

GRASSLANDS IN SLOVENIAN KARST AND ISTRIA AS CULTURAL HERITAGE

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ABSTRACT

Grasslands have always been an important part of the cultural landscape. They were created by people, as they needed fodder for their livestock. But this led to the development of the grassland ecosystem, with its numerous plant species adapted to this particular environment. With sustainable management, farmers preserved the biodiversity of grasslands. The changes in grassland management have resulted in decreasing biodiversity in grasslands. Where the biodiversity in grasslands is still relatively high, we would need to reintroduce the traditional management to preserve the grasslands. At the same time, grasslands would become part of the tourism offer and a source of agricultural products of higher quality.

Keywords: grasslands, biodiversity, ecotourism, cultural heritage, Karst, Istria

I PRATI DEL CARSO SLOVENO E DELL'ISTRIA COME PATRIMONIO CULTURALE

SINTESI

I prati sono sempre stati una parte importante del paesaggio culturale. Sono stati creati con l'aiuto dell'uomo poiché aveva bisogno di cibo per il bestiame. Ma questo ha anche stabilito un ecosistema del prato, con molte specie vegetali adattate a questo particolare ambiente. Attraverso una gestione sostenibile, i contadini hanno preservato la biodiversità dei prati. Il nuovo modo di gestire i prati ha fatto sparire la biodiversità dei prati. Laddove la biodiversità dei prati è ancora piuttosto elevata, sarebbe necessario reintrodurre il metodo di gestione tradizionale che preserverebbe i prati. Allo stesso tempo, diventerebbero una parte dell'offerta turistica e costituirebbero una fonte di prodotti agricoli di qualità superiore.

Parole chiave: prati, biodiversità, ecoturismo, patrimonio culturale, Carso, Istria

TRADITIONAL GRASSLAND MANAGEMENT

Not so many years ago, perhaps a century or even less, farmers were forced to know and follow the laws of nature, as their survival depended on this knowledge. Today, we like to talk about sustainable management and how we can implement it. However, in the past, only sustainable management of natural resources by farmers ensures sufficient quantities of food for people and feed for livestock. Farmers treated natural resources with respect and did not exploit them indefinitely. The land that was treated with respect, prudence, and love included grasslands. Grasslands were, in fact, the main source of feed for livestock, but also natural colourful gardens – places for relaxation, sources of flowers, and sources of healing plants. Many customs associated with grasslands have developed, enriching Slovenia's cultural heritage. Grasslands and steeper meadows were areas that were torn from the forest in past centuries. However, with centuries of excessive forest exploitation in Karst and Istria, bora and associated additional drying and erosion of fertile soil became a problem. Aristocracy, in particular, started reforesting Karst and shrinking open areas (Komisija, 1884; Panjek, 2015; Perko, 2016). Almost 200 years after the start of reforestation (Panjek, 2015; Perko, 2016), the same problem developed in Karst as in the interior of Slovenia. The areas are becoming overgrown. Specifically, the natural succession always has a tendency towards forest growth, so the annual mowing and repeated deforestation of forest margins every few years were necessary for the preservation of grasslands (Bavcon, 2013; Bavcon et al., 2019). The shrubs on forest margins were cut down for firewood. They used everything to their advantage and discarded nothing (Bavcon, 2013; Bavcon & Ravnjak, 2018; Petkovšek, 2019; Jereb, 2019). In Karst, they dug up and removed rocks in the winter, and built dry stone walls between plots threw them onto mounds or rock outcrops, thus clearing land for grasslands, fields and commons (Panjek, 2015; Perko, 2016). They also cleared and repaired cart tracks leading to these areas, and cut hedges along these tracks every few years. Grasslands were cleared in April and beginning of May. First, they raked the leaves that had accumulated since autumn, gathered branches and rocks. During rest days, when grasslands were adorned with colourful flowers, farmers visited them with their whole families and picked flowers. First they picked the first spring flowers, such as lilies of the valley and daffodils, followed by daisies, meadow claries, knapweeds and others in the summer. They used them to decorate chapels and

churches, and many bouquets were also brought to school by children (Petkovšek, 2019; Jereb, 2019). In summer months, grasslands were the source of medicinal herbs. They were generally picked by children, accompanied by mothers and grandmothers. They were intended for domestic use and for sale (Petkovšek, 2019). Later, in late summer, locals also picked cyclamen plants and took them to larger cities to be sold (Bavcon, 2009; Guštin, 2018).

Late mowing and occasional grazing were essential for the preservation of grasslands. Mowing began only when most of the grassland flowers had bloomed and produced seeds, thus renewing the seed bank of plant species in the soil each year. Thus, they only mowed grasslands when grasses dropped their seeds, as they used to say (Rustja, 1929; Turk, 1924; 1925). Mowing represented quite a venture for a farmstead, in terms of both labour organisation and food. At such times, many people came together for mowing and raking. At the same time, mowing was associated with a feeling of great satisfaction because of the work done (Prešern, 1933; Jordan, 1945; Mencinger, 1963; Petek, 2004; Čemažar, 2009). Mowing in hilly areas was different and much more difficult than mowing in lowlands (Kuret, 1989a). People from different areas of the Littoral Region came to help with mowing in Karst. Some of those who had already done everything at home went to from place to place to help with mowing, earning some additional money, as mowing was well paid. Only experienced mowers went to Karst, as mowing was more difficult because of plants adapted to drought. The scythe blade in Karst was different to that in the interior of Slovenia. It was narrower and set at a higher angle, as this allowed mowers to more efficiently cut grass. In the interior of Slovenia, the blade was thinner and set at a lower angle, resulting in greater width of the blade (Bavcon Sr., 2018). In Karst, the grass was sharper and thinner, and it was hard to cut with a scythe. That is why grasslands were always mowed early in the morning when the grass was still dewy (Bavcon Sr., 2018; Petek, 2004). Mowers gathered at the landowner's while it was still dark. When the moon was full, they headed to the most remote meadow or grassland soon after two or three o'clock in the morning (Bavcon Sr., 2018; Guštin, 2018; Kuret, 1989a, 1989b; Petek, 2004). When they arrived to the meadow, dawn was usually breaking, and the mowers had to be organised. Mowing was started by the landowner or the best mower. Mowed grass was only mixed or strewn by rakers with rakes and pitchforks only when the sun was shining and the dew on the freshly cut grass dried off (Makarovič, 1978).



Image 1: Cart track in Čičarija (Photo: J. Bavcon).
Slika 1: Kolovoz v Čičariji (Foto: J. Bavcon).



Image 2: Mower under Križna gora (Podkraj) (Photo: J. Bavcon).
Slika 2: Kosec pod Križno goro (Podkraj) (Foto: J. Bavcon).



Image 3: Traditional hay drying in Dutovlje (Komen) (Photo: J. Bavcon).
Slika 3: Tradicionalno sušenje sena v Dutovljah (Komen) (Foto: J. Bavcon).



Image 4: Traditional hay drying (Komenski Kras) (Photo: J. Bavcon).
Slika 4: Tradicionalno sušenje sena (Komenski Kras) (Foto: J. Bavcon).

Mowing continued to about 11 AM and was followed by lunch. After their lunch, mowers rested in the shade until 4 PM. If there was anything left unmown, they continued mowing after their rest or joined the rakers, who were strewing the rows and turning the hay. If the weather was unstable, they raked the hay together into small piles (note: *zagrabeč* in parts of the Littoral and Upper Carniola regions or *ograbek* in Brkini). From these piles, they formed heaps of hay – *lonec* or *lounec* (in Istria, Brda) – to prevent rain or dew wetting the hay (Makarovič, 1978). In Karst, they used ox-drawn carts to transport the hay to the farm, where they stored it above the barn. In Karst, they usually stored hay just above the barn or even inside the house, because the barn and the house could be linked together in the same building, or separate.

During hot days, hay on Karst meadows would dry in just one day. Thus, there was significantly less work with drying and turning hay than in the interior of Slovenia, where hay was usually gathered on the second, but generally only on the third day. Another reason is also the composition of the vegetation, which is more adapted to drought and contains less water in Karst. In the interior of Slovenia, plants were less mature and also more succulent. In Karst, among the margins and shrubs, where there was less grass, they used sickles for mowing (Guštin, 2017). As some have explained, the Slovenian name for meadows (*senožet*) is derived from the Slovenian expression for mowing hay (*seno žeti*) (Čemažar, 2009). Even some places derived their names from such activities: Senožeče, Travnik, Otave (Savnik et al., 1968; Majdič, 1994). The little hay they mowed was then brought home in large baskets (*žbrinca* – large, very loosely woven and open baskets) by ox-drawn carts. The farmers who did not have oxen left their baskets next to the track. Later, someone would pick up all these baskets and transport them to the village (Guštin, 2018). In the past, hay was actually a commodity. It was transported from Dragonja Valley to Seča, where it was loaded onto ships and transported to Trieste.

Starting in 1980s, the traditional hay harvesting was slowly supplemented by ensilage, and then by an even simpler process of baling in mid-1990s, thus contributing to reduced biodiversity of grasslands. Seeds of plant species have always been present in traditionally mowed and dried hay, but are no longer present in today's plastic bales. Because all dried grass is cut too early, does not mature in hermetically sealed plastic bales, and the seeds do not fall on the grassland. The traditional way of dry baling and single mowing of grasslands, where seeds can return to the

soil's seed bank, has been preserved in very few places. When hay was transported from meadows to barns, seeds were distributed on other surfaces, too. In addition to the traditional way of mowing, the grasslands in the wider Karst region were also preserved by sheep grazing. During winter, until March, sheep were grazing even on wheat fields, thereby strengthening wheat plants. In winter, they transported sheep to warmer areas towards the sea, along the Gulf of Trieste and to Istria (Smerdel, 1989, 1995). With the beginnings of reforestation of Karst, from 1822 onwards, sheep breeding in Karst was restricted for the first time (Fleischmann, 1850a-h; Komisija, 1891; Panjek, 2015; Perko, 2016; Praprotnik & Bavcon, 2016). However, currently the only method for preserving the cultural landscape and grasslands is often grazing, particularly in Karst, Istria and on steeper areas of the interior of Slovenia (Škornik et al., 2010; Poldini et al., 2014; Pornaro et al., 2014a, 2014b; Bavcon, 2013; Bavcon et al., 2019).

There are fewer and fewer colourful grasslands rich in biodiversity as the method of their management has changed (Ivajšič et al., 2013; Bavcon et al., 2019). The key problem is too early mowing, which prevents the natural seed bank in the soil from replenishing. Too early mowing results in a loss of biodiversity and causes a green desert. Furthermore, grasslands are also endangered by fertilisation, which does increase the amount of green feed for livestock, but leads to disappearance of more sensitive plant species that do not tolerate excessive amounts of nutrients. Grasslands surfaces are also shrinking due to overgrowing. Edges of grasslands are no longer being cleared, and grassland vegetation is slowly transitioning into forest vegetation, once again resulting in a slow disappearance of grassland plant species. Overgrowing of grasslands is, in fact, slower in area of Istria and Karst. The primary reason for this are hot and dry summer (Kaligarič, 1997a, 1997b; Kaligarič & Ivanjšič, 2014; Bavcon, 2013; Bavcon et al., 2019). The disappearance of colourful grasslands is not only a nature conservation issue but also a cultural landscape problem. The mosaic structure of former farms, customs related to grasslands and quality agricultural products (meat, milk, medicinal herbs), which were also associated with sustainable grassland management, are disappearing. Therefore, it is important to recognise and understand grasslands as very diverse ecosystems, which can not only improve the quality of our life with their beautiful appearance, but can also become a source of quality agricultural products and a wonderful tourist destination (Bavcon & Ravnjak, 2019; Bavcon et al., 2019).



Image 5: Overgrowing grasslands in Čičarija (Photo: J. Bavcon).
Slika 5: Zaraščajoči se travniki v Čičariji (Foto: J. Bavcon).

GRASSLANDS BIODIVERSITY OVERVIEW

The grasslands of the Karst, Slovenian Istria and Čičarija are the ones that have the highest number of species. In February and March, these grasslands are painted white by the common snowdrop (*Galanthus nivalis* L.). The species always spreads from forest margins, which indicates that these areas were covered by forests in the past (Bavcon, 2014a, 2016; Bavcon et al., 2019). In Slovenian heritage, the common snowdrop is considered a herald of spring. As soon as the first flowers appear in nature, the first bouquets of snowdrops also make it to local markets. On grasslands, they are soon joined by the genus of crocuses (*Crocus* L.). In karst, meadows mown once per year, primarily on shallower soil, are dominated by striped crocus (*C. reticulatus* Steven ex Adam in Weber fil. & Mohr), while sinkholes, where it is colder, are dominated by the intensely purple spring crocus (*C. vernus* (L.) Hill subsp. *vernus*) (Bavcon, 2012). In Goriško and parts of Komen Karst, there are many white populations within blue ones. Primroses (*Primula vulgaris* Hudson) also appear on sunny south-facing

slopes in the spring. Compared to snowdrops and crocuses, it forms smaller populations, but there are still specimens growing in groups. In addition, cowslip primrose (*P. veris* L.) appears in grasslands occasionally, the roots of which were once harvested as a remedy for colds (Bavcon, 2013; Bohinc, 1985; Jagodič, 2004; Kromar, 1992; Gale-Toplak, 2002; Willfort, 1976). Even today, it is one of the main ingredients of cough syrups. Where once there were light thermophilic forests of manna ash, downy oak and European hop-hornbeam and grasslands were formed by human encroachment, we can observe remnants of undergrowth vegetation, represented by *H. multifidus* Vis. subsp. *istriacus* (Schiffner) Merxm. & Podl. Grasslands represent secondary habitats for the latter species. It primarily grows on Karst commons and Karst mown meadows. It grows in large bunches among dry grass, specifically where grasslands are grazed or mown only occasionally. Where mowing is more often, plants are smaller but consequently more compact. Hellebore has also been a very popular species for spring bouquets (Bavcon et al., 2012). In spring, mountain pasqueflower (*Pulsatilla*

montana Rchb.) appears in masse in some places in Karst and Slovenian Istria, usually together with Tommasini's cinquefoil (*Potentilla tommasiniana* F.W.Schultz), white cinquefoil (*Potentilla alba* L.), globe daisy (*Globularia punctata* Lapeyr.) and grass lily (*Ornithogalum comosum* L., *O. umbellatum* L.). Pasqueflower often grow on shallow soil and overgrowing commons. Pasqueflower mark Karst grasslands twice: when they bloom and when they bear fruit, when fluffy infructescences developed at the top of their stems (Bavcon, 2013). In some areas in Karst and Istria, globe daisy is so common that it turns the area completely blue. In some places, the colour of the flowers in the population transitions from blue to white. There are a few of such places in Podgorje Karst, where globe daisy is also common on pastures (Bavcon, 2014b). In some places, we can find common grape hyacinths (*Muscari botryoides* (L.) Mill.) among globe daisies (Bavcon, 2013; Bavcon, 2014b). In May, Karst and Istria don the white of poet's daffodils (*Narcissus poeticus* subsp. *radiiflorus*). There, their diversity is greater than in some significantly denser and more numerous populations elsewhere in Slovenia. In Karst, they first appear at the edges of bushes, from where populations spread to grasslands (Bavcon, 2013; Praprotnik et al., 2018). Poet's daffodil is also a popular horticultural species, introduced into home gardens from nature in many places. It is also one of the species popular in bouquets sold on markets.

At the end of May, the whiteness of daffodils is in some places in Karst and Istria replaced by iris flowers blue as the sea. First, the vivid purple flowers of grass leaved iris (*I. graminea* L.) appear among leaves that resemble grass. A subspecies of Siberian iris (*I. sibirica* L. subsp. *erirrhiza* Pospichal) also grows in some sinkholes in Slovenian Istria, as this is its traditional habitat (Wraber, 1990; Bavcon, 2013). In some places, it tends to grow in large populations. Its basic species, Siberian iris, grows in wetter lowland grasslands (*I. sibirica* L.) (Bavcon et al., 2019). At the same time, the green of grasslands is livened up by intense purple flowers of peonies. Only common peony (*Paeonia officinalis* L.) thrives in large numbers, while the wild peony (*P. mascula* (L.) Mill.) is very rare. Common people prefers edges of sinkholes, where it sometimes grows in larger groups. White asphodel (*Asphodelus albus* Willd.), whose white spike inflorescences rise above the grassy green, blooms at the same time as peonies. It is followed at the start of June by dittany (*Dictamnus albus* L.), which presents two appearances. On mown grasslands, it is lower, more compact, and generally spread out. On overgrowing grasslands, it develops into large plants with significantly larger inflorescences. Its

pink flowers arranged in spike inflorescences are appealing pasture for bees (Bavcon, 2013; Ravnjak & Bavcon, 2020). Lilies of the valley (*Convallaria majalis* L.) predominate in some places with dry and acidic soil in May. Since olden day, flowers used to decorate churches and sold on the market were the most abundant in May. At the transition into summer, Karst grasslands once again take on a purple colour with the bloom of meadow clary (*Salvia pratensis* L.) (Bavcon & Ravnjak, 2015a), with white-yellow flowers of mountain daisy (*Leucanthemum adustum* (Koch) Gremler, *L. platylepis* Borbas). Clary prefers dry grasslands with a limestone base (Hegi, 1908–1931). Occasionally on Karst grasslands, we can also find purple mullein (*Verbascum phoenicum* L.), which, unlike other members of the genus of mullein, as the name suggests, blooms purple. Other species have yellow flowers, with the most common ones being Austrian mullein (*V. austriacum* Schott ex Roem. & Schult.), Alpine mullein (*V. alpinum* Turra) and dense-flowered mullein (*V. densiflorum* Bertol.). Mullein flowers are characterised by cup-shaped capsules. In the past, they utilised this feature by dipping the entire inflorescence into oil, lit in on fire, and used it as a torch. The oil collected in the capsules and burned slowly. The appearance of Karst grasslands then quickly changes into the rippling softness of European feather grass (*Stipa eriocaulis* Borb.) and silver giant scabiose (*Jurinea mollis* (L.) Reichenb.), among which purple pads of various types of thyme (*Thymus*) form near the ground (Bavcon et al., 2019). Since days of old, locals have collected thyme as a medicinal herb for respiratory diseases, while the syrup made from thyme flowers is a pleasant summer refreshment. In the middle of June, wonderful colours appear on dry grasslands in Karst field, which is greatly livened up by wild gladiolus (*Gladiolus illyricus* Koch.) (Kaligarič, 1997a, 1997b; Bavcon, 2013; 2014b). Primarily on Karst field, great burnet (*Sanguisorba officinalis* L.) grows among wild gladiolus plants. In folk medicine, it was used to treat intestinal diseases and diarrhoea (Ašič, 1987; Bohinc, 1985; Kromar, 1992; Jagodič, 2004; Gale-Toplak, 2002). Great yellow gentian (*Gentiana lutea* L. subsp. *symphyandra* Murbeck) was also used as a medicinal herb. They used its dried roots to prepare tea to treat stomach ailments (Ašič, 1987; Bohinc, 1985; Jagodič, 2004; Kromar, 1992; Gale-Toplak, 2002; Willfort, 1976). Because its roots were so popular, it became an endangered species and is not on the list of protected plant species. A plant that was used as a medicinal herb only in the Littoral Region of Slovenia, and is just as common on grasslands, is *Inula hirta* L. According to folklore, the plant is said to cure all diseases,



Image 6: Grasslands with Iris illyrica and Narcissus poeticus subsp. radiiflorus (Photo: J. Bavcon).
Slika 6: Travniki z Iris illyrica and Narcissus poeticus subsp. radiiflorus (Foto: J. Bavcon).



Image 7: Jurinea mollis and Stipa eriocalis in Čičarija (Photo: J. Bavcon).
Slika 7: Jurinea mollis in Stipa eriocalis v Čičariji (Foto: J. Bavcon).



Image 8: *Gentiana lutea* at Vremščica (Photo: J. Bavcon).
Slika 8: *Gentiana lutea* na Vremščici (Foto: J. Bavcon).

including snake bites (Fleischmann, 1848; Bavcon & Ravnjak, 2018; Ravnjak & Bavcon, 2020). More recent studies have shown that the plant does, in fact, contain numerous substances that improve immune responses. It was commonly known as *astra montana* (Bavcon, 2013). Locals gathered its yellow flowers to be used as medicine. Of course, we cannot have a dry grassland without umbellifers. The most common species is mountain parsley (*Peucedanum oreoselinum* (L.) Moench), which is occasionally accompanied in Karst and Istria by *Ferulago campestris* (Besser) Grecescu (Bavcon et al., 2019). Branched St Bernard's lily (*Anthericum ramosum* L.) blooms during the hottest part of the summer. Afterwards, Karst commons are turned blue by amethyst sea holly (*Eryngium amethystinum* L.). Because of its wonderful blue colour and interesting structure, it was often picked for bouquets (Bavcon, 2013). Karst grasslands once again take on a beautiful appearance when plants of the *Allium* genus bloom. The first to bloom is round-headed leek (*Allium sphaerocephalon* L.), followed by broadleaf chives (*A. senescens* L.) and witch's garlic (*A. carinatum* L.). When summer turns to au-

tumn, they are joined by *A. ericetorum* Thore (Bavcon, 2013, 2014b; Bavcon et al., 2019). Among the last plants to adorn the rocky Karst grasslands are savories: mountain savory (*Satureja montana*), Liburnian savory (*Satureja subspicata* Bartl. ex Vis. subsp. *liburnica* Šilić), and their endemic hybrid, Karst savory (*Satureja x karstiana* Justin) (Bavcon, 2013, 2014b; Bavcon & Ravnjak, 2015b). Savories were used in the past, and still are, as a spice, a medicinal herb with an antimicrobial and antibacterial effect, and as an aphrodisiac. Because of the latter property, it was used in love potions in the past.

GRASSLAND AS A SUSTAINABLE PRODUCT

In the description, we provided only a few images of Karst grasslands throughout the year and only a few of the most noticeable and recognisable plant species. Of course, species diversity is much greater and can include around 150 plant species on average. It is this rich species diversity that makes these grasslands special in the global sense and should be preserved as a natural and



Image 9: Grasslands with Apiaceae family in Senožeče (Photo: J. Bavcon).
Slika 9: Travniki s kobulnicami v Senožečah (Foto: J. Bavcon).

cultural treasure. Even though today's grassland management is intensive and strives to produce the highest quantity of feed for livestock, it is necessary to switch again to extensive grassland management to ensure development of rural areas in the spirit of sustainable development. From the perspective of livestock farming, livestock grazing on grasslands rich in biodiversity is more resistant to various diseases and parasites. Tannins in plants (more specifically proanthocyanidins) help improve animals' digestion of proteins, reduce the possibility of attack by digestive parasites, and reduce the excretion of methane (Aerts et al., 1999; Waghorn et al., 2002). With varied plant food, animals ingest various minerals (Ca, Na, K, Mg) and vitamins, with vitamin E being the most important for livestock (Hopkins, 2004; Beever et al., 2000), affecting the quality of meat and milk. It was discovered that the quality of milk is significantly higher in animals grazing on grasslands with rich plant diversity. Such milk is richer in protein, fatty acids, minerals and antioxidants, and is as such also healthier for humans (Moloney, 2008). In fact, some secondary plant metabolites are essential

for the production of some cheeses of the highest quality (Léveillé, 2018). Although farmers in the past did not have access to any modern analyses, farmers from Rakitovec told how the hay they brought from the higher areas smelled better and resulted in better milk (Anon., 2017, 2018).

In addition to traditional agricultural activities associated with meadows, farms could offer their extensively managed grasslands as part of their ecotourism offer. Colourful grasslands are the thing that attracts tourists to Slovenia (Bavcon, 2013, 2014a, 2014b; Bavcon & Ravnjak 2019; Bavcon et al., 2019). Gerritsen (2008) states that these meadows in Slovenian Istria are as diverse as those in South Africa.

With the help of botany experts, owners of colourful grasslands could allow guided botanical excursions for a small number of participants, thus preventing possible damage to the grasslands. Whenever we led foreign groups to these areas, they could not help but marvel at the diversity of our grasslands (Bavcon & Ravnjak, 2019, 2018). An additional farm product could be hay residue obtained by late mowing, which could be offered



Image 10: Back basket from Slovenian Istria in Rakitovec (Photo: J. Bavcon).
Slika 10: Koš iz slovenske Istre v Rakitovcu (Foto: J. Bavcon).



Image 11: Grasslands in Čičarija (Photo J. Bavcon).
Slika 11: Senožeti v Čičariji (Foto J. Bavcon).

to tourists for sowing their lawns or for use in traditional medicine (for baths, to treat colds, muscle aches). Farmers in the Karst and Istria already knew all this, as they often told us in interviews how they put hay or hay residue in a bucket, steamed it with water, and then covered the patient and the bucket for inhalation (Anon., 2015, 2017).

Of course, grasslands with rich species diversity, there are also plant species that were part of Slovenian traditional medicine. With relevant knowledge and moderate harvesting that would not endanger their populations, they could also be a marketable product as part of herbalism. Beekeeping also goes hand in hand with the countryside, sustainable tourism and Slovenian tradition. Species-rich grasslands that are mowed after most plant species bloom represent an important pasture for bees (Ravnjak & Bavcon, 2020). Because of the early start of the growing season and favourable temperatures, the beekeeping season in Karst and Slovenian Istria begins in early spring and lasts longer in autumn than in the central part of Slovenia. The only obstacle can be a strong bora during the period of abundant flowering, which prevents bees from flying, or, as elsewhere in Slovenia, periods of rainy weather. In Karst, some

beekeepers are already producing special and lesser-known types of honey, such as meadow clary honey, mahaleb cherry honey (*Prunus mahaleb*), prostrate Canary clover honey (*Dorycnium germanicum*) and savory honey (*Satureja montana* and *S. subspicata* subsp. *liburnica*). The hyssop (*Hyssopus officinalis* L.) in particular represents an important autumn bee pasture on Karst grasslands (ČD Sežana, 2011; Uredništvo, 2007). Part of sustainable grassland-related tourism could be the revival of the traditional customs described in the introduction, related to mowing and hay storage (Mencinger, 1963; Kuret, 1989a, 1989b; Bavcon et al., 2019). Such activities could be presented to tourists, who would also learn them. And once abandoned barns with haylofts would become a new form of accommodation.

Colourful flowering grasslands are therefore not only botanically interesting but can also be a venue for sustainable tourism and a product of sustainable agriculture. By preserving them, we will not only protect plant species, but we will also add value to our tourist offer and agricultural products, which can become a Slovenian trademark, and at the same time contribute to the biodiversity of the animal world.

TRAVNIKI SLOVENSKEGA KRASA IN ISTRE KOT KULTURNA DEDIŠČINA

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POVZETEK

Kras in Istra imata še v današnjem času veliko odprtih travniških površin. Zaradi specifične podnebja in tal gre bolj ali manj za enokosne travnike. Pred dobrimi dvesto leti so se začeli sicer prvi poskusi pogozdovanja Krasa, čemur kmetje niso bili naklonjeni. Vendar je prav v današnjem času tudi na Krasu in v Istri ravno tako prisotno zaraščanje travniških površin, kar poleg intenzivnega kmetijstva predstavlja grožnjo njihovi vrstni pestrosti. Travniki so del kulturne krajine in gozd se tja znova naravno vrača. Skozi tisočletja so nastale zelo pisane travniške površine, ki so dobile značaj naravne krajine, čeprav so izvirno kulturna krajina. S popisi vrstne pestrosti in dolgoletnim monitoringom posameznih površin, ki jih beležimo s slikovnim gradivom, osebnimi intervjuji z lastniki, domačini, ki so nekoč tukaj delali, skušamo zabeležiti nekdanjo rabo travnikov, tradicionalni način obdelave teh površin in kako njihovo biodiverzitetno ohraniti s kombinacijo tradicionalnega in sodobnega gospodarjenja. Podoba travnatih površin se čez leto spreminja in s tem se spreminja tudi zastopanost različnih rastlinskih vrst. Nekatere med njimi so pogostejše in se razširjajo v večjih populacijah, spet druge so redkejše, a vnašajo travnikom veliko površinsko pisanost. Poleg kmetijske izrabe so travniki s svojo biodiverzitetno pomembni tako v etnobotaniki in hortikulturi kot ekoturizmu. Prav tako so lahko travniki z zelo bogato rastlinsko biodiverzitetno vir visokokakovostnih produktov kmetijstva, ki poleg klasične izrabe lahko pomenijo novo dodano vrednost, ki jo je možno izkoristiti za ekoturizem z namenom, da bi to bogato kulturno krajino ohranili še prihodnjim rodovom.

Ključne besede: travniki, biodiverzitetna, ekoturizem, kulturna dediščina, Kras, Istra

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