

The background image is a landscape photograph showing a dry, grassy hillside in the foreground. The grass is yellowish-brown, indicating a dry season. In the middle ground, there are some green and brown shrubs and trees. The background features a range of blue mountains under a clear, light blue sky. The overall scene is bright and clear.

NABIRANJE SEMEN V SUŠNEM LETU 2012

SEEDS COLLECTING IN THE DRY YEAR 2012

**HORTUS BOTANICUS UNIVERSITATIS LABACENSIS,
SLOVENIA
INDEX SEMINUM ANNO 2012 COLLECTORUM**

Nabiranje semen v sušnem letu 2012

Seeds collecting in the dry year 2012

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Nabiranje semen v sušnem letu 2012

Jože Bavcon & Janja Makše

Izveček

V sušnem letu 2012 smo v Botaničnem vrtu nabrali semena 452 različnih rastlinskih vrst. Vse vrste so razvrščene po družinah, znotraj njih pa po abecednem vrstnem redu. Mnoge rastline so zaradi izredno visoke temperature in sušnih razmer tudi v vrtu kljub zalivanju slabše semenile. Seznam nabranih rastlin v vrtu je v primerjavi s prejšnjimi leti manjši kar za okrog 100 vrst. V letošnjem letu v naravi mnoge vrste semen sploh niso razvile ali so bila le ta slabo razvita. Na nekaterih nahajališčih v submediteranskem delu semen sploh ni bilo. Zato se je število semen nabranih v naravi skoraj prepolovilo: 2011 (233) letos pa vsega skupaj le 124 različnih rastlinskih vrst ob enakem nabiranju na terenu.

Ključne besede: Index seminum, annus 2011, 2012 collectorum, suša.

Uvod

Suša v letu 2012 naj bi bila po moči šele druga po letu 2000, močnejša suša naj bi bila leta 2003. Poleg pogostega pojavljanja suš, se od srede osemdesetih let dviguje tudi povprečna poletna temperatura. Daljša sušna obdobja so bila tudi že prej: leta 1989, 1993 (Bertalanich s sod. 2010). Kljub temu je bila za rastline po opazovanjih v naravi suša v letu 2012 zanesljivo močnejša od prej omenjenih. Pri tem je potrebno je upoštevati še razmere iz leta 2011, ko jeseni in pozimi ni bilo veliko padavin. Prav tako sta bila v letu 2011 avgust in september izredno topla (<http://www.arso.gov.si/>

2012). Posledice pomanjkanja padavin leta 2011 so rastline pokazale v letu 2012.

Prav zaradi tega je suša v letu 2012 na rastlinah pustila večje posledice kot bi jih sicer. Mnogim rastlinam, ki rastejo na suši najbolj izpostavljenih delih Slovenije v slovenski Istri, na Krasu in Primorskem, se je listje povsem posušilo že v drugi polovici avgusta. Tako so vse na sušo odporne drevesne in grmovne vrste v Slovenski Istri in na Krasu povsem porjavele: mali jesen (*Fraxinus ornus* L.), trokrpi javor (*Acer monspessulanum* L.), kraški gaber (*Carpinus orientalis* Mill.), puhasti hrast (*Quercus pubescens* Willd.), navadni ruj (*Cotinus coggygria* Scop.), enovrati glog (*Crataegus monogyna* Jacq.), derak (*Paliurus spina-christi* Mill.), tudi kakega prišleka - robinijo (*Robinia pseudoacacia* L.) je suša prizadela in še druge. Nikakor pa suša ni prizadela zelo invazivne vrste doma na Kitajskem – pajesena (*Ailanthus altissima* (Mill.) Swingle), ki je podivjan marsikje na Krasu. Ta celo v najhujši suši ohranja povsem zelene liste.

Avgusta je bila podoba taka, kot je običajno novembra. Šele takrat namreč v teh toplejših delih listje povsem porjavi, predhodno pa se odvisno od vrste obarva še rdeče do rumeno. Enak pojav smo opazili na travnih površinah. Te so bile rjave že v prvi polovici avgusta, kot da bi šlo za pozni november, ko pašniki in gmajne povsem porjavijo. Mnoge rastline, ki so cvetele, semen sploh niso razvile. Običajno konec avgusta in septembra nabiramo semena v različnih predelih Istre in Krasa. Letos je bilo semen izredno malo, mnoge vrste jih sploh niso razvile ali le komaj kaj.

