of classes or orders *Elyno-Seslerietea*

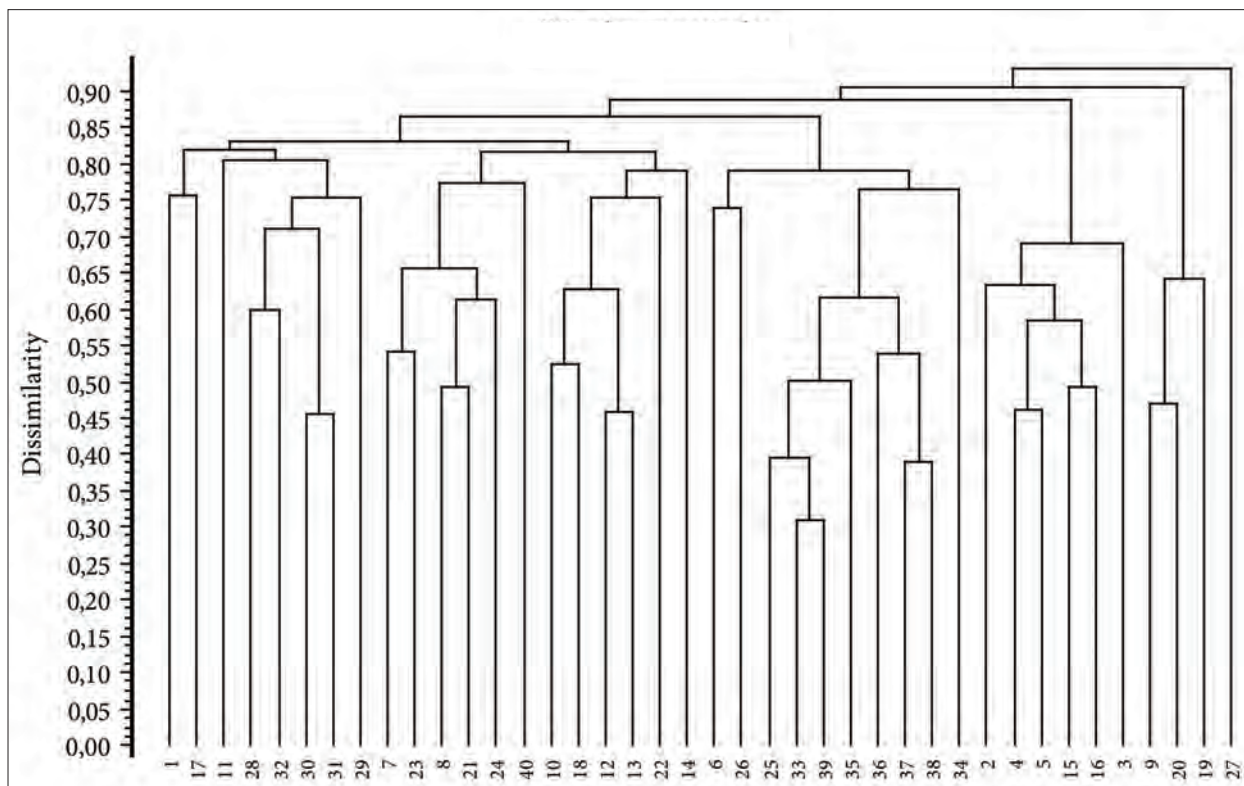


Figure 8: Dendrogram of chasmophytic communities with dominant *Primula auricula* from various regions of Slovenia. Stands with *P. auricula* var. *tolminensis* group separately (relevés 2, 4, 5, 15, 16, 3) on the right side of the dendrogram, UPGMA, 1–similarity ratio

Slika 8: Dendrogram združb skalnih razpok s prevladujočo vrsto *Primula auricula* iz različnih delov Slovenije. Sestoji s taksonom *P. auricula* var. *tolminensis* so v ločeni skupini (popisi 2, 4, 5, 15, 16, 3) v desnem delu dendrograma, UPGMA, 1–similarity ratio



Figure 9: Stony altimontane grassland used as a pasture, with *Primula auricula* var. *tolminensis*  
Slika 9: Kamnito altimontansko travnišče, v rabi kot pašnik s tolminskim jegličem (*Primula auricula* var. *tolminensis*)



Figure 10: Rocky sites of *Primula auricula* var. *tolminensis*  
Slika 10: Skalovje, rastišče tolminskega jegliča (*Primula auricula* var. *tolminensis*)



(the most common among them are *Sesleria caerulea* as well as *Gentiana verna*, *Phyteuma orbiculare*, *Thymus praecox* subsp. *polytrichus*, on two relevés even a species of stony alpine grasslands *Carex ornithopodoides*), *Festuco-Brometea* (*Plantago media*, *Carex caryophyllea*, *Carlina acaulis*, *Euphorbia cyparissias*), *Poo alpinae-Trisetetalia* (*Crocus albiflorus*, *Trollius europaeus*) and *Calluno-Ulicetea* (*Alchemilla flabellata*, *Antennaria dioica*, *Selaginella helvetica*). As the slopes are very stony, *Primula auricula* var. *tolminensis* is common on these pastures; the specimens of the typical form occur individually, similarly to another character chasmophytic species, *Saxifraga crustata*.

The second group of relevés (relevés 5 to 10 in Table 1, i.e. the large group of relevés on the right side of the dendrogram in Figure 7) represents chasmophytic communities on limestone breccia and limestone, two relevés under Krikov Vrh also on dolomite. These relevés comprise substantially fewer species, with the most common (other than the Tolmin auricula) being *Sesleria caerulea*, *Cystopteris fragilis*, *Kernera saxatilis*, *Saxifraga crustata* and *Campanula carnica*.

These six relevés were compared with 34 relevés of chasmophytic communities in which one of the dominating species is *Primula auricula* (from different parts of Slovenia: Mrzli Vrh above Tolmin, Hoč at Mt. Porezen, the upper Bača Valley: Kacenpoh, Driselpoh, Zakojška Grapa gorge), the Breginjski Kot (the foothills of Mt. Mija at Robič), the Idrija Valley (Golo Brdo), Banjšice (Gomila at the hamlet of Madoni, Avšček), the Reka valley before the Škocjan Caves, Sv. Križ above Bele Vode and Donačka Gora. The result was the dendrogram in Figure 8, where the relevés with *Primula auricula* var. *tolminensis* grouped separately (the group of six relevés – 2, 4, 5, 15, 16 and 3) on the right side of the dendrogram. These stands are therefore provisionally classified into the new association *Campanulo carnicae-Primuletum tolminensis* nom. prov., but additional research is required before we can provide a valid description. Whereas the typical form *P. auricula* occurred alongside *Primula auricula* var. *tolminensis* on all relevés of the first site type (a stony pasture or montane grassland), the second type (chasmophytic community) comprised the typical form on only one of six relevés.



Figure 11: Stand of the association *Campanulo carnicae-Primuletum tolminensis*

Slika 11: Sestoj asociacije *Campanulo carnicae-Primuletum tolminensis*

## 4 CONCLUSIONS

Populations of *Primula auricula* differ considerably across the distribution area and the taxon can therefore be subdivided into several subspecies, varieties and forms, according to some authors even several species. Due to the complexity involved in a mutual comparison of all these different varieties we were forced to conduct our research without comparing them. In this article we would primarily like to draw attention to the population of distinctly pale (lemon-coloured) flowering auriculas with relatively small flowers that Anka Rudolf found below Kobilja Glava in the Tolmin region (at the foothills of the southern Julian Alps). They occur together with the specimens that have the more common, deep (bright) yellow flowers and are outnumbered here by the pale flowering auriculas. Although there are other species of auriculas occurring in the vicinity there is little likelihood that the pale colour is the result of cross-pollination. The sites, stony mountain pastures, limestone and dolomite rocks, are distinctly shady, with a cold local climate and a snow cover that lasts long into the spring. According to our knowledge and experience, this auricula does not occur elsewhere in Slovenia, although we came across specimens with paler and smaller flowers in several other spots as well. Those specimens, however, do not stand out from other specimens of the typical form in their surroundings as distinctly and in such a contiguous population

as below Kobilja Glava. We are conducting other investigations that might explain the reasons for the distinctiveness of the auricula from the mountain pasture Lom and allow us to validly describe the new taxon. The observations and measurements conducted so far allow us to provisionally describe the new variety *Primula auricula* var. *tolminensis* (the Tolmin auricula), which is at present treated as strictly endemic and therefore deserves our attention also in view of its protection. Although *Primula auricula* is already protected in Slovenia (ANON. 2004), its rare variety from the Tolmin mountains with its unusual colour might attract more attention in certain (especially gardening) circles. At the moment, the land management practice in the area of its occurrence does not pose a threat to this auricula, but this might change if people started to pick these flowers in order to grow them at home. Its localities are on the margins of the Triglav National Park, some of them, below Krikov Vrh, also on its territory. Although the population above the mountain pasture of Lom boasts more than 500 specimens it might still be necessary to put up information boards in the future to explain to the visitors the uniqueness of the Lom in Kobilja Glava population, instructing them not to pick or dig up the Tolmin auricula without prior permission of the relevant authorities. Any such unauthorised picking or poaching should be prohibited and punishable.

## 5 POVZETEK

### 5.1 Uvod

*Primula auricula* je južnoevropska montanska vrsta, značilnica združb skalnih razpok, ki raste od kolinskega do alpskega pasu v večini pokrajin v Alpah, v Juri, Schwarzwald, Apeninih, severnem delu Dinarskega gorstva, v Tatrah in v Karpatih. Vrsta je zelo raznolika in v preteklosti je bilo opisano več podvrst, npr. subsp. *bauhini*, subsp. *balbisii* (sin. subsp. *ciliata*), subsp. *hungarica*, subsp. *serratifolia* (MARHOLD 2011), in več nižjih taksonomskih oblik, varietet in form. Razlike med navedenimi taksoni so predvsem v obliki pritličnih listov, njihovi nazobčanosti in žlezavosti, deloma tudi v velikosti in barvi cvetov. Živo (temno) rumene populacije avriklja, ki uspevajo v Sloveniji, naj bi pripadale podvrsti *P. auricula* subsp. *balbisii* (ZHANG & KADEREIT 2004), a sta kasneje ZHANG in KADEREIT (2005) v takson *P. auricula* kot tipsko obliko podredila vse zgoraj navedene podvrste, pač pa ponovno opredelila že

opisano vrsto *P. lutea* Vill., kamor uvrščata populacije lepega jegliča iz severnih Alp, Tater, zahodne Avstrije, Francije, Nemčije, Poljske, Slovaške in Švice. Znotraj te vrste so opisane tri podvrste: subsp. *lutea*, *widmerae* in *tatriaca* (ZHANG & KADEREIT 2005).

17. 5. 2009 je prva avtorica tega članka (Anka Rudolf) na pašnikih planine Lom pod Vrhom Klonic (ki je vzpetina v severozahodnem grebenu Kobilje glave) v tolminskem prigorju južnih Julijskih Alp opazila netipično obliko lepega jegliča (*Primula auricula*). Prepoznala jo je po zelo svetlih cvetovih, ki so manjši in ne popolnoma razprti. Na pašniku ga je veliko in le okoli 10 % rastlin ima normalne bolj živo rumene cvetove. Ko smo si njeno nahajališče ogledali, smo njena opažanja lahko potrdili. Barva cvetov je očitno svetlejša, limonasta, cvetovi so navadno manjši. Običajne, živo (temno) rumeno cvetoče rastline so v tej populaciji redke. Kljub temu, da v širši okolici posamično rastejo tudi druge vrste jegličov (*Primula vulgaris*, *P. veris*



subsp. *columnae*, *P. elatior*), je možnost, da bi bila svetla barva posledica križanja, zelo majhna. S fotografiranjem, meritvami cvetov in listov in s popisom rastišč smo želeli taksonomsko ovrednotiti to nenavadno populacijo lepega jegliča, pri čemer smo primerjalne meritve opravili tudi na drugih nahajališčih, na Poreznu, na južnem robu Trnovskega gozda, v dolini Reke pri Škocjanskih jamah, na Donački gori in še drugod. Obdelava podatkov in predvsem primerjava z drugimi do zdaj znanimi oblikami oz. različki vrste *Primula auricula* s. lat. je v teku (VREŠ et al. 2018). V tem članku podajamo prva spoznanja in predvsem značilnosti rastišč, v katerih se nenavadna oblika lepega jegliča pojavlja. Za zdaj ga imenujemo *P. auricula* var. *tolminensis* (tolminski jeglič).

## 5.2 Metode

Na nahajališčih tolminskega jegliča smo naredili fitocenološke popise po standardni srednjeevropski metodi (BRAUN-BLANQUET 1964) in jih vnesli v podatkovno bazo FloVegSI (T. SELIŠKAR, VREŠ, A. SELIŠKAR 2003). Popise smo v preglednico uredili s hierarhično klasifikacijo. Izbrali smo metodo kopičenja na podlagi povezovanja (netehtanih) srednjih razdalj – “(Unweighted) average linkage” – UPGMA, ob uporabi Wishartovega koeficienta podobnosti (1–similarity ratio). Pri tem smo kombinirane ocene zastiranja in pogostnosti pretvorili v števila (1–9) – van der MAAREL (1979). Numerično primerjavo popisov smo izdelali s programskim paketom SYN-TAX (PODANI 2001). Rastline smo v skupine diagnostičnih vrst uvrstili na podlagi dela Flora alpina (AESCHIMANN et al. 2004). To delo nam je tudi vir za horološko oznako vrste *Primula auricula* s. lat. Nomenklaturni vir za imena praprotnic in semenk je Mala flora Slovenije (MARTINČIČ et al. 2007), pri čemer za pisano vilovino uporabljamo ime *Sesleria caerulea* (L.) Ard. MARTINČIČ (2003, 2011) je nomenklaturni vir za imena mahov, SUPPAN & al. (2000) pa za imena lišajev. Nomenklatura vira za imena sintaksonov sta THEURILLAT (2004) in ŠILC & ČARNI (2012). Geografske koordinate popisov so določene po slovenskem geografskem koordinatnem sistemu D 48 (5-ta cona) po Besselovem elipsoidu in z Gauss-Krügerjevo projekcijo.

## 5.3 Rezultati in razprava

### 5.3.1 Opis tolminskega jegliča

Tolminski jeglič (*Primula auricula* var. *tolminensis*) se od v Sloveniji običajno rastočih populacij taksona *Pri-*

*mula auricula* s. lat. razlikuje po nižji rasti, krajših in ožjih cvetovih in najbolj očitno po izrazito svetli, limonasto rumeni barvi cvetnege venca. Pri dosedanjih raziskavah populacij avriklja na drugih nahajališčih v Sloveniji smo opazili tudi primerke z nižjo rastjo in krajšimi in ožjimi cvetovi od običajnih, nikjer pa primerkov z izrazito svetlo, limonasto barvo cvetnega venca. Prav ta barva je torej tisti morfološki znak, ki dopušča, da rastline s severozahodnih pobočij Kobilje glave in okolice planine Lom v južnem prigorju Julijskih Alp za zdaj obravnavamo kot posebno varieteto. Ker pa je znotrajvrstna variabilnost taksona *Primula auricula* s. lat. velika in njeno vrednotenje zapleteno, veljaven opis nove varietete na podlagi našega dozdajšnjega poznavanja populacij iz Slovenije in drugih območij Alp pred dokončno obdelavo vseh meritev in drugih analiz še ni mogoč. Novo varieteto zato predstavljamo le z izbranimi fotografijami in opisom njenih rastišč.

### 5.3.2 Ekološke in fitocenološke značilnosti rastišč, na katerih raste novi takson

Svetlo rumeno (limonasto rumeno) cvetoče populacije lepega jegliča smo doslej našli le na severozahodnih pobočjih Kobilje glave oz. njenega predvrha Vrha Klonic nad planino Lom in nad cesto pl. Lom–pl. Podkuk, pod Krikovim vrhom, v dveh kvadrantih srednjeevropskega kartiranja flore (sliki 5 in 6). Nadmorska višina nahajališč je od 1130 m do 1200 m, lega je izrazito osojna, v glavnem severna. Geološka podlaga je kredni volčanski apnenec z roženci, ponekod tudi s primesjo laporovca in deloma apnenčeva breča, pod Krikovim vrhom tudi triasni baški dolomit (BUSER 1986, 1987). Podnebje je humidno, gorsko, s povprečno letno višino padavin od 2000 mm do 2500 mm (B. ZUPANČIČ 1998) in s povprečno z letno temperaturo 4–6 °C (CEGNAR 1998). Na nahajališčih tolminskega jegliča je hladnejše krajevno podnebje od regionalnega povprečja za to nadmorsko višino, kar pomeni, da se na teh pobočjih sneg zadržuje dalj časa kot na prisojnih pobočjih Kobilje glave in tudi fenološke faze (začetek cvetenja) nekoliko kasnijo. Pašniki so izkrceni v pasu altimontanskega bukovega gozda (*Ranunculo platani-folii-Fagetum*), skalovje pod Krikovim vrhom je v območju aconalnega bukova s klinolistnim kamnokrečem in kresničjem (*Saxifraga cuneifolii-Fagetum aruncetosum*) – DAKSKOBLER (2015). Pašniki so v ekstenzivni rabi, na njih se govedo občasno pase v poletnem času.

Tolminski jeglič raste v dveh tipih vegetacije (slika 7, preglednica 1). Prvi štirje popisi (popisi 1 do 4 v preglednici 1), oziroma skupina štirih popisov v levem

delu dendrograma na sliki 7, predstavlja gorska travišča, ki so v rabi kot pašniki. Navadno, ne pa vedno, na njih prevladuje vrsta *Sesleria caerulea*. Zaradi vplivov paše je v njih precej vrst gojenih travnikov iz razreda *Molinio-Arrhenatheretea*, zaradi primesi roženca in laporovca so prisotne tudi kisloljubne vrste (na primer *Antennaria dioica*, *Saxifraga cuneifolia*, *Luzula luzuloides*), zaradi izrazito osojne lege in razmeroma svežih tal tudi vrste visokih steblik (na primer *Hypericum maculatum*, *Veratrum album*, *Aconitum angustifolium*, mladice zelene jelše, *Alnus viridis*, in velikolistne vrbe, *Salix appendiculata*). Med skupinami diagnostičnih vrst imajo precej enakovredne deleže diagnostične vrste razredov oz. redov *Elyno-Seslerietea* (med njimi so poleg pisane vilovine najbolj pogoste *Gentiana verna*, *Phyteuma orbiculare*, *Thymus praecox* subsp. *polytrichus*, na dveh popisih celo vrsta kamnitih alpinskih trat *Carex ornithopodoides*), *Festuco-Brometea* (*Plantago media*, *Carex caryophyllea*, *Carlina acaulis*, *Euphorbia cyparissias*), *Poo alpinae-Trisetetalia* (*Crocus albiflorus*, *Trollius europaeus*) in *Calluno-Ulicetea* (*Alchemilla flabellata*, *Antennaria dioica*, *Selaginella helvetica*). Ker so pobočja precej kamnita, je tolminski jeglič na teh pašnikih pogost, primerki tipske oblike so prisotni posamično, podobno kot še ena značilna vrsta skalnih razpok skorjasti kamnokreč (*Saxifraga crustata*).

Druga skupina popisov (popisi 5 do 10 v tabeli 1 oz. večja skupina popisov na desni strani dendrograma na sliki 7) predstavlja združbe skalnih razpok na apnenčasti breči, apnencu in dva popisa pod Krikovim vrhom tudi na dolomitu. Na teh popisih je vrst bistveno manj, najbolj pogoste poleg tolminskega jegliča pa so *Sesleria caerulea*, *Cystopteris fragilis*, *Kernera saxatilis*, *Saxifraga crustata* in *Campanula carnica*. Teh šest popisov smo primerjali skupaj s 34 popisi združb skalnih razpok, kjer je ena od prevladujočih vrst *Primula auricula* (iz različnih delov Slovenije: Mrzli vrh nad Tolminom, Hoč pri Poreznu, zgornja Baška dolina: Kacenpoh, Drišelpoh, Zakojška grapa), Breginjski kot (vznožje Mije pri Robiču), dolina Idrije (Golo Brdo), Banjšice (Gomila pri zaselku Madoni, Avšček), dolina Reke pred Škočjanskimi jamami, Sv. Križ nad Belimi Vodami in Donačka gora in dobili dendrogram (slika 8), kjer so se popisi s tolminskim jegličom združevali posebej (skupina šestih popisov 2, 4, 5, 15, 16 in 3) v desnem delu dendrograma. Zato te sestoje začasno uvrščamo v novo asociacijo *Campanulo carnicae-Primuletum tolminensis* nom. prov., ki pa za veljaven opis potrebuje dodatne raziskave. Medtem ko je na prvem tipu rastišč, kamnitem pašniku oz. gorskem travišču, na vseh popisih poleg tolminskega jegliča rasla tudi tipska oblika *P. auricula*, je v drugem tipu, v združbi skalnih razpok, le ta prisotna le na enem popisu od skupno šestih.

## 5. 4 Zaključki

Populacije vrste *Primula auricula* so si v različnih delih areala zelo raznolike in ta takson je zato mogoče členiti v več podvrst, varietet in form, po nekaterih avtorjih tudi v več vrst. Medsebojna primerjava vseh teh različkov je zelo zahtevna in pri naši raziskavi smo se ji morali odpovedati. V članku želimo predvsem opozoriti na populacijo izrazito svetlo rumeno (limonasto) cvetočih lepih jegličov, z razmeroma majhnimi cvetovi, ki jih je Anka Rudolf opazila pod Kobiljo glavo na Tolminskem (v prigorju južnih Julijskih Alp). Uspevajo skupaj z običajno temno (živo) rumeno cvetočimi primerki, a so slednji v manjšini. V okolici posamično uspevajo tudi druge vrste jegličov, a možnost, da bi bila svetla barva posledica križanja, je zelo majhna. Rastišča, kamniti gorski pašniki, apnenčasto in dolomitno skalovje, so izrazito osojna, s hladnim krajevnim podnebjem, kjer spomladi dolgo ostaja sneg. Drugod v Sloveniji po naših izkušnjah tak jeglič ne raste, čeprav smo na več krajih opazili tudi bolj svetlo cvetoče primerke z manjšimi cvetovi od običajnih, a vendar ti primerki ne odstopajo tako očitno od okoliških primerkov tipske oblike in rastejo bolj posamično, nikakor ne v tako strnjeni populaciji kot pod Kobiljo glavo. V teku so še druge naše raziskave, ki bodo morda pojasnile vzroke za posebnost jegliča s planine Lom in omogočile veljaven opis novega taksona. Do zdaj opravljena opažanja in meritve pa dopuščajo provizoren opis nove varietete *Primula auricula* var. *tolminensis* (tolminski jeglič), ki jo za zdaj obravnavamo kot ozko endemično in zato zasluži našo pozornost tudi z vidika njenega varstva. To je že zdaj zagotovljeno, saj je vrsta *Primula auricula* v Sloveniji zavarovana (ANON. 2004). A tolminski jeglič kot redek barvni različek bi lahko v določenih (predvsem vrtnarskih) krogih vzbudil večje zanimanje. Zdajšnji način rabe prostora, kjer raste, ga ne ogroža, ogrozati bi ga lahko začeli ljudje, zaradi želje, da ga vzgojijo tudi doma. Njegova nahajališča so na robu Triglavskega narodnega parka, tista pod Krikovim vrhom, tudi znotraj njega. Čeprav je populacija nad pl. Lom zelo bogata, skupno zagotovo več kot 500 primerkov, bodo morda v bodoče potrebne ustrezne informacijske table, ki bodo na to posebnost pl. Lom in Kobilje glave opozarjale in obiskovalcem dale jasno napotilo, da je trgiranje in izkopavanje tolminskega jegliča brez predhodnega dovoljenja ustreznih služb strogo prepovedano in podvrženo kaznovanju.



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**Table 1: Communities with *Primula auricula* var. *tolminensis***

**Preglednica 1: Združbe s tolminskim jegličem (*Primula auricula* var. *tolminensis*)**

Authors of the table /Avtorja preglednice: I. Dakskobler & B. Vreš

| Number of relevé (Zaporedna številka popisa)               |                | 1                                                       | 2                 | 3                 | 4                 | 5                 | 6                 | 7                 | 8                 | 9          | 10         |
|------------------------------------------------------------|----------------|---------------------------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------|------------|
| Database number of relevé (Delovna številka popisa)        |                | 233781                                                  | 233730            | 246706            | 246707            | 235178            | 233780            | 242497            | 242498            | 257568     | 257569     |
| Elevation in m (Nadmorska višina v m)                      |                | 1170                                                    | 1130              | 1200              | 1150              | 1142              | 1150              | 1160              | 1170              | 1150       | 1150       |
| Aspect (Lega)                                              |                | NEE                                                     | N                 | N                 | NW                | NNW               | NNE               | NW                | NW                | NE         | NE         |
| Slope in degrees (Nagib v stopinjah)                       |                | 30                                                      | 25                | 25                | 30                | 70                | 80                | 95                | 90                | 80         | 90         |
| Parent material (Matična podlaga)                          |                | A                                                       | AL                | ALR               | ALR               | A                 | A                 | A                 | A                 | D          | D          |
| Soil (Tla)                                                 |                | Re                                                      | CC                | CC                | CC                | Li                | Li                | Li                | Li                | Li         | Li         |
| Stoniness in % (Kamnitost v %)                             |                | 30                                                      | 30                | 30                | 20                | 100               | 100               | 100               | 100               | 100        | 100        |
| Cover of shrub layer in % (Zastiranje grmovne plasti v %): | E2             |                                                         | 10                | 10                |                   |                   |                   |                   |                   |            |            |
| Cover of herb layer in % (Zastiranje zeliščne plasti v %): | E1             | 70                                                      | 80                | 70                | 80                | 30                | 40                | 20                | 25                | 25         | 20         |
| Cover of moss layer in % (Zastiranje mahovne plasti v %):  | E0             |                                                         | 10                |                   |                   | 30                |                   | 10                | 5                 | 30         | 20         |
| Number of species (Število vrst)                           |                | 36                                                      | 88                | 71                | 50                | 23                | 19                | 12                | 10                | 19         | 10         |
| Relevé area (Velikost popisne ploskve)                     | m <sup>2</sup> | 40                                                      | 40                | 20                | 20                | 10                | 10                | 20                | 20                | 5          | 5          |
| Date of the relevé (Datum popisa)                          |                | 5/24/2009                                               | 5/24/2009         | 5/9/2012          | 5/9/2012          | 5/9/2010          | 5/24/2009         | 4/21/2011         | 4/21/2011         | 5/10/2015  | 5/10/2015  |
| Locality (Nahajališče)                                     |                | Lom-Kobilja glava                                       | Lom-Kobilja glava | Lom-Kobilja glava | Lom-Kobilja glava | Lom-Kobilja glava | Lom-Kobilja glava | Lom-Kobilja glava | Lom-Kobilja glava | Krikov vrh | Krikov vrh |
| Quadrant (Kvadrant)                                        |                | 9848/2                                                  | 9848/2            | 9848/2            | 9848/2            | 9848/2            | 9848/2            | 9848/2            | 9848/2            | 9748/4     | 9748/4     |
| Coordinate GK Y (D-48)                                     | m              | 406675                                                  | 406608            | 406679            | 406630            | 406631            | 406659            | 406613            | 406652            | 406655     | 406637     |
| Coordinate GK X (D-48)                                     | m              | 5117930                                                 | 5117921           | 5117889           | 5117923           | 5117932           | 5117912           | 5117926           | 5117956           | 5118828    | 5118852    |
| ES                                                         |                | <b><i>Elyno-Seslerietea</i></b>                         |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | 2                                                       | .                 | 1                 | 1                 | 1                 | 2                 | 1                 | 1                 | +          | Pr. 8      |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | Fr. 80     |
| CA                                                         |                | <b><i>Sesleria caerulea</i></b>                         |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | +                                                       | .                 | .                 | .                 | .                 | +                 | +                 | .                 | .          | 3          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 30         |
|                                                            |                | <b><i>Festuca calva</i></b>                             |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | .                                                       | 1                 | 1                 | 1                 | .                 | .                 | .                 | .                 | .          | 3          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 30         |
|                                                            |                | <b><i>Gentiana verna</i></b>                            |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | .                                                       | +                 | +                 | +                 | .                 | .                 | .                 | .                 | .          | 3          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 30         |
|                                                            |                | <b><i>Phyteuma orbiculare</i></b>                       |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | 1                                                       | 1                 | +                 | .                 | .                 | .                 | .                 | .                 | .          | 3          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 30         |
|                                                            |                | <b><i>Thymus praecox</i> subsp. <i>polytrichus</i></b>  |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | 1                                                       | 1                 | .                 | .                 | .                 | .                 | .                 | .                 | .          | 3          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 30         |
|                                                            |                | <b><i>Arabis ciliata</i></b>                            |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | 1                                                       | 1                 | .                 | .                 | .                 | .                 | .                 | .                 | .          | 2          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 20         |
|                                                            |                | <b><i>Galium anisophyllum</i></b>                       |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | +                                                       | 1                 | .                 | .                 | .                 | .                 | .                 | .                 | .          | 2          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 20         |
| Cfir                                                       |                | <b><i>Carex ornithopodoides</i></b>                     |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | r                                                       | .                 | +                 | .                 | .                 | .                 | .                 | .                 | .          | 2          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 20         |
|                                                            |                | <b><i>Aster bellidiastrum</i></b>                       |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | .                                                       | +                 | .                 | .                 | .                 | +                 | .                 | .                 | .          | 2          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 20         |
|                                                            |                | <b><i>Erigeron glabratus</i></b>                        |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | .                                                       | +                 | .                 | .                 | .                 | +                 | .                 | .                 | .          | 2          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 20         |
|                                                            |                | <b><i>Acinos alpinus</i></b>                            |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | 1                                                       | .                 | .                 | .                 | .                 | .                 | .                 | .                 | .          | 1          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 10         |
|                                                            |                | <b><i>Polygala alpestris</i></b>                        |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | .                                                       | 1                 | .                 | .                 | .                 | .                 | .                 | .                 | .          | 1          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 10         |
|                                                            |                | <b><i>Betonica alopecuroides</i></b>                    |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | .                                                       | +                 | .                 | .                 | .                 | .                 | .                 | .                 | .          | 1          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 10         |
|                                                            |                | <b><i>Hieracium pilosum</i></b>                         |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | .                                                       | +                 | .                 | .                 | .                 | .                 | .                 | .                 | .          | 1          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 10         |
|                                                            |                | <b><i>Leucanthemum heterophyllum</i></b>                |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | .                                                       | +                 | .                 | .                 | .                 | .                 | .                 | .                 | .          | 1          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 10         |
|                                                            |                | <b><i>Carex mucronata</i></b>                           |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | .                                                       | .                 | .                 | .                 | .                 | .                 | .                 | +                 | .          | 1          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 10         |
| PS                                                         |                | <b><i>Physoplexido comosae-Saxifragion petraeae</i></b> |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | 2                                                       | 1                 | 2                 | 3                 | 1                 | 1                 | 2                 | 2                 | 2          | 10         |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 100        |
|                                                            |                | <b><i>Primula auricula</i> var. <i>tolminensis</i></b>  |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | 1                                                       | +                 | .                 | +                 | .                 | 1                 | 1                 | +                 | .          | 6          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 60         |
|                                                            |                | <b><i>Saxifraga crustata</i></b>                        |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | .                                                       | .                 | .                 | .                 | .                 | 1                 | .                 | .                 | 1          | 3          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 30         |
|                                                            |                | <b><i>Campanula carnica</i></b>                         |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | .                                                       | .                 | .                 | .                 | +                 | .                 | +                 | .                 | .          | 2          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 20         |
|                                                            |                | <b><i>Paederota lutea</i></b>                           |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | .                                                       | .                 | .                 | .                 | +                 | .                 | .                 | .                 | .          | 2          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 20         |
|                                                            |                | <b><i>Campanula cespitosa</i></b>                       |                   |                   |                   |                   |                   |                   |                   |            |            |
|                                                            | E1             | .                                                       | .                 | .                 | .                 | +                 | .                 | .                 | .                 | .          | 1          |
|                                                            |                |                                                         |                   |                   |                   |                   |                   |                   |                   |            | 10         |



| Number of relevé (Zaporedna številka popisa) |                                                 | 1  | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Pr. | Fr. |
|----------------------------------------------|-------------------------------------------------|----|---|---|---|---|---|---|---|---|----|-----|-----|
| Cy                                           | <b>Cystopteridion fragilis</b>                  |    |   |   |   |   |   |   |   |   |    |     |     |
|                                              | <i>Cystopteris fragilis</i>                     | E1 | . | + | + | + | . | + | . | r | l  | 7   | 70  |
|                                              | <i>Valeriana tripteris</i>                      | E1 | . | . | + | + | 1 | . | . | r | .  | 4   | 40  |
|                                              | <i>Heliosperma pusillum</i>                     | E1 | . | + | . | . | . | + | . | . | .  | 2   | 20  |
|                                              | <i>Carex brachystachys</i>                      | E1 | . | . | . | . | . | . | . | r | .  | 1   | 10  |
| PC                                           | <i>Asplenium viride</i>                         | E1 | . | . | . | . | . | . | . | . | r  | 1   | 10  |
|                                              | <b>Potentilletalia caulescentis</b>             |    |   |   |   |   |   |   |   |   |    |     |     |
|                                              | <i>Primula auricula</i> s.str.                  | E1 | + | + | + | 1 | . | . | + | . | .  | 5   | 50  |
| AT                                           | <i>Festuca stenantha</i>                        | E1 | . | . | . | . | . | 1 | . | . | .  | 1   | 10  |
|                                              | <b>Asplenietea trichomanis</b>                  |    |   |   |   |   |   |   |   |   |    |     |     |
|                                              | <i>Asplenium ruta-muraria</i>                   | E1 | + | + | . | . | . | . | + | r | +  | 5   | 50  |
|                                              | <i>Kernera saxatilis</i>                        | E1 | . | + | . | . | + | + | . | + | .  | 5   | 50  |
|                                              | <i>Asplenium trichomanes</i>                    | E1 | . | . | . | . | . | 1 | + | r | 1  | 5   | 50  |
| TR                                           | <i>Sedum album</i>                              | E1 | + | . | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Polypodium vulgare</i>                       | E1 | . | . | . | . | + | . | . | . | .  | 1   | 10  |
|                                              | <i>Saxifraga paniculata</i>                     | E1 | . | . | . | . | . | + | . | . | .  | 1   | 10  |
|                                              | <b>Thlaspietea rotundifolii</b>                 |    |   |   |   |   |   |   |   |   |    |     |     |
|                                              | <i>Arabis alpina</i> subsp. <i>alpina</i>       | E1 | . | . | . | + | + | . | + | . | .  | 3   | 30  |
| FB                                           | <i>Pimpinella alpina</i>                        | E1 | . | . | + | + | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Trisetum argenteum</i>                       | E1 | . | . | . | . | + | . | . | + | .  | 2   | 20  |
|                                              | <i>Biscutella laevigata</i>                     | E1 | + | . | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Adenostyles glabra</i>                       | E1 | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Gymnocarpium robertianum</i>                 | E1 | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Hieracium bifidum</i>                        | E1 | . | . | . | . | . | . | . | r | .  | 1   | 10  |
|                                              | <b>Festuco-Brometea</b>                         |    |   |   |   |   |   |   |   |   |    |     |     |
|                                              | <i>Plantago media</i>                           | E1 | + | 1 | 1 | 2 | . | . | . | . | .  | 4   | 40  |
|                                              | <i>Carex caryophyllea</i>                       | E1 | + | 1 | 1 | 1 | . | . | . | . | .  | 4   | 40  |
|                                              | <i>Carlina acaulis</i>                          | E1 | + | + | + | + | . | . | . | . | .  | 4   | 40  |
| PaT                                          | <i>Euphorbia cyparissias</i>                    | E1 | 2 | . | + | + | . | . | . | . | .  | 3   | 30  |
|                                              | <i>Galium verum</i> s.str.                      | E1 | 1 | + | + | . | . | . | . | . | .  | 3   | 30  |
|                                              | <i>Koeleria pyramidata</i>                      | E1 | + | + | 1 | . | . | . | . | . | .  | 3   | 30  |
|                                              | <i>Bromopsis transsylvanica</i>                 | E1 | 2 | . | . | . | . | + | . | . | .  | 2   | 20  |
|                                              | <i>Genista tinctoria</i>                        | E1 | + | + | . | . | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Anthyllis vulneraria</i>                     | E1 | 1 | . | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Allium carinatum</i> subsp. <i>carinatum</i> | E1 | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Gentiana cruciata</i>                        | E1 | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Cirsium erisithales</i>                      | E1 | . | . | + | . | . | . | . | . | .  | 1   | 10  |
|                                              | <b>Poo alpinae-Trisetetalia</b>                 |    |   |   |   |   |   |   |   |   |    |     |     |
| MA                                           | <i>Crocus albiflorus</i>                        | E1 | + | + | 1 | 1 | . | . | . | . | .  | 4   | 40  |
|                                              | <i>Trollius europaeus</i>                       | E1 | . | + | + | + | . | . | . | . | .  | 3   | 30  |
|                                              | <i>Poa alpina</i>                               | E1 | + | 1 | . | . | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Campanula scheuchzeri</i>                    | E1 | + | + | . | . | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Ranunculus nemorosus</i>                     | E1 | . | 1 | + | . | . | . | . | . | .  | 2   | 20  |
|                                              | <b>Molinio-Arrhenatheretea</b>                  |    |   |   |   |   |   |   |   |   |    |     |     |
|                                              | <i>Luzula campestris</i>                        | E1 | . | 1 | + | + | . | . | . | . | .  | 3   | 30  |
|                                              | <i>Taraxacum</i> sect. <i>Ruderalia</i>         | E1 | . | 1 | + | + | . | . | . | . | .  | 3   | 30  |
|                                              | <i>Lotus corniculatus</i>                       | E1 | + | + | . | . | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Galium mollugo</i>                           | E1 | . | + | + | . | . | . | . | . | .  | 2   | 20  |
| CU                                           | <i>Lathyrus pratensis</i>                       | E1 | . | 1 | + | . | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Leontodon hispidus</i>                       | E1 | . | 1 | + | . | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Veronica chamaedrys</i>                      | E1 | . | + | + | . | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Dactylis glomerata</i> s.str.                | E1 | . | 1 | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Achillea millefolium</i>                     | E1 | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Carum carvi</i>                              | E1 | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Cerastium holosteoides</i>                   | E1 | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Trifolium pratense</i>                       | E1 | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Vicia cracca</i>                             | E1 | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Vicia sepium</i>                             | E1 | . | + | . | . | . | . | . | . | .  | 1   | 10  |
| CU                                           | <b>Calluno-Ulicetea</b>                         |    |   |   |   |   |   |   |   |   |    |     |     |
|                                              | <i>Alchemilla flabellata</i>                    | E1 | + | + | + | 1 | . | . | . | . | .  | 4   | 40  |
|                                              | <i>Antennaria dioica</i>                        | E1 | + | + | 1 | . | . | . | . | . | .  | 3   | 30  |
|                                              | <i>Selaginella helvetica</i>                    | E1 | . | 1 | + | 1 | . | . | . | . | .  | 3   | 30  |

| Number of relevé (Zaporedna številka popisa) |                                                         | 1   | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Pr. | Fr. |
|----------------------------------------------|---------------------------------------------------------|-----|---|---|---|---|---|---|---|---|----|-----|-----|
|                                              | <i>Carex pallescens</i>                                 | E1  | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Lathyrus linifolius</i>                              | E1  | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Polygala vulgaris</i>                                | E1  | . | . | + | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Viola canina</i>                                     | E1  | . | . | + | . | . | . | . | . | .  | 1   | 10  |
| CD                                           | <b><i>Caricetalia davallianae</i></b>                   |     |   |   |   |   |   |   |   |   |    |     |     |
|                                              | <i>Gentiana utriculosa</i>                              | E1  | + | . | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Parnassia palustris</i>                              | E1  | . | + | . | . | . | . | . | . | .  | 1   | 10  |
| TG                                           | <b><i>Trifolio-Geranietea</i></b>                       |     |   |   |   |   |   |   |   |   |    |     |     |
|                                              | <i>Silene nutans</i>                                    | E1  | 1 | + | . | . | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Achillea distans</i>                                 | E1  | . | 1 | + | . | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Vicia sylvatica</i>                                  | E1  | . | 1 | + | . | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Libanotis sibirica</i> subsp. <i>montana</i>         | E1  | . | . | + | + | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Hypericum perforatum</i> s.str.                      | E1  | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Valeriana wallrothii</i> (V. <i>collina</i> )        | E1  | . | . | + | . | . | . | . | . | .  | 1   | 10  |
| MuA                                          | <b><i>Mulgedio-Aconieteta, Betulo-Alnetea</i></b>       |     |   |   |   |   |   |   |   |   |    |     |     |
|                                              | <i>Hypericum maculatum</i> s.str.                       | E1  | + | + | 1 | + | . | . | . | . | .  | 4   | 40  |
|                                              | <i>Veratrum album</i> subsp. <i>lobelianum</i>          | E1  | . | 1 | + | 2 | . | . | . | . | .  | 3   | 30  |
|                                              | <i>Aconitum angustifolium</i>                           | E1  | . | + | 2 | + | . | . | . | . | .  | 3   | 30  |
|                                              | <i>Alnus viridis</i>                                    | E2a | . | + | r | + | . | . | . | . | .  | 3   | 30  |
|                                              | <i>Aconitum degenii</i> subsp. <i>paniculatum</i>       | E1  | . | + | . | 1 | r | . | . | . | .  | 3   | 30  |
|                                              | <i>Salix appendiculata</i>                              | E1  | . | + | + | . | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Rumex arifolius</i>                                  | E1  | . | . | + | 1 | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Ranunculus platanifolius</i>                         | E1  | . | . | . | . | r | . | . | . | .  | 1   | 10  |
|                                              | <i>Senecio ovatus</i>                                   | E1  | . | . | . | . | r | . | . | . | .  | 1   | 10  |
| EA                                           | <b><i>Epilobietea angustifolii, Galio-Urticetea</i></b> |     |   |   |   |   |   |   |   |   |    |     |     |
|                                              | <i>Tussilago farfara</i>                                | E1  | . | 1 | + | 1 | . | . | . | . | .  | 3   | 30  |
|                                              | <i>Urtica dioica</i> s.str.                             | E1  | . | + | + | + | . | . | . | . | .  | 3   | 30  |
|                                              | <i>Cirsium arvense</i>                                  | E1  | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Cirsium palustre</i>                                 | E1  | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Fragaria vesca</i>                                   | E1  | . | . | 1 | . | . | . | . | . | .  | 1   | 10  |
| SSc                                          | <b><i>Sambuco-Salicion capreae, Rhamno-Prunetea</i></b> |     |   |   |   |   |   |   |   |   |    |     |     |
|                                              | <i>Rosa canina</i>                                      | E2a | . | . | + | . | . | r | . | . | .  | 2   | 20  |
|                                              | <i>Sorbus aucuparia</i>                                 | E2a | . | . | + | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Rubus idaeus</i>                                     | E1  | . | . | . | . | . | + | . | . | .  | 1   | 10  |
| EP                                           | <b><i>Erico-Pinetea</i></b>                             |     |   |   |   |   |   |   |   |   |    |     |     |
|                                              | <i>Carex ornithopoda</i>                                | E1  | 1 | . | + | + | . | . | . | . | .  | 3   | 30  |
|                                              | <i>Molinia arundinacea</i>                              | E1  | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Pinus mugo</i>                                       | E2a | . | . | + | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Rhododendron hirsutum</i>                            | E2a | . | . | + | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Rubus saxatilis</i>                                  | E1  | . | . | + | . | . | . | . | . | .  | 1   | 10  |
| VP                                           | <b><i>Vaccinio-Piceetea</i></b>                         |     |   |   |   |   |   |   |   |   |    |     |     |
|                                              | <i>Clematis alpina</i>                                  | E2a | . | + | + | + | + | 1 | . | . | .  | 5   | 50  |
|                                              | <i>Saxifraga cuneifolia</i>                             | E1  | . | 1 | + | 1 | + | . | . | . | .  | 4   | 40  |
|                                              | <i>Picea abies</i>                                      | E2a | . | + | + | 1 | . | . | . | . | .  | 3   | 30  |
|                                              | <i>Luzula luzuloides</i>                                | E1  | . | 1 | . | + | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Oxalis acetosella</i>                                | E1  | . | . | + | + | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Gentiana asclepiadea</i>                             | E1  | . | 1 | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Phegopteris connectilis</i>                          | E1  | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Hieracium murorum</i>                                | E1  | . | . | 1 | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Homogyne alpina</i>                                  | E1  | . | . | + | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Larix decidua</i>                                    | E2a | . | . | r | . | . | . | . | . | .  | 1   | 10  |
| TA                                           | <b><i>Tilio-Acerion</i></b>                             |     |   |   |   |   |   |   |   |   |    |     |     |
|                                              | <i>Thalictrum aquilegiifolium</i>                       | E1  | . | . | + | + | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Acer pseudoplatanus</i>                              | E1  | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Aruncus dioicus</i>                                  | E1  | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Corydalis solida</i>                                 | E1  | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Tephrosieris pseudocrispa</i>                        | E1  | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Adoxa moschatellina</i>                              | E1  | . | . | . | + | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Chrysosplenium alternifolium</i>                     | E1  | . | . | . | + | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Geranium robertianum</i>                             | E1  | . | . | . | . | + | . | . | . | .  | 1   | 10  |
| FS                                           | <b><i>Fagetalia sylvaticae</i></b>                      |     |   |   |   |   |   |   |   |   |    |     |     |
|                                              | <i>Mercurialis perennis</i>                             | E1  | + | . | . | . | . | . | . | r | .  | 2   | 20  |

| Number of relevé (Zaporedna številka popisa) |                                                | 1   | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Pr. | Fr. |
|----------------------------------------------|------------------------------------------------|-----|---|---|---|---|---|---|---|---|----|-----|-----|
|                                              | <i>Fagus sylvatica</i>                         | E1  | . | . | + | + | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Symphytum tuberosum</i>                     | E1  | . | . | + | + | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Daphne mezereum</i>                         | E2a | . | . | + | . | r | . | . | . | .  | 2   | 20  |
|                                              | <i>Myosotis sylvatica</i>                      | E1  | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Lathyrus vernus</i> subsp. <i>flaccidus</i> | E1  | . | . | + | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Campanula trachelium</i>                    | E1  | . | . | . | + | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Prenanthes purpurea</i>                     | E1  | . | . | . | . | . | . | . | r | .  | 1   | 10  |
|                                              | <i>Dryopteris filix-mas</i>                    | E1  | . | . | . | . | . | . | . | r | .  | 1   | 10  |
| QP                                           | <b><i>Quercetalia pubescenti-petraeae</i></b>  |     |   |   |   |   |   |   |   |   |    |     |     |
|                                              | <i>Primula veris</i> subsp. <i>columnae</i>    | E1  | . | + | . | r | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Fraxinus ornus</i>                          | E1  | + | . | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Orchis mascula</i> subsp. <i>speciosa</i>   | E1  | . | + | . | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Sorbus aria</i> ( <i>Aria edulis</i> )      | E1  | . | . | + | . | . | . | . | . | .  | 1   | 10  |
| QF                                           | <b><i>Quercio-Fagetea</i></b>                  |     |   |   |   |   |   |   |   |   |    |     |     |
|                                              | <i>Anemone nemorosa</i>                        | E1  | . | + | + | + | . | . | . | . | .  | 3   | 30  |
|                                              | <i>Cruciata glabra</i>                         | E1  | . | + | + | . | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Gagea lutea</i>                             | E1  | . | + | . | + | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Dactylorhiza fuchsii</i>                    | E1  | . | . | + | + | . | . | . | . | .  | 2   | 20  |
|                                              | <i>Carex montana</i>                           | E1  | . | . | + | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Primula vulgaris</i>                        | E1  | . | . | . | . | . | . | . | r | .  | 1   | 10  |
|                                              | <i>Hepatica nobilis</i>                        | E1  | . | . | . | . | . | . | . | r | .  | 1   | 10  |
| ML                                           | <b>Mosses and lichens (Mahovi in lišaji)</b>   |     |   |   |   |   |   |   |   |   |    |     |     |
|                                              | <i>Ctenidium molluscum</i>                     | E0  | . | + | + | . | 1 | + | 1 | + | 1  | 2   | 80  |
|                                              | <i>Schistidium apocarpum</i>                   | E0  | + | . | + | . | . | + | . | . | 1  | 1   | 50  |
|                                              | <i>Neckera crispa</i>                          | E0  | . | . | . | . | 1 | + | + | + | 2  | .   | 50  |
|                                              | <i>Tortella tortuosa</i>                       | E0  | 1 | + | . | + | . | . | . | . | .  | 3   | 30  |
|                                              | <i>Hylocomium splendens</i>                    | E0  | . | + | . | 1 | 1 | . | . | . | .  | 3   | 30  |
|                                              | <i>Rhytidiadelphus triquetrus</i>              | E0  | . | + | 2 | 1 | . | . | . | . | .  | 3   | 30  |
|                                              | <i>Mnium thomsonii</i>                         | E0  | . | . | . | . | + | . | . | . | +  | 3   | 30  |
|                                              | <i>Homalothecium lutescens</i>                 | E0  | . | . | + | . | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Hypnum cupressiforme</i>                    | E0  | . | . | . | + | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Atrichum undulatum</i>                      | E0  | . | . | . | + | . | . | . | . | .  | 1   | 10  |
|                                              | <i>Marchantia polymorpha</i>                   | E0  | . | . | . | . | + | . | . | . | .  | 1   | 10  |
|                                              | <i>Distichium capillaceum</i>                  | E0  | . | . | . | . | + | . | . | . | .  | 1   | 10  |
|                                              | <i>Homalothecium sericeum</i>                  | E0  | . | . | . | . | . | + | . | . | .  | 1   | 10  |
|                                              | <i>Musci</i> spp.                              | E0  | . | . | . | . | . | . | . | . | 1  | 1   | 10  |

# Legend - Legenda

A Limestone - Apnenec

D Dolomite - dolomit

L Marlstone - laporovec

C Chert - roženec

CC Brown soil on limestone - rjava pokarbonatna tla

Li Lithosol - kamnišče

Re Rendzina - rendzina

CA *Caricion austroalpiniae*

Cfir *Caricion firmiae*