

Po poti Fleischmannovega rebrinca

Path of the Fleischmann's Parsnip

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Uvod

Tako Botanični vrt Univerze v Ljubljani kot Ljubljanski grad s svojim Grajskim gričem sta prijetni zeleni točki v mestu Ljubljana, ki ju obišče marsikateri Slovenec ali tuji turist. Zgodovina raziskovanj rastlinstva Grajskega griča pa sega že več kot 250 let nazaj. Tam so rastline popisovali: Franc Ksaver Wulfen (1728-1805), Franc Hladnik (1773-1844), Andrej Fleischmann (1804-1867), Žiga Graf (1801-1838), Karel Dežman (1821-1889), Wilhelm Voss (1849-1895), Alfonz Paulin (1853-1942), Fran Dolšak (1877-1941), Leopold Zor (1919-2009), Milan Piskernik (1925-2006), v novejšem času pa Dušan Naglič, Boris Turk in Nejc Jogan.

Poleg pestrega rastlinja obe ustanovi povezuje tudi prav posebna rastlina, Fleischmannov rebrinec (*Pastinaca sativa* var. *fleischmanni* (Hladnik) Burnat). Je izredna dragocenost, ki se je po prvi polovici 19. stoletja ohranila samo v Ljubljanskem botaničnem vrtu. V svetovni literaturi (Hegi 1908–1931) piše, da so Fleischmannov rebrinec našli na Ljubljanskem gradu, in da je bilo to dotlej edino odkrito in potrjeno nahajališče. Od tod je rastlina kasneje izginila in raste samo še v Botaničnem vrtu Univerze v Ljubljani. Leta 2011 smo jo znova uspešno zasadili na grajskem dvorišču. Fleischmannov rebrinec je naš endemit, ki ga v naravnem okolju ne najdemo več. V vsej botanični strokovni in znanstveni literaturi navajajo kot edino nahajališče zanj prav Botanični vrt Univerze v Ljubljani.

Rastlina je dvoletnica. Prvo leto tvori le rozeto z dvakrat pernato deljenimi

Introduction

The Ljubljana Botanic Gardens as well as the Ljubljana Castle with its Castle Hill are pleasant green points in the city of Ljubljana, which are visited by many Slovenian and foreign tourists. The history of Castle Hill flora research is more than 250 years old. Plants in this area were registered already by: Franc Ksaver Wulfen (1728-1805), Franc Hladnik (1773-1844), Andrej Fleischmann (1804-1867), Žiga Graf (1801-1838), Karel Dežman (1821-1889), Wilhelm Voss (1849-1895), Alfonz Paulin (1853-1942), Fran Dolšak (1877-1941), Leopold Zor (1919-2009), Milan Piskernik (1925-2006) and in modern time by Dušan Naglič, Boris Turk and Nejc Jogan. In addition to the varied vegetation, both institutions are connected by a special plant called *Pastinaca sativa* var. *fleischmanni* (Hladnik) Burnat). It is an extraordinary treasure that has, after first half of 19th century, maintained only at the Ljubljana Botanic Gardens. It is said in the world literature (Hegi 1908-1931) that the Fleischmann's parsnip was found at the Ljubljana Castle and that this was until then its only discovered and confirmed habitat. The plant later disappeared from there and is now growing only at the University Botanic Gardens Ljubljana. In 2011, it was again planted in the Castle courtyard. The Fleischmann's parsnip is our endemic plant, which can no longer be found in the natural environment. Throughout botanical literature, the University Botanic Gardens Ljubljana is referred to as its only remaining habitat.

The plant is a biennial plant. During the first year, it forms only a rosette of bipinnate leaves growing from a long and thick root. During the second year, an up to

1.) Cvetoč Fleischmannov rebrinec.
Blossoming Fleischmann's parsnip.



2.) Andrej Fleischmann: Pregled kranjske flore.
 Andrej Fleischmann: An Outline
 of Carniolan Flora.

listi, ki izrašča iz dolge in debele glavne korenine (korena). Drugo leto pa požene iz te rozete do 100 cm veliko steblo, robato in poraslo s kratkimi štrlečimi dlakami. Veliki kobuli so rumene barve, sestavljeni iz številnih drobnih cvetov. Fleischmannov rebrinec je mutant navadnega rebrinca, ki je sicer ena izmed najpogostejših travniških rastlin. V otavi cveti na mnogih travnikih in pripotjih. Fleischmannov rebrinec se od navadnega razlikuje po dvojno pernatih listih, po obliki in nazobčanosti listov ter delno še po temnejši zeleni barvi listov. Razen nahajališča na Ljubljanskem gradu, kjer je rastlina rasla vse od leta 1819 do nekako leta 1835, niso našli drugega nahajališča. Navadni rebrinec so kot vrtnino začeli

100-centimetre stem, grooved and covered with short stiff hairs, grows from the rosette. Its large umbels consist of a multitude of small yellow flowers. Fleischmann's parsnip is a mutant of the common parsnip, which is one of the most frequent meadow plants. It is blooming at the time of rowen on meadows and along paths. Fleischmann's parsnip, however, is a special plant that differs from the common parsnip for its double feathery leaves, the shape and serration of leaves and, partially, also by the dark green colour of leaves. Other than its habitat at the Ljubljana Castle, where the plant grew from 1819 to around 1835, no other habitat was found for the plant. The common parsnip, as a vegetable, started to be grown in Middle Ages and was used for a long time, until it was superseded by

gojiti v srednjem veku in je bila dolgo v uporabi, dokler ga nista spodrinila korenje in krompir. Koren enoletne rastline poleg veliko vode vsebuje še sladkorje, beljakovine, pektin, celo malo maščobnega in eteričnega olja. Angleži ga še vedno cenijo. Mogoče bi torej bilo, da je omenjeni rebrinec sorta navadnega rebrinca, ki so jo nekoč kultivirali. Ne glede na to možnost pa še vedno čudi dejstvo, da se je obdržal samo na Ljubljanskem gradu in pozneje v botaničnem vrtu.

Fleischmannov rebrinec je dobil ime po svojem najditelju, botaniku in vrtnarju Andreju Fleischmannu, ki se je rodil leta 1804 v Beričevem. Že leta 1819 ga je kot petnajstletnega dečka vodja ljubljanskega botaničnega vrta Franc Hladnik vzel za vajenca in vrtnarja v vrt, v katerem je Fleischmann preživel vse življenje. S svojim učiteljem je prehodil 5 celotno Kranjsko in mu pomagal nabirati rastline za vrt in herbarij. Pod Hladnikovim vodstvom je delal do leta 1834, do leta 1850 pa je bil njegov predstojnik zdravnik Ivan Nepomuk Biatzovsky. Med letoma 1850 in 1867 je Fleischmann botanični vrt vodil sam. Leta 1843 je izdal delo Übersicht der Flora Krain's (Pregled kranjske flore), ki je drugo tiskano delo o rastlinstvu Kranjske.

A pozornosti ni vreden le Fleischmannov rebrinec, ampak tudi pestrost življenjskih okolij na Grajskem griču in pestrost tukajšnjih rastlinskih vrst. Zato smo za vse obiskovalce pripravili naravoslovno učno pot, ki vodi med rastlinjem vse od rebrinca, rastočega v botaničnem vrtu, do rebrinca, rastočega na grajskem dvorišču. Spoznali boste značilnosti življenjskih okolij v različnih sezonah in njihove tipične predstavnike.

carrots and potatoes. In addition to having a high content of water, the taproot of this annual also contains sugars, proteins, pectin and even a bit of fatty and essential oil. The British still cherish it. So, it is possible that the mentioned parsnip is a variety of the common parsnip, which was once grown. Irrespective of this, however, many are still bewildered by the fact that the variety was only preserved at the Ljubljana Castle and, later on, at the Botanic Gardens.

Fleischmann's parsnip was named after its discoverer, a botanist and gardener Andrej Fleischmann, who was born in 1804 in Beričevo. He came to the Garden in 1819 as a fifteen year old boy, when the manager of the Ljubljana Botanic Gardens, Franc Hladnik, hired him as a student and a gardener. He stayed there all his life. He walked the entire Carniola with his teacher and helped him collect plants for the garden and herbarium. He worked under Hladnik's leadership until 1834, until 1850 his superior was Dr. Ivan Nepomuk Biatzovsky. During 1850 and 1867 Fleischmann took over the management of the Garden. In 1843, he published Übersicht der Flora Krain's (An Outline of Carniolan Flora), which is the second printed work on the flora of the Carniola region.

But Fleischmann's parsnip is not the only one that deserves attention, there is also a diversity of habitat at the Castle Hill and a variety of local flora. Therefore, we prepared a Natural science educational path for all the visitors, which runs among the vegetation, from the parsnip growing in the Botanic Gardens to the parsnip in the Castle courtyard. You will learn about the features of habitats in different seasons and their typical representatives.



- 3.) Bazeni z barjanskimi rastlinami v Botaničnem vrtu Univerze v Ljubljani./Pools with plants from the Ljubljana Marshes in the University Botanic Gardens Ljubljana.
- 4.) Močvirska logarica/Snake's head (*Fritillaria meleagris*).
- 5.) Rožmarinka/Bog-rosemary (*Andromeda polifolia*).



4.



5.

Botanični vrt Univerze v Ljubljani

Je najstarejša znanstvenoraziskovalna ustanova z neprekinjenim delovanjem v Sloveniji. Ustanovljen je bil leta 1810 v času Ilirskih provinc. Dandanes v njem raste približno 5000 različnih vrst, podvrst in varietet. Predstavlja izredno bogato rastlinsko zbirko vrst iz različnih delov sveta, hkrati pa se kot institucija ukvarja z izobraževanjem, raziskavami in varovanjem rastlinskih vrst tako v naravi kot na nadomestnih rastiščih v vrtu. Prav slednje je izredno pomembno tudi za Fleischmannov rebrinec. Le-ta je namreč iz narave že izginil, skrbne vrtnarske roke pa so ga skozi skoraj že dve stoletji uspele ohraniti v ljubljanskem botaničnem vrtu. Raste v delu vrta, ki se imenuje rastlinski sistem in pripada mu kar cela gredica. V tem delu vrta so rastline posajene po posameznih gredicah, kjer vsaka gredica predstavlja eno rastlinsko družino. Tu se v vsakem letnem času najde kaj cvetočega. Iz rastlinskega sistema se lahko sprehodimo do arboretuma in betonskih bazenčkov, ki so namenjeni varovanju barjanskih rastlinskih vrst. Tukaj lahko občudujemo drobno mesojedko okroglostno rosiko (*Drosera rotundifolia*), navadno rožmarinko (*Andromeda polifolia*), dlakavo mahovnico (*Oxycoccus palustris*), ozkolistni munec (*Eriophorum angustifolium*), močvirsko logarico (*Fritillaria meleagris*), barsko vijolico (*Viola uliginosa*) in še številne druge. S tega mesta se že lepo vidita tudi Grajski grič in njegova zelenina. Pot do tja nas vodi prek Gruberjevega prekopa, ki so ga gradili med letoma 1772 in 1780; z njim so rešili Ljubljano pred poplavami in začeli osuševanje ljubljanskega barja.

University Botanic Gardens Ljubljana

It is the oldest Slovene scientific and research institution with continuous operation. It was founded in 1810, in the time of the Illyrian Provinces. Today, it grows approximately 5,000 different species, subspecies and varieties. It represents an extremely rich collection of plant species from various parts of the world, while as an institution it is engaged in education, research and protection of flora in the nature and on alternate habitats in the Garden. The latter is extremely important for the Fleischmann's parsnip. It already disappeared from the nature, but careful gardening hands were able to preserve it at the Ljubljana Botanic Gardens for almost two centuries. It grows in a part of the Garden called the Plant system, and it has the entire plant bed. In this part of the Garden, the plants are planted in individual beds, where each bed represents one plant family. Here, something is blooming in every season. From the Plant system we can walk to the Arboretum and concrete pools, which are intended to protect marsh flora. Here, we can admire common sundew (*Drosera rotundifolia*), bog rosemary (*Andromeda polifolia*), common cranberry (*Oxycoccus palustris*), common cottongrass (*Eriophorum angustifolium*), snake's head fritillary (*Fritillaria meleagris*), Violaceae (*Viola uliginosa*) and many others. From this site we can already see the Castle Hill and its greenery. The path to there leads through the Gruber Canal, which was built between 1772 and 1780; they used it to rescue Ljubljana against floods and begin the drainage of the Ljubljana Marshes.



6.

Mejice

Mejice so bile vedno tiste, ki so ločevale posamezne travne površine. »Plotovi« so nekoč rekli mejicam belega gabra, največkrat naravno rastočega ob kolovozih. Na vsake toliko let so takšno strnjeno gabrovo mejo obrezali na določeno višino in prav tako v širino, da so lahko brez težav mimo vozili seno. Pomen teh visokih živih mej – plotov je bil v tem, da je živina hodila v senci in je v vročini ni napadal nadležen mrčes. V nasprotnem primeru bi lahko namreč podivjala in polomila voz. Na Grajskem griču je iz smeri Karlovške ceste zasajena prav takšna gabrova živa meja, po kateri se vzpenja navadni srobot (*Clematis vitalba*). Mejice pa so pomembne tudi zaradi številnih grmovnih vrst, kot so npr. navadna trdoleska (*Euonymus europaeus*), enovratni glog (*Crataegus monogyna*), maklen (*Acer campestre*) in še druge, ki v jeseni obilno plodijo in ponujajo hrano živalim.

Hedges

Hedges have always been the one that have separated individual grass surfaces. "Plotovi" ("piles") was once the name for hedges of white hornbeam, often naturally growing next to cart tracks. Every so many years they cropped such a concise of hornbeam hedge to a specific height and width for easier transportation of hay past this hedge. The relevance of these high hedges - piles was that the animals were walking in the shade and that they were not attacked by pesky insects in the heat. Otherwise, livestock would run wild and break the wagon. At the Castle Hill, from the direction of the Karlovška road, grows such a hornbeam hedge, on which climbs ordinary Clematis (*Clematis vitalba*). Hedges are also important because of many shrubs species, such as common spindle (*Euonymus europaeus*), common hawthorn (*Crataegus monogyna*), field maple (*Acer campestre*) and others that proliferate abundantly in the autumn and offer food to animals.

- 8 9 6.) Mejica ob Kostanjevem drevoredu.
A hedgerow on the avenue lined with chestnut trees.

- 7.) Mejice lahko varujejo tudi pred strmim bregom.
Hedgerows can also offer protection where there is a steep slope.



7.

Suhozid

Ko se Fleischmannova pot začne vzpenjati in z asfaltne poti stopimo na gozdno, lahko na naši levi strani opazimo suhozid (zid, narejen iz kamenja), ki je polno zarašččen s smrdljivičko (*Geranium robertianum*). Spomladi ga povsem preraste. Nad njo se bohotijo že nekoliko višje rastline, kot je česnovka (*Alliaria petiolata*), ki se mestoma naseljuje kar v šopih. Podobno je z gorsko rumenko (*Galeobdolon montanum*) ali s podlesno vetrnico (*Anemone nemorosa*), ki se v zgodnji pomladi razrašča povsod. Kasneje sta tam zelo pogosta še navadni jagodnjak (*Fragaria vesca*), šesterokotna homulica (*Sedum sexangulare*) in ostrá homulica (*S. acre*). Prav tako se množično razraščajo petelinčki: votli petelinček (*Corydalis cava*) ter tu in tam pa tudi čvrsti petelinček (*Corydalis solida*). Od sonca segreto kamenje rastline še dodatno ogreje. Le-te pa s svojimi koreninskimi prepleti med špranjami kamenja iščejo vodo.

Dry wall

When the Fleischmann's path starts to ascend and we step from the asphalt to the forest road, we can see on our left a dry wall (wall made of stone), which is fully overgrown with Herb-Robert (*Geranium robertianum*). In the spring, it completely overgrows it. Above it boast a bit higher plants, such as the garlic mustard (*Alliaria petiolata*), which in places inhabits in clumps. It is similar with the yellow archangel (*Galeobdolon montanum*) or the wood anemone (*Anemone nemorosa*), which in the early spring grow everywhere. Later, wild strawberry (*Fragaria vesca*), tasteless stonecrop (*Sedum sexangulare*) and goldmoss stonecrop (*S. acre*) are also very common there. Also wildly growing is the crested lark (*Corydalis cava*, here and there also *Corydalis solida*). Rocks, heated from the sun, additionally heat the plants. With its root entanglements they are searching for water between crevices of rocks.

- 8.) Krvavi mlečnik/Greater celandine (*Chelidonium majus*).
- 9.) Smrdljivička/Herb-Robert (*Geranium robertianum*).
- 10.) Ostra homulica/Goldmoss stonecrop (*Sedum acre*).
- 11.) Zidni poponec prerašča razpoke med kamenjem in celo druge rastline./Ivy-leaved toadflax grows over the cracks between rocks and even other plants.
- 12.) Nad suhozidom so rastline bujnejše./Above the dry stone wall the plants are even lusher.



10 11



11.



9.



10.



12.

Gozd

Vse od vznožja pa do vrha Grajskega griča Fleischmannova pot poteka bodisi po gozdnem robu bodisi obiskovalca pelje prav skozi gozd. Ta je zanimiv prav v vsakem letnem času. Spomladi je najbolj barvita gozdna podrast. Krošnje listavcev so še gole, zato do tal pride dovolj svetlobe. Še pozimi se zato tu in tam na plano prebijejo navadni mali zvončki (*Galanthus nivalis*). Na Grajskem griču je njihova zgodovina dokaj poznana. Včasih so cveteli že za prvega januarja, kot zapiše Graf 1834. Na južni strani so zgodnejši, a rastejo le tu in tam, na severni, prav tam, kjer se vzpenjača dviga do Ljubljanskega gradu, pa pobočje povsem pobelji, običajno šele marca. Toliko jih je, da se med njimi ne da hoditi, zato pa je njihova raznolikost na videz manj opazna. A ljubljanski zvončki so prav posebni in med njimi je kar nekaj zelo zanimivih različic. Med njimi si posebno omembo zasluži sorta *G. nivalis* 'Ljubljana'. Že ko rastejo zvončki ali malo kasneje, Grajski grič pokrijejo modro-vijolične zaplate. Tvorita jih navadni žafran (*Crocus vernus* subsp. *vernus*) ter tu in tam dvolistna morska čebulica (*Scilla bifolia*). Žafran za razliko od zvončkov raste na bolj zbitih tleh, a ga bomo med potjo kar nekajkrat srečali. Tudi na strminah tik pod gradom in po vseh poteh nanj ga je vedno dovolj. Le ob soncu se razpira, v oblačnem vremenu pa cvetovi ostanejo zaprti. Če vmes zapade še sneg, potem je s cvetenjem za tisto leto hitro konec. Ko spet posije sonce, se cvetovi razprejo in tedaj so prava paša za čebele. Marsikje se v celih zaplatah razrašča po travnikih ali v gozdu. S postopno otoplitvijo nato gozdna tla s svojo belino prekrijejo podlesne vetrnice. Zelo rade se razraščajo v otokih. Njihovo belino popestrijo še vijolični petelinčki, pljučniki in pasji zob (*Erythronium dens-canis*). Kasneje se jim pridružijo blede rumenka (*Galeobdolon montanum*), čemaž (*Allium ursinum*), šmarnica (*Convallaria majalis*) in mnoge druge. Pozno pomladi se krošnje dreves strnejo in podrast začne počasi usihati. A v poznopoletnem in zgodnjejesenskem času podrast znova popestrijo dišeče navadne ciklame (*Cyclamen purpurascens*), ki pa so za razliko od ostalih omenjenih vrst na Grajskem griču redke.

Krošnje dreves pa niso povsod goste in strnjene, naklon je ponekod dovolj velik, da vsaj na južni strani griča svetloba dobro preseva v gozd. Na takšnih mestih je zelo dobro razvit grmovni sloj, ki ga tvorijo navadne leske (*Corylus avellana*), črni bezeg (*Sambucus nigra*) in seveda mladje jesenov, javorjev, hrastov ter tudi kakšnega iglavca.

Woods

All from the bottom to the top of the Castle Hill, Fleischmann's path runs either at the forest edge or leads visitors right through the forest. It is interesting in all seasons. In the spring, the most colourful is the forest undergrowth. Treetops of deciduous trees are bare, so enough light gets to the ground. Even in the winter, we can see common snowdrops (*Galanthus nivalis*) here and there. At the Castle Hill, their history is quite well known. Once they bloomed already on the first of January, as recorded by Graf 1834. On the south side, they are earlier, but they grow only here and there, on the north, right where the cable railway lifts to the Ljubljana Castle, they usually completely whiten the slope only in March. There are so many that you cannot walk among them, and therefore, their diversity is seemingly less obvious. But Ljubljana snowdrops are very special, and among them there are some very interesting variations. Among them, we have to especially mention the variety *G. nivalis* 'Ljubljana'. When snowdrops already grow or a little later, the Castle Hill is covered with blue and violet patches. They are formed by spring crocus (*Crocus vernus* subsp. *vernus*) and occasionally by the two-leaf squill (*Scilla bifolia*). Unlike snowdrops, crocus grows in a more compacted soil, but we will see it several times on our path. There is enough of it even on the slopes just below the Castle and on all the trails to it. Its flowers open only in the sun, but they stay closed in cloudy weather. If it snows in the meantime, then flowering is done for that year. When the sun shines once again, the flowers open and are then a real feast for the bees. In many places, they grow in patches on meadows or in the forest. With gradual warming the forest grounds are covered with wood anemone and its whiteness. They tend to grow in islands. Their whiteness is brightened up by violet crested lark, lungwort and dogtooth violet (*Erythronium dens-canis*). Later they are joined by yellow archangel (*Galeobdolon montanum*), ramsons (*Allium ursinum*), Lily of the valley (*Convallaria majalis*) and many others. Later in the spring, the treetops condense and the undergrowth starts to slowly dry up. But in late summer and early autumn, undergrowth is again enlivened by scented purple cyclamen (*Cyclamen purpurascens*) which, unlike other mentioned species at the Castle Hill, are rare.

Treetops are not everywhere thick and concise, and the slope is sometimes steep enough that at least on the south side of the hill a good light shines into the woods. On such places, scrubs layer is very well developed and is formed by common hazel (*Corylus avellana*), black elder (*Sambucus nigra*) and, of course, young ash trees, maple trees, oak and also few conifers.

13.) Tam kjer je svetlobe dovolj je grmovni sloj v gozdu dobro razvit./The layer of shrubs in the forest is well developed wherever there is sufficient light.

12 13



Grajski grič je sicer mešanica naravnega gozda, v katerem prevladujejo predvsem graden (*Quercus petraea*), dob (*Q. robur*), navadni gaber (*Carpinus betulus*), beli javor (*Acer pseudoplatanus*), ostrolistni javor (*A. platanoides*), iva (*Salix caprea*), krhka vrba (*S. fragilis*), rdeča vrba (*S. purpurea*) in nekaj vrst borov: od črnega (*Pinus nigra*) do rdečega bora (*P. sylvestris*). Vmes je tu in tam moč videti tudi manjše grmiče tise (*Taxus baccata*) in navadne bodike (*Ilex aquifolium*). A tukaj so tudi številne hortikulture različice drevesnih vrst, ki so jih po Grajskem griču sadili skozi celotno njegovo zgodovino. Bodiko in tiso večinoma sem zanesejo ptiči iz mestnih vrtov, kjer sta omenjeni vrsti zelo prisotni. Po enaki poti je na grič zašla še katera druga vrsta. Največ je tukaj vsekakor navadne robinije (*Robinia pseudoacacia*), ki je prva invazivka na presvetljenih površinah. Ko pa se gozd strne, njena moč pojenja in tukaj ostanejo samo še velika drevesa. Zaradi velikega naklona je ob obilnem sneženju na Grajskem griču vedno slišati pokanje. Težak sneg lomi in ruva dreve. Seveda je po takšnih zimah gozd videti precej poškodovan. A v resnici nastane le prostor za nove vrste, ki bodo v nekaj desetletjih osvojile

The Castle Hill is a mixture of native forest, which is dominated by oak trees (*Quercus petraea*, *Q. robur*), hornbeam (*Carpinus betulus*) with sycamore maple tree (*Acer pseudoplatanus*), Norway maple (*A. platanoides*), pussy willow (*Salix caprea*) crack willow (*S. fragilis*), purple Osier willow (*S. purpurea*) and several species of pine (from black (*Pinus nigra*) to red pine (*P. sylvestris*)). Here and there you can see small bushes of yew (*Taxus baccata*) and common holly (*Ilex aquifolium*). But here are also many horticultural varieties of tree species, which were planted at the Castle Hill throughout its history. Holly and yew trees are mainly brought here by birds from city gardens, where these two species are very common. Some other species also wandered to the Hill following the same path. Most common here is definitely black locust (*Robinia pseudoacacia*), which is the first invasive species on sunlit surfaces. When the forest condenses, its strength ebbs away and only large trees remain. Due to a steep slope, you can always hear cracking at the Castle Hill in heavy snowfall. Heavy snow breaks and tears up trees. Of course, after such winters forest looks pretty damaged. But in fact it only gives room for new species that will capture this light in a few decades. Herbs and blackberry will make use of the interim periods with a bit more light. They will expand

14.) Črni bor/Black pine
(*Pinus nigra*).



14.

15.) Rdeči bor/Scots pine
(*Pinus sylvestris*).

14 15



15.

te presvetlitve. Vmesna obdobja z nekaj več svetlobe bodo izkoristili zelišča in robida. Tja se bodo razširili z gozdnega roba ali pa bo njihovo seme zanesla kakšna žival. Ob tem naj omenimo, da imajo tudi suha in podrta drevesa v gozdu svoj pomen. V njih najdejo svoj prostor mnoge drobne živali in žuželke, tem pa na lovu za hrano sledijo ptiči. Nekateri med njimi v trhljih drevesih izdolbejo dupla in si v njih naredijo gnezda. Ta so kasneje spet pribežališča za žuželke.

there from the forest edge or some animal will transfer their seeds. We should also mention that dry and fallen trees also have their importance in the forest. They are a place for many small animals and insect, which are followed by birds on their hunt for food. Some of them carve a cavity in the fragile trees and build nests in it. Later they are again refuge for insects.

16.) Pasji zob/Dogtooth violet
(*Erythronium dens-canis*).

17.) Rumena pasja čebulica/Yellow Star-of-Bethlehem (*Gagea lutea*).

18.) Podlesna veternica/Wood anemone
(*Anemone nemorosa*).



16.



17.



18.



19.



20.



21.

19.) Čvrsti petelinček/Fumeroot
(*Corydalis solida*).

20.) Dvolistna morska čebulica/Alpine squill
(*Scilla bifolia*).

21.) Navadni zimzelen/Lesser periwinkle
(*Vinca minor*).

16 17



22.



23.



24.



25.

22.) Dob/English oak
(*Quercus robur*).

23.) Ostrolistni javor/Norway maple
(*Acer platanoides*).

24.) Moške mačice pri hrastu./Pussy willows by an oak.

25.) Češnja/Wild cherry
(*Prunus avium*).

26.) Navadni mali zvončki (*Galanthus nivalis*) so na Grajskem hribu množično prisotni. Najprej zacvetijo povsem blizu poti na južni strani gradu, marca pa jih je največ na severni strani./Common snowdrops (*Galanthus nivalis*) are abundant on the Castle Hill. They first bloom very near the path on the southern side of the castle, and in March they are mainly on the northern side.



26.

Gozdni rob

Vrstno pester in vedno zanimiv je gozdni rob. Je najbolj strnjjen sestoj, saj je svetlobe vedno dovolj, včasih celo preveč. Sonce je močno in tam se rastlinstvo resnično bohota. Medsebojno se mešajo rastline, ki se prebijajo s travnika v gozd, in gozdne, ki se prebijajo na travnik. Gozdni rob pomeni prvo fronto gozda, ki z malimi koraki osvaja travniške površine. Tam kalijo vse gozdne vrste, ki pa jih že preraščajo številne grmovnice. Slednje so hitrejše in bolj konkurenčne, a le dokler imajo dovolj svetlobe. Ko le-te začne primanjkovati, se grmovne vrste umaknejo drevesnim; tako se gozd pomakne naprej v travnik. Gozdni rob je običajno omejeval in vzdrževal človek, ker je na vsake toliko let v gozdnem robu posekal grmovje in ga uporabil za kurjavo. S tem je preprečeval širjenje gozda v travnik. Gozdni rob je nato naslednjo pomlad začel z vnovičnim zaraščanjem, bodisi iz panja požaganih grmovnic in dreves bodisi s kalitvijo novih grmovnih in drevesnih vrst, ki so tukaj imele odprto nišo. Na gozdnem robu ne manjka niti cvetja. Spomladi so poleg petelinčkov tam še rumene pasje čebulice (*Gagea lutea*) in živo rumeni cvetovi navadnega lapuha (*Tussilago farfara*). V zgodnji pomladi je na prisojnih legah polno pasje vijolice (*Viola canina*) in dišeče vijolice (*V. odorata*), ki se razraščata po strmih obronkih. Pozno pomladi se po robovih razraščajo smrdljike z drobnimi vijoličnimi cvetovi, modri cvetovi vrednikovega jetičnika (*Veronica chamaedrys*), perzijskega jetičnika (*V. persica*) in zdravilnega jetičnika (*V. officinalis*), krvavi mlečnik (*Chelidonium majus*), dišeči salomonov pečat (*Polygonatum odoratum*), navadni repik (*Agrimonia eupatoria*)... Kasneje se jim pridruži navadni jagodnjak, ki popotniku kmalu nudi okusne sadeže, navadni pelin (*Artemisia vulgaris*), in pozno poleti so tam gosti sestoji lepljive kadulje (*Salvia glutinosa*) in konjske grive (*Eupatorium cannabinum*).

Ob gozdu, obrnjenim proti soncu, se na jugu odpira nov grajski vinograd. Vinsko trto so v naše kraje zanesljivo zanesli že Rimljani, morda pa je bila tukaj že prej. Vinogradi so bili nekoč tudi v Ljubljani, predvsem na južni strani hribov. Večinoma pa je Ljubljana slovela po pretovarjanju vina. V novem grajskem vinogradu je posajenih 1050 trt dveh vinskih sort, in sicer bele Belpin (slovenski sinonim za Chardonnay) ter rdeče Rdečegrajc (slovenski sinonim prvotnega imena 'Rotburger', pozneje preimenovanega v 'Zweigelt'). Prav v vinogradih je bil navadni rebrinec izredno pogost in se je vedno sam zasejal. Prav zanimivo bo spremljati, kdaj se bo med vinskimi trtami na Grajskem griču pojavil tudi Fleischmannov rebrinec.

Forest edge

Species varied and always interesting is the forest edge. It is the most compact plantation because there is always enough light, sometimes even too much. The sun is strong and vegetation there really flourishes. Plants that penetrate from the meadow into the woods and forest plants that penetrate to the meadow mix among themselves. The forest edge means the first front line of the forest, which is conquering meadows with small steps. There sprout all forest species, which are already overgrown by many bushes. The latter are faster and more competitive, but only as long as they have enough light. When the latter starts to run low, the shrub species make room for the trees, so the forest moves forward into a meadow. The forest edge was normally limited and maintained by people, because every so many years they cut down bushes at the edge of the forest and used it for firewood. With this they prevented spreading of the woods into the meadows. The following spring, the forest edge again started to overgrow, either from the hive of sawn down shrubs and trees, either by germination of new bushes and tree species that had an open niche here. The forest edge is also full of flowers. In the spring, in addition to dogtooth, grow also the Yellow Star-of-Bethlehem (*Gagea lutea*) and bright yellow flowers of coltsfoot (*Tussilago farfara*). Early in the spring, sunny slopes are full of heat violets (*Viola canina*) and sweet violets (*V. odorata*), which grow on steep slopes. In the late spring, the edges are full of Herb-Robert with small violet flowers, blue flowers of germander speedwell (*Veronica chamaedrys*), Persian speedwell (*V. persica*) and common speedwell (*V. officinalis*), greater celandine (*Chelidonium majus*), and common agrimony (*Agrimonia eupatoria*). Later, they are joined by common fragaria, which soon offers delicious fruits to visitors, common wormwood (*Artemisia vulgaris*), and later in the summer also thick stands of the glutinous sage (*Salvia glutinosa*) and hemp-agrimony (*Eupatorium cannabinum*).

Next to the woods, facing the sun, in the south opens up a new Castle vineyard. Vine was brought to our region by the Romans, or perhaps it was here even earlier. Vineyards were once also in Ljubljana, especially on the south side of the hills. But mostly, Ljubljana was known for its trans-shipment of wine. The new Castle vineyard has 1,050 vines of two vine cultivars, namely white Belpin (Slovenian synonym for Chardonnay) and red Rdečegrajc (Slovenian synonymous of the original name 'Rotburger', later renamed 'Zweigelt'). In the vineyards, the parsnip was very common and was always self-seeded. It is interesting to follow when the Fleischmann's parsnip will also appear among the vines at the Castle Hill.



27.) Gozdni rob./A forest edge.

28.) Njivska spominčica/Field forget-me-not (*Myosotis arvensis*).

29.) Velecvetna zvezdica/Addersmeat (*Stellaria holostea*).



Grajski zid (obzidje na Šancah)

Prav posebno življenjsko okolje je nekdanje grajsko obzidje, ki ga je mojster Plečnik uredil v sprehajališče. Uporabil je ostanke nekdanje utrdbe iz 16. stoletja. To sprehajališče so urejali med letoma 1932 in 1935 v obdobju gospodarske krize, in to kar z javnimi deli. Arhitekt Jože Plečnik je to obzidje na več mestih prevotlil; uporabil je cenena gradiva, kot so kanalizacijske cevi za ograjo, in iskal preproste rešitve. Ustvaril je zelo zanimivo sprehajališče, in tako povezal različne višinske nivoje v mrežo obhodnih poti in razgledišč ter počivališč. Po njem se lahko sprehodimo in zremo v krošnje dreves. Številne rastline so v teh desetletjih na tem obzidju našle svoj dom. Tam, kjer so špranje med kamni tolikšne, da se mednje ujame seme, lahko zraste nova rastlina. S svojimi šopastimi koreninami se čvrsto zasidra med kamne in od tam črpa potrebno vlago. Na mestih, kjer sonce manj pripeka, je tudi rastlinska razrast večja. Najpogostejši prebivalec zidov je tako zidni poponec (*Cymbalaria muralis*), ki je stara okrasna rastlina. Iz severnih delov Sredozemlja jo je razširil človek. Na teh zidovih je poponcu dovolj toplo, tako da se razrašča v velike padajoče zaplate. V špranjah so različne male praproti – sršaji, pozidna rutica (*Asplenium ruta-muraria*) in rjavi sršaj (*Asplenium trichomanes*), tu in tam se naselijo še posamezne drevesne vrste, npr. navadna breza (*Betula pendula*), ki tam vztrajajo tako dolgo, dokler jih kakšna zares huda sušna poletja ne pokončajo. Če pa imajo v notranjosti med špranjami kamenja dovolj vode, pa jim še suše ne pridejo do živega.



30

Castle wall (walls on Šance)

A special habitat is the former castle walls, which was arranged in a strolling area by the master Plečnik. He used the remains of the fort from 16th century. This walkway was fixed up between 1932 and 1935, during the economic crisis and with public works. Architect Jože Plečnik punctured walls in several places; he used inexpensive materials, such as sewage pipes for the fence and looked for simple solutions. He created a very interesting walkway and thus connected different height levels into a network of walking paths, looking points and resting places. We can walk through it and gaze at the treetops. In these decades, many plants found their home on these walls. Where gaps between stones are big enough to capture a seed, a new plant may grow. It anchors firmly between the stones with its roots and drains moisture from there. In places with less sun, the plant grows larger. The most common inhabitant of the walls is Kenilworth ivy (*Cymbalaria muralis*), which is an old ornamental plant. It was spread by humans from the northern parts of the Mediterranean. It is warm enough for the Kenilworth ivy on these walls, so it grows in large falling patches. In cracks is a variety of small fern – spleenwort, Wall Rue (*Asplenium ruta-muraria*) and Maidenhair (*Asplenium trichomanes*), here and there we find individual tree species, e.g. birch (*Betula pendula*), which persist as long as a really severe drought finished them in the summer. If they have enough water among the stone crevices, not even drought can get to them.

20 21

- 30.) Pod grajskim zidom se v zgodnji pomladi zamodrijo jetičniki./In early spring, germander speedwell turns the area beneath the castle wall blue.
- 31.) Poraščen zid na Šancah./An overgrown wall in Šance.



31.



32. 22 23



33.

Travnik

Travniki so bili nekoč najbolj pisane površine. Kosilo se jih je razmeroma pozno, ko so odcvetele trave in drugo pisano rastlinstvo. Krma je namreč morala malo dozoreti, da se ni preveč osušila, da bi jo bilo prek zime dovolj za prehrano živine. Krma se je sušila vsaj dva dni in vmes so jo vsaj dva- do trikrat obrnili ter jo potem še pograbili na kup, ko je bila že suha. Zaradi tega se je večji del semena rastlin že otresel kar na mestu samem. Travnik je bil tako vsako leto zelo pisan. Z novim načinom gospodarjenja, zelo zgodnjo košnjo in baliranjem pa se vsa ta raznolikost izgublja. Na srečo na Grajskem griču v preteklosti ni bilo tako intenzivne izrabe travnikov in je pisanost travnikov ostala. Tu in tam se je res morda kakšna zaplata zarasla, a večji del travnikov je ostal tak, kot so bili nekoč, pisan in cvetoč. Ker ti travniki niso gnojeni, ne prevladujejo samo trave, ampak tudi zeli, ki že maja zacvetijo v najlepših barvah. Tukaj so med njimi travniške kadulje (*Salvia pratensis*), navadne ivanjščice (*Leucanthemum ircutianum*), ripeče zlatice (*Ranunculus acris*), njivske spominčice (*Myosotis arvensis*), razprostrte zvončice (*Campanula patula*), kasneje navadni potrošnik (*Cichorium intybus*), navadni čišljak (*Betonica officinalis*), kjer je več vlage se jim pridružijo še kukavičje lučce (*Lychnis flos-cuculi*). Na suhih mestih se najde kakšen vrbovolistni primožek (*Bupthalmum salicifolium*), prav pri tleh plazéči skrečnik (*Ajuga reptans*) in perzijski jetičnik (*Veronica persica*) ter še marsikaj, kar daje tem površinam čudovito barvitost. Na južni strani Grajskega griča so travnate površine bolj strme in se hkrati zajedajo v gozd. Pogosto so malo manj pisane, ker so zaradi drevov bolj v senci. Tam se ob robovih belita navadna regačica (*Aegopodium podagraria*) in gozdna krebujlica (*Anthriscus sylvestris*). Čeprav bi pričakovali prav obratno, so na severni strani travniki mnogo večji in prav zaradi tega tudi bolj pisani.

- 32.) Travnik pod Šancami./The meadow below Šance.
- 33.) Na robu travnika se v pasovih razrašča gozdna krebujlica (*Anthriscus sylvestris*).
On the edge of a meadow, cow parsley (*Anthriscus sylvestris*) grows in rows.
- 34.) Kukavičja lučca/Ragged-Robin (*Lychnis flos-cuculi*).

Meadow

Meadows were once the most colourful surfaces. They were cut down rather late, when grasses and other colourful vegetation withered. Feed had to mature a little, so it was not too dry and there would be enough food for livestock during the winter. The feed dried at least two days and in the meantime they turned it at least two to three times and then raked it on a pile when it was dry. For this reason, the majority of the seeds of plants were already shaken on the spot. Therefore, the meadow was very colourful every year. With the new method of management, very early mowing and baling, all this diversity is getting lost. Fortunately, meadows at the Castle Hill were not intensively used in the past and their colourfulness remained. Here and there, maybe a patch overgrown, but the greater part of the meadows remained the same as they once were, colourful and thriving. Since these pastures are not fertilized, the grasses do not prevail, and we can also find herbs that bloom in beautiful colours already in May. Here we can find meadow sage (*Salvia pratensis*), oxeye daisies (*Leucanthemum ircutianum*), buttercups (*Ranunculus acris*), Forget-me-nots (*Myosotis arvensis*), bellflower (*Campanula patula*), later chicory (*Cichorium intybus*), betony (*Betonica officinalis*); where there is more moisture, we can also find Ragged-Robin (*Lychnis flos-cuculi*). In dry areas, we may find ox-eye (*Bupthalmum salicifolium*), at the ground crawling bugle (*Ajuga reptans*) and Persian speedwell (*Veronica persica*) and much more that gives a wonderful colouring to the surfaces. On the south side of the Castle Hill, meadows are steeper and also stretch into the forest. They are often less colourful, because they are in a shade due to the trees. There, at the edges whiten ground elder (*Aegopodium podagraria*) and cow parsley (*Anthriscus sylvestris*). Although one would expect the opposite, the meadows on the northern side are much larger and because of this also more colourful.



34.



35.

Grajski drevored

Ko se s travnikov približujemo gradu, v dolgi liniji uzremo drevored navadnega divjega kostanja (*Aesculus hippocastanum*). Že pred ureditvijo Šanc ga je zasadil tedanji mestni vrtnar češkega rodu Vaclav Hejnic (1864–1929). Deželna vlada Kranjske ga je najela za prenovo parka v čast prihoda avstrijskega cesarja. Drevored poteka na obeh straneh poti, ki s Šanc vodi do gradu in predstavlja nekdanjo obzidno linijo. Navadni divji kostanj je vrsta, ki je bila pred ledeno dobo razširjena v srednji Evropi. Po ledeni dobi pa se je ohranila samo na jugu Balkana, od koder ga je severneje zanesel šele zdravnik Carolus Clusius. Nekaj plodov je v dar dobil od turškega sultana. V letu 1567 jih je posadil na Dunaju, od tam se je vrsta razširila po vsej monarhiji. Zaradi hitre rasti in lepega cvetenja je kot drevoredno drevo postalo vsekakor zelo zanimivo. Prav zato so ga množično sadili tudi v Ljubljani. Dandanes je z njim več težav. Nažira ga namreč kostanjev listni zavrtač, ki povzroča rjavenje listov že sredi poletja. S tem drevo izgublja svojo moč in lepoto.

24 25

A še vedno je ob cvetenju in plodenju divji kostanj zelo lepa rastlina. Pod kostanji se tako vse bolj približujemo gradu. Ob vstopu skozi obokan vhod, še preden pridemo do grajskega dvorišča, pa se znova srečamo s Fleischmannovim rebrincem. Raste na mestu ob grajski trti, potomki najstarejše trte Žametovke oz. Modre kavčine z mariborskega Lenta. Rebrinec tam znova uspešno rase od leta 2011. Ob poti Fleischmannovega rebrinca je še veliko več rastlin, kot smo jih navedli tukaj. Za njihovo navedbo in opis bi potrebovali več prostora. Zato pa vas vabimo, da na sprehodu odprete oči in s pomočjo rastlinskih določevalnih ključev najdete še katero izmed njih.

- 35.) Drevored divjega kostanja vodi od Šanc do Ljubljanskega gradu.
An avenue lined with wild chestnut trees leads from Šance to the Ljubljana Castle.
- 36.) Cvetoč divji kostanj.
Blossoming wild chestnut trees.

Castle avenue

When the meadows approach the Castle, we see a long avenue of horse chestnuts (*Aesculus hippocastanum*). Even before the arrangement of Šance, it was planted by Vaclav Hejnice, a city gardener of Czech descent (1864-1929). The Provincial Government of Carniola hired him to renovate the park in honour of the arrival of the Austrian Emperor. The avenue runs on both sides of the path that lead from Šance to the Castle and present a former wall line. Horse chestnut is a species that was widespread in Central Europe before the ice age. After the ice age, it was preserved only in the south Balkans, from where it was carried to the north by the doctor Carolus Clusius. He received a few fruits as a gift from the Turkish sultan. In 1567, he planted them in Vienna and from there the species spread across the entire monarchy. Due to the rapid growth and beautiful flowering the tree became very interesting as an avenue tree. For this reason, it was widely planted also in Ljubljana. Today, there are more problems with it. Horse chestnut leaf miner is eating into it, causing rusting of leaves in mid-summer. With this the tree is losing its power and beauty.

But at flowering and proliferation, the horse chestnut is still a very beautiful plant. Under the chestnut trees, we are increasingly approaching the Castle. Upon entering through the arched entrance, even before we get to the Castle courtyard, we again see the Fleischmann`s parsnip. It grows at the site by the castle vine, a descendant of the oldest vine Žametovka or Blue Franconian from Lent in Maribor. Parsnip is again successfully growing there since 2011. Along the path of the Fleischmann`s parsnip there are many more plants than we have mentioned here. To list and describe them would require more space. Therefore, we invite you to open your eyes on your stroll and with the help of plant identification keys find also others.



36.



- 1 BOTANIČNI VRT UNIVERZE V LJUBLJANI
UNIVERSITY BOTANIC GARDENS LJUBLJANA
- 2 MEJICE
HEDGES
- 3 SUHOZID
DRY WALL
- 4 GOZD
WOODS
- 5 GOZDNI ROB
FOREST EDGE
- 6 GRAJSKI ZID (OBZIDJE NA ŠANCAH)
CASTLE WALL (WALLS ON ŠANCE)
- 7 TRAVNIK
MEADOW
- 8 GRAJSKI DREVORED
CASTLE AVENUE
- 9 LJUBLJANSKI GRAD
LJUBLJANA CASTLE

VrSource: Geodetska uprava Republike Slovenije/The surveying and mapping authority of the Republic of Slovenia, 2016

Vodeni ogled Po poti Fleischmannovega rebrinca

Med vodenim ogledom Po poti Fleischmannovega rebrinca se skupina pod vodstvom vodnika Botaničnega vrta Univerze v Ljubljani seznaní s pestrostjo rastlinskih vrst v botaničnem vrtu in v različnih življenjskih okoljih Grajskega griča, kjer se odpre pogled na sezonsko barvitost rastlinskega sveta. Pot pelje vse do Ljubljanskega gradu – do mesta ponovnega rastišča Fleischmannovega rebrinca, kjer skupino prevzame vodnik Ljubljanskega gradu in jo popelje po pestri in zanimivi preteklosti te poznosrednjeveške trdnjave, simbola slovenske prestolnice.

Trajanje: 150 minut ali po dogovoru

Informacije in najave: +386 1 42 71 280 ali info@botanicni-vrt.si

Guided tour the Path of the Fleischmann's Parsnip

During the guided tour the Path of the Fleischmann's Parsnip, the group, led by a guide of the University Botanic Gardens Ljubljana, learns about the diversity of plant species in the botanic garden and in different environments of the Castle Hill, where opens the view to the seasonal colours of the plant kingdom. The path runs all the way to the Ljubljana Castle - the place of another site of the Fleischmann's parsnip, where a guide of the Ljubljana Castle takes over the group and takes it on a varied and interesting history of late medieval fortress - the symbol of the Slovenian capital.

Duration: 150 minutes or by agreement

Information and notices: +386 1 42 71 280 or info@botanicni-vrt.si

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Avtor/Author:
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Uredil/Editor:
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Izdal/Publisher:
Ljubljanski grad/Ljubljana Castle, zanj/represented by Mateja Avbelj Valentan, direktorica/Director in/and Botanični vrt Univerze v Ljubljani/University Botanic Gardens Ljubljana, zanj/represented by Jože Bavcon, vodja/Manager

Fotografije/Photographs:
Jože Bavcon, Blanka Ravnjak, Arne Hodalič
Jezikovni pregled/Slovenian Proofreading:
Dušanka Pene

Prevod v angleščino/English Translation:
GRENS-TIM d.o.o.

Oblikovanje/Design:
Planar d.o.o.

Tisk/Printing:
Tiskarna Januš

Naklada/Edition:
5000 izvodov/copies

Ljubljana, maj/May 2016

Uporabljena literatura/Literature used:

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CIP - Kataložni zapis o publikaciji
Narodna in univerzitetna knjižnica, Ljubljana

582.795.15
37.091.33-027.22:5(497.4)Ljubljana

RAVNJAK, Blanka
Po poti Fleischmannovega rebrinca = Path of the Fleischmann's parsnip / Blanka Ravnjak, Jože Bavcon, Nada Praprotnik; [fotografije Jože Bavcon, Blanka Ravnjak; prevod v angleščino Grens-tim]. - Ljubljana : Botanični vrt Univerze : Ljubljanski grad, 2016

ISBN 978-961-6822-36-7 (Botanični vrt)
1. Bavcon, Jože 2. Praprotnik, Nada
284578560



Botanični vrt Univerze v Ljubljani/University Botanic Gardens Ljubljana.



Ljubljanski grad/Ljubljana Castle.

Publikacija je brezplačna./Publication is free of charge.

Izdajo publikacije je sofinancirala Mestna občina Ljubljana.
The publication of the brochure was co-financed by the Municipality of Ljubljana.

Ustanoviteljica
The founder

Mestna občina
Ljubljana