Po prvem septembrskem deževju in po nekaj nižjih temperaturah (<http://www.arso.gov.si/> 2012) pa so mnoge rastline začele ponovno odganjati. Rastline so poletno dolgotrajno sušo zaznale kot obdobje mirovanja (podobno kot da sta zimska suša in mraz) čemur nato sledi nova vegetacijska doba (pomlad). Nove popke so nastavljali puhasti hrast, mali jesen in trokrpi javor. Tu in tam se je pojavila tudi kaka zelnata vrsta. Med njimi je prednjačil jesenček (*Dictamnus albus* L.), ki cveti od maja do junija, potem nekje do

srede julija že razvije semena. Zelene liste ohranja in ti običajno porumenijo šele jeseni. Letos jesenček suše ni zdržal. Povsem se je posušil, edino semena je več ali manj do srede julija še uspel razviti, ker do tedaj, ko semeni, je še imel dovolj zaloge za razvoj.

Ker me je zanimalo do katere faze se bodo rastline ponovno razvile, sem jih od septembra naprej spremljal. September in še prva polovica oktobra v letu 2012 je bilo še relativno toplo, padavin je bilo ravno pravo mero za rast, ne pa za popolnitev zalog vode (<http://www.arso.gov.si/> 2012), se je iz tedna v teden kazalo več zelenine. Vendar ni ostalo le pri tem. Najprej sta ozelenela mali jesen in trokrpi javor. Povsem posušeni ruj ni kazal nobenih znakov rasti, a po treh tednih v septembru se je tudi v povsem suhih grmih ruja tu in tam opazilo nove zelene poganjke. Mali jesen in trokrpi javor sta kmalu popolnoma ozelenela. Ni šlo le za nekaj dreves, ampak je na nekaterih območjih ozelenelo več dreves in to na najbolj izpostavljenih predelih kot je Stena nad Dragonjo, ali apnenčasti rob nad Dolom pri Hrastovljah, ali še višje na kraškem robu nad Zazidom in še marsikje drugje. Ni pa ostalo le pri ozelenitvi listov. Mali jesen je na različnih območjih, ne le na omenjenih, ponovno zacvetel in ponovno začel razvijati plodove. Podobno je zacvetel še puhasti hrast, za njim robinija. Njim se je prve dni oktobra pridružila še rešeljika (*Prunus mahaleb* L.), ki je sicer sušo od vseh omenjenih vrst še najbolje prenesla in večinoma ostala zelena. Celo derak je popolnoma izgubil liste, vendar čeprav najkasneje, je med vsemi omenjenimi vrstami še enkrat ponovno ozelenel in zacvetel prve dni oktobra.

Nekatere pozno cvetoče vrste, ki v Istri in na Krasu običajno zacvetijo v prvi polovici septembra, so tu zamujale s cvetenjem prav tako kot tudi v notranjosti Slovenije. Navadna ciklama (*Cyclamen purpurascens* Mill.) , ki običajno v Istri zacveti v prvi polovici septembra, redko prej, odvisno od tega kako je poletje mokro (Bavcon 2009), je letos množičneje zacvetela šele konec septembra. Podobno se je zgodilo s kraškim in liburnijskim šetrajem (*Satureja montana* L., *S. subspicata* Bartl ex Vis. subsp. *liburnica* Šilić), ki sta bila v polnem cvetu šele od konca septembra

naprej.

Jesenček, ki je ponovno ozelenel prve dni septembra, je sicer cvetne popke vsak teden bolj razvijal. Postajali so bolj napolnjeni, rastline bolj košate, vendar cvetenja relativno dolgo ni bilo. Trajalo je približno toliko časa kot spomladi, ko se počasi razvija in traja približno mesec dni od začetka razvoja popkov do cvetenja. Razlika v primerjavi s spomladanskim izgledom rastline je bila samo v tem, da je bil jesenček v septembru že na začetku popolnoma zelen, medtem ko so spomladi mladi listi rumeno zeleni. V prvih dneh oktobra pa je jesenček zacvetel na že omenjenih nahajališčih. Edina razlika med pomladi cvetočimi rastlinami in jesenskimi je bila v tem, da so bile rastline bolj temno zelene in nekoliko nižje rasti, liste pa so imele nekoliko manj trde kot običajno. Njihova socvetja pa so bila enako dobro razvita.

Podobno kot pri jesenčku tudi pri drevesnih vrstah ni bilo opaziti tiste rumeno zelene obarvanosti razvijajočih se listov, ampak je takoj nastopila povsem zelena barva. Če tega pojava ne bi spremljal od začetka pri puhastem hrastu, morda niti ne bi zaznal, da gre za nove liste. Podobno tudi pri malem jesenu. Običajno lahko namreč v mokrih poletjih ob takem času - sredi septembra v Istri najdemo še povsem zelena drevesa. Še manj se to opazi pri puhastem hrastu, kjer se nove liste prepozna po tem, da so razviti na novih mladih poganjkih. Listi so se zaradi še vedno dovolj močnega sonca in toplih noči razvijali hitreje in takoj postali bolj usnjati, kot je to sprva spomladi opazno. Kljub temu so bili med opazovanimi drevesi nekateri primerki, ki so ostali le z rjavimi posušenimi listi. Nekatero mlade veje so izgledale, kot da so povsem suhe. Zanimivo bo spremljati, kaj se bo zgodilo spomladi. Naša sedanja opažanja kažejo, da nekoliko starejša drevesa sušo lažje preživijo, ker imajo koreninski sistem bolj razvejan, mlajša slabše, vsaj tako se kaže s ponovno ozelenitvijo. Ali bo temu res tako bo pokazala naslednja pomlad.

Material in metodika

Semena rastlin v vrtu začnemo nabirati konec aprila ali v začetku maja, kar je odvisno od vremenskih razmer. Od tedaj naprej redno spremljamo posamezne vrste v različnih delih vrta in semena sproti nabiramo. Vsaka vrsta dobi ustrezno etiketo z datumom nabiranja in imenom. Ker semena iste vrste nabiramo večkrat, tako kot ta zorijo, tako dobimo več vrečk semen posamezne vrste. V vrtu si prizadevamo, da imamo minimalno vsaj pet rastlin za posamezno vrsto. Semena nato sušimo v suhem prostoru. Glede na naravo semen jih ustrezno temu sušimo. Semena v sočnih plodovih pred tem ustrezno razpremo in razporedimo na časopisni papir. Tista, ki potrebujejo stalno vlago, takoj po nabiranju skladiščimo v mivko.

V naravi semena ravno tako nabiramo od pomladi do pozne jeseni in še celo pozimi. Nabiramo jih v različnih delih Slovenije. Vedno pazimo, da jih naberemo iz večjega števila primerkov, najmanj na petih primerkih posamezne vrste na enem nahajališču. Za vsako nahajališče grede semena v eno vrečko. Zapišemo nahajališče in vrsto, če je že poznana, v nasprotnem naberemo celo rastlino, da vrsto določimo kasneje v botaničnem vrtu. Še nedoločene vrste na terenu tudi poslikamo: celo rastlino in posamezne detajle, cvet, liste. Semena nabiramo tako v papirnate kot v plastične vrečke. Razlika je le v tem, da potem tiste iz plastičnih vrečk v vrtu prestavimo v papirnate, če gre za semena, ki še niso še dovolj suha.

V botaničnem vrtu vsa v naravi nabrana semena takoj po nabiranju pregledamo, nedoločene vrste določimo s ključi, ki so navedeni v literaturi ali primerjalno z vzorčno zbirko semen. V nasprotnem te vrečke samo razpremo in jih pustimo v suhem in naravno zračnem prostoru. V zimskem času od novembra do januarja vsa semena očistimo, še enkrat preverimo določitve, tokrat tudi s ključi za določanje semen in v končni fazi še primerjamo z referenčno zbirko, ki jo hrani botanični vrt.

Abstract

In 2012, an extremely dry year, we collected seeds of 452 different plant species. All species are arranged per family, and inside respective families in the alphabetical order. Due to very high temperatures and dry conditions, even in the garden the seed gain was poorer with many plant species although they were constantly watered. List of plant species collected in the garden is shorter for about 100 species in comparison to last couple of years. In their natural habitats many of plant species didn't even develop any seeds or their seeds were underdeveloped. On some localities in the submediterranean area no seeds were present. Therefore the amount of seeds collected in nature was reduced almost by half: from 233 in year 2011 to a total of 124 different species in year 2012, however with the same collection effort.

Key words: *Index seminum, annus 2011, 2012 collectorum*, drought

Introduction

After year 2000 the drought intensity for 2012 should be the second one, while the strongest one was in year 2003. Besides increased frequency of droughts also a rise in average summer temperature has been observed since the middle 80's. There have been longer drought periods also before this year: in 1989 and 1993 (Bertanič et al 2010). However, based on observations in nature the draught in 2012 had definitely a stronger impact on plants than abovementioned two. Additionally, also conditions in year 2011 have to be considered, when autumn and winter precipitations were lower. Also August and September of 2011 were extremely warm (<http://www.arso.gov.si/> 2012). Consequences of precipitation deficiency in 2011 on plants were the seen in 2012.

For this reason, the draught in year 2012 left bigger consequences as usual on plants. Many of them, which are growing on drought-exposed parts of Slovenia like Slovenian Istra, Karst and Primorska region, had leaves totally dried already in the second half of august. All drought-tolerant trees and shrub species became totally browned: manna ash (*Fraxinus ornus* L.), Montpellier maple (*Acer monspessulanum* L.), oriental hornbeam (*Carpinus orientalis* Mill.), pubescent oak (*Quercus pubescens* Willd.), smoke bush (*Cotinus coggygria* Scop.), common hawthorn (*Crataegus monogyna* Jacq.), Christ's thorn (*Paliurus spina-christi* Mill.), even some alien species like black locust (*Robinia pseudacacia* L.) and others were affected by drought. However a highly invasive species - tree of heaven (*Ailanthus altissima* (Mill.) Swingle), originating from China and found in nature in the Karst region, was not harmed at all. This plant keeps its leaves entirely green even in extreme drought.

In August the appearance was like usually is in November. Only in that time of year leaves namely become totally brown in warmer regions, while before, depending on the species, their colours change to red or yellow. The same phenomenon we noticed on grasslands. Those were already brown in first half of august, like they were in late November, when pastures and commons become totally brown. Many flowering plants did not even developed any seeds. At the end of August and September we normally gather seeds from different parts of Istra and Karst. In this year seed amount from these parts was extraordinarily low, because many species haven't developed any seeds or only a very small amount.

After the first september rain and after a few days of lower temperature, many plants began to sprout again. They perceived the long-lasting summer draught like a dormant period (similarly to winter draught and cold) followed by a new vegetation period (spring). New buds were visible by pubescent oak, manna ash and Montpellier maple. Here and there also some herbaceous plant species appeared. Gas plant (*Dictamnus albus* L.), which blooms from May to June and develops seeds by the middle of July, was leading among them. The plant keeps its leaves green till autumn,

when they turn yellow. In this year the gas plant did not withstand the drought. It totally dried out; however it managed to develop some seeds by mid-July because of sufficient supply during its fruiting time.

Being interested to establish till which phase plants will develop again, I observed some of the plant species from September on. Because this year's relatively warm September and November and enough precipitation for sufficient growing although not enough for water supply, from week to week more green could be seen. However this was not everything. Manna ash and Montpellier maple became green first. Totally dried smoke bush did not showed any signs of growth at all. But after three weeks in September we here and there some new green buds in dried shrubs of smoke bush could be noticed. Manna ash and Montpellier maple became completely green. Not only some trees became green. On some exposed localities like Stena above Dragonja and limestone edge above the Dol pri Hrastovljah or even higher on Karst edge above the village of Zazid, most of the trees became green again. In many places manna ash flowered and fruited again. Similarly also pubescent oak and black locust flowered again. In first days of October mahaleb cherry (*Prunus mahaleb* L.) joined them. From all the above mentioned species mahaleb cherry beared the drought the best and mostly remained green all the time. Even Christ's thorn completely lost its leaves and became green once again in the first days of October.

It is necessary to add that some species which are blooming in the first half of September in Istra and Karst, were late in their blooming period on abovementioned sites and in the central Slovenia. While, depending on wet conditions in summer, common cyclamen (*Cyclamen purpurascens* Mill.) flowers even before september (Bavcon 2009) and blooms in the first half of September in Istra, was massively blooming only at the end of September. Similarly happened with winter savory and summer savory (*Satureja montana* L., *S. subspicata* Bartl ex Vis.), that were in full bloom only from the end of September onwards.

Gas plant, which became green once again in first days of September, developed its flower buds from week to week. They became more and more full, the plants were more bushy, but it took relatively long until they blossomed. It took almost the same time as in spring (approximately one month) to get from bud till flower. The difference between the appearance of gas plant in spring and in September was, that in September the plant was totally green already at the beginning, while in spring the first young leaves were completely yellow-green. During the first days of October the gas plant already flowered on abovementioned sites. The only difference between spring and autumn blooming plants was that plants were more dark-green, they had a little less hardy leaves like usually and they were somewhat smaller. Inflorescences were normally developed.

Similarly as with gas plant also with tree species no yellow-green coloration of developing leaves was observed, completely green colour appeared immediately. If I had not observed them from the beginning, probably I would not notice that pubescent oak had actually new leaves. The same was with the manna ash. During wet summer seasons in this time of mid-September namely completely green trees can be found in Istra. Even less this is noticeable with pubescent oak where new leaves can be recognised by observing them being on new sprouts. The leaves developed faster and instantly became more leathery, as observed in spring, due to enough sun strength and warm nights. Nevertheless among those trees there are specimens with dried leaves only. Some younger shrubs appeared as being completely dry. It will be interesting to observe what happens in the spring. Current observations have shown that it is easier to survive the draught for older trees, due to their more branched root system. Younger trees are more draught-intolerant, at least this being indicated by re-greening. Next spring will show if this is being the case.

Material and Methodology

Seeds begin to be harvested at the end of April or the beginning of May, depending on the weather conditions. As of April and May single species growing in different parts of the garden are regularly monitored and their seeds promptly harvested. Each species gets a label bearing the date of harvesting and the name. As the seeds of the same species are collected as they mature, i.e. more than just once, they are put into separate bags. We endeavour to maintain minimally five plants per species. The seeds are then dried in a dry room. The drying process is adapted to the nature of seeds. The seeds of juicy fruits are preliminarily split open and arranged over newspaper. Those requiring constant moisture are put into fine sand immediately after being harvested.

The seeds from nature can likewise be harvested from spring till late autumn and even in winter. They are collected in different parts of Slovenia. We always take care to harvest them from a larger number of specimens, minimally five specimens of a species in one habitat. Seeds from single habitats are stored in separate bags. The habitat is written down on the bag while the name of the species only if it is already known; if not, the whole plant is taken along to be determined in the Botanic Garden. The as yet undetermined species are also photographed in their habitat: the plant as a whole and single details, flower, leaves. Both paper and plastic bags are used for storing seeds but once the seeds are in the Garden those from plastic bags are poured into paper bags if the seeds are not properly dry.

Immediately after being brought from the wild, all seeds are examined, the non-determined species are determined by using the keys stated in the literature or by comparing them with the sample seed collection. Otherwise the bags are just left open in a dry, naturally aired room. During the winter season, from November to January, all seeds are cleansed, their determination is rechecked by means of the keys for seed determination, and they are

ultimately compared with the reference collection.

Harvesting seeds from nature is a much more demanding task. One must be familiar with the time when the seeds of a species mature because some scatter very quickly so it is difficult to lay hands on them just at the right moment. A particularly powerful factor to be counted with in Slovenian Istria, the Goriško and Vipavsko region is a very strong wind. Furthermore, it is necessary to have a thorough knowledge of the habitats of species since many plants recognizable and clearly visible when in bloom are subsequently overgrown by other plants and are difficult to locate and much harder to determine. This is why single habitats should best be visited several times a year, which makes seed harvesting easier and more reliable.



Dragonja



Dragonja



8.9.2012

Fraxinus ornus



8.9.2012

Fraxinus ornus



Fraxinus ornus



Cotinus coggygria



Fraxinus ornus



Fraxinus ornus



Ponovna ozelenitev Dol nad Hrastovljami / Re-greening in the autumn times Dol nad Hrastovljami



Ponovna ozelenitev Dol nad Hrastovljami / Re-greening in the autumn times Dol nad Hrastovljami



Ponovna ozelenitev Dol nad Hrastovljami / Re-greening in the autumn times Dol nad Hrastovljami



Quercus pubescens



Dictamnus albus



Dictamnus albus



Dictamnus albus



Dictamnus albus



7.10.2012

Fraxinus ornus



21. 10. 2012

Paliurus spina-christii



Še novembra so na novo ozelenjeni listi ostali zeleni. / Even in November, the new flat green leaves remain green.

Index seminum annis 2012 et 2011 collectorum

Jože Bavcon & Janja Makše

CONIFEROPHYTINA (Gymnospermae)

Pinaceae

1. *Pinus mugo* Turra
2. *Tsuga canadensis* (L.) Carriere

Taxaceae

3. *Taxus baccata* L.

Taxodiaceae

4. *Metasequoia glyptostroboides* Hu & Cheng

MAGNOLIOPHYTINA (Angiospermae)

Acanthaceae

5. *Acanthus balcanicus* Heywood & I.B.K. Richardson

Aceraceae

6. *Acer campestre* L.
7. *Acer griseum* (Franch.) Pax.
8. *Acer pseudoplatanus* L.
9. *Acer tataricum* L.

Alismataceae

10. *Alisma plantago-aquatica* L.

Alliaceae

11. *Allium angulosum* L.
12. *Allium ericetorum* Thore

13. *Allium schoenoprasum* L. subsp. *alpinum* (DC.) Čelak
14. *Allium senescens* L. 2011
15. *Allium tuberosum* Roxb.
16. *Allium ursinum* L.

Amaranthaceae

17. *Froelichia gracilis* Moq.
18. *Gomphrena globosa* L.

Amaryllidaceae

19. *Galanthus nivalis* L.

Anacardiaceae

20. *Rhus verniciflua* Stokes

Apiaceae

21. *Aethusa cynapium* L.
22. *Ammi majus* L.
23. *Astrantia carniolica* Jacq.
24. *Astrantia major* L.
25. *Athamanta haynaldii* Borb. & Uechtr.
26. *Conium maculatum* L.
27. *Daucus carota* L.
28. *Eryngium amethystinum* L.
29. *Eryngium planum* L.
30. *Foeniculum vulgare* Mill.
31. *Hacquetia epipactis* (Scop.) DC.
32. *Libanotis sibirica* (L.) C. A. Mey
33. *Orlaya grandiflora* (L.) Hoffm.
34. *Pastinaca sativa* L. var. *fleischmanni* (Hladnik) Burnat
35. *Peucedanum coriaceum* Rchb.
36. *Peucedanum schottii* Besser ex DC.
37. *Scandix brachycarpa* Guss.
38. *Scandix pecten-veneris* L.
39. *Seseli gouanii* W.D.J.Koch 2011
40. *Smyrniium perfoliatum* L.

Apocynaceae

41. *Amsonia tabernaemontana* Walt.

Aquifoliaceae

42. *Ilex aquifolium* L.

Araceae

43. *Calla palustris* L.

Araliaceae

44. *Acanthopanax sieboldianus* Mak.

45. *Hedera helix* L.

Asclepiadaceae

46. *Asclepias syriaca* L.

47. *Vincetoxicum hirundinaria* Medik.

Asphodelaceae

48. *Anthericum liliago* L.

49. *Anthericum ramosum* L. 2011

50. *Asphodeline liburnica* (Scop.) Rchb.

51. *Asphodeline lutea* (L.) Rchb.

52. *Asphodelus albus* Mill.

Asteraceae

53. *Ageratum houstonianum* Mill.

54. *Ambrosia trifida* L.

55. *Anthemis tinctoria* L.

56. *Artemisia abrotanum* L.

57. *Aster alpinus* L.

58. *Aster amellus* L.

59. *Bidens tripartita* L.

60. *Bupthalmum salicifolium* L.

61. *Calendula arvensis* L.

62. *Calendula officinalis* L.

63. *Carduus acanthoides* L.
64. *Carlina vulgaris* L. subsp. *brevibracteata* (Andrae) K.Werner
65. *Centaurea cyanus* L.
66. *Centaurea scabiosa* L.
67. *Chamomilla recutita* (L.) Rauschert
68. *Cirsium acaule* Scop.
69. *Cirsium oleraceum* (L.) Scop.
70. *Cirsium palustre* (L.) Scop.
71. *Cladanthus arabicus* Cass.
72. *Coreopsis grandiflora* Hogg.
73. *Coreopsis verticillata* L.
74. *Cosmos bipinnatus* L.
75. *Cosmos sulphureus* Cav. 2011
76. *Echinacea purpurea* Moench
77. *Echinops exaltatus* Schrader 2011
78. *Echinops sphaerocephalus* L.
79. *Emilia coccinea* Sweet
80. *Eupatorium cannabinum* L.
81. *Gaillardia aristata* Pursh
82. *Gaillardia pulchella* Foug.
83. *Gynura cernua* Benth.
84. *Inula hirta* L.
85. *Inula magnifica* L.
86. *Iva xanthifolia* Nutt.
87. *Liatris graminifolia* (Walt.) Willd.
88. *Osteospermum hyoseroides* (DC.) Norlindh
89. *Serratula lycopifolia* (Vill.) A.Kern.
90. *Silphium perfoliatum* L.
91. *Sonchus asper* (L.) Hill.
92. *Tagetes erecta* L.
93. *Tagetes patula* L.
94. *Tagetes tenuifolia* Cav.
95. *Tanacetum corymbosum* (L.) Schultz Bip.
96. *Tanacetum vulgare* L.
97. *Xeranthemum cylindraceum* Sibth. & Smith
98. *Zinnia elegans* Jacq.

99. *Zinnia pauciflora* L.

Basellaceae

100. *Basella alba* L.

101. *Basella rubra* L. 2011

Berberidaceae

102. *Gymnospermium scipetarum* Papparisto & Qosja ex E.Mayer & Pulević

Betulaceae

103. *Alnus glutinosa* (L.) Gaertner

104. *Alnus incana* (L.) Moench

Boraginaceae

105. *Anchusa officinalis* L.

106. *Echium vulgare* L.

107. *Nonea lutea* (Desr.) DC. in Lam.& DC.

108. *Solenanthes scardicus* Bornm.

109. *Symphytum officinale* L.

Brassicaceae

110. *Aethionema saxatile* (L.) R. Br.

111. *Alyssoides sinuatum* Medik.

112. *Alyssoides utriculata* (L.) Medicus

113. *Alyssum idaeum* Boiss. & Heldr.

114. *Alyssum montanum* L. subsp. *pluscanescens* (Raim. ex J.Baumg.)

Trpin

115. *Alyssum ovirense* Kerner

116. *Alyssum petraeum* Ard.

117. *Arabis caucasica* Schlecht.

118. *Barbarea vulgaris* R. Br.

119. *Berteroa incana* (L.) DC. 2011

120. *Braya alpina* Sternb. & Hoppe

121. *Bunias orientalis* L.

122. *Erysimum comatum* Pančić

- 123. *Fibigia clypeata* (L.) Medicus
- 124. *Fibigia triquetra* (DC.) Boiss.
- 125. *Iberis amara* L.
- 126. *Isatis tinctoria* L.
- 127. *Lepidium sativum* L.
- 128. *Lunaria rediviva* L.
- 129. *Peltaria alliacea* Jacq.
- 130. *Sisymbrium austriacum* Jacq.

Buxaceae

- 131. *Buxus sempervirens* L. 2011
- 132. *Sarcococca saligna* Müll. Arg.

Caesalpiaceae

- 133. *Cercis siliquastrum* L.
- 134. *Gleditsia triacanthos* L.

Calycanthaceae

- 135. *Sinocalycanthus chinensis* Cheng & S.Y.Chang

Campanulaceae

- 136. *Campanula justiniana* Witasek
- 137. *Campanula poscharskyana* Degen 2011
- 138. *Campanula rapunculoides* L.
- 139. *Campanula trachelium* L.
- 140. *Edraianthus graminifolius* (L.) DC.
- 141. *Legousia speculum-veneris* (L.) Chaix
- 142. *Lobelia siphilitica* L. 2011

Cannabaceae

- 143. *Cannabis sativa* L.
- 144. *Humulus lupulus* L.

Caprifoliaceae

- 145. *Lonicera alpigena* L.

Carpinaceae

- 146. *Carpinus betulus* L.
- 147. *Carpinus orientalis* Mill.

Caryophyllaceae

- 148. *Agrostemma githago* L.
- 149. *Arenaria procera* Spreng. ex Hornem.
- 150. *Cerastium arvense* L.
- 151. *Cerastium grandiflorum* Waldst. & Kit.
- 152. *Cerastium tomentosum* L.
- 153. *Dianthus armeria* L.
- 154. *Dianthus barbatus* L.
- 155. *Dianthus deltoides* L.
- 156. *Dianthus fragrans* M. Bieb.
- 157. *Dianthus giganteus* D'uru
- 158. *Dianthus knappii* (Pant.) Ascherson & Kanitz
- 159. *Dianthus monspessulanus* L.
- 160. *Dianthus pinifolius* Sibth. & Sm.
- 161. *Dianthus plumarius* L. subsp. *glandus*
- 162. *Dianthus pontederiae* Kern.
- 163. *Dianthus pubescens* Sibth. & Sm.
- 164. *Dianthus sternbergii* Sieber
- 165. *Dianthus superbus* L.
- 166. *Dianthus tergestinus* (Rchb.) Kerner
- 167. *Gypsophila scorzonerifolia* Ser.
- 168. *Lychnis coronaria* (L.) Desr.
- 169. *Lychnis flos-cuculi* L.
- 170. *Lychnis viscaria* L.
- 171. *Petrorhagia prolifera* (L.) P.W.Ball & Heyw.
- 172. *Petrorhagia saxifraga* (L.) Link
- 173. *Silene alpestris* Jacq.
- 174. *Silene dichotoma* Ehrh.
- 175. *Silene dioica* (L. em. Mill.) Clairv.
- 176. *Silene gallica* L.
- 177. *Silene maritima* With.
- 178. *Silene vulgaris* (Moench) Garcke subsp. *glareosa* (Jordan) Marsden-

Jones & Turrill

179. *Vaccaria hispanica* Medic. 2011

180. *Viscaria vulgaris* Bernh.

Celastraceae

181. *Celastrus orbiculatus* Thunb.

182. *Euonymus europaeus* L.

Cercidiphyllaceae

183. *Cercidiphyllum japonicum* Sieb. & Zucc.

Chenopodiaceae

184. *Chenopodium bonus-henricus* L.

Cichoriaceae

185. *Crepis biennis* L.

186. *Crepis pulchra* L.

187. *Crepis rubra* L.

188. *Hieracium aurantiacum* L.

189. *Hieracium lanatum* Vill.

190. *Hieracium pilosella* L.

191. *Lapsana communis* L. 2011

192. *Leontodon hispidus* L. subsp. *brumatii* (Rchb.) T. Wraber

193. *Leontodon hispidus* L. subsp. *danubialis* (Jacq.) Simonkai

194. *Tragopogon balcanicus* Velen.

195. *Tragopogon pratensis* L.

196. *Tragopogon pratensis* L. subsp. *orientalis* (L.) Čelak

197. *Tragopogon pterodes* Pančić

Convallariaceae

198. *Convallaria majalis* L.

199. *Danaë racemosa* (L.) Medicus

200. *Polygonatum latifolium* (Jacq.) Desf.

Convolvulaceae

201. *Ipomoea purpurea* (L.) Roh.

202. *Quamoclit pennata* Voigt

Cornaceae

203. *Cornus mas* L.

Crassulaceae

204. *Sedum aizoon* L.

205. *Sedum maximum* Suter

206. *Sedum sexangulare* L.

Cucurbitaceae

207. *Bryonia dioica* Jacq.

* 208. *Ecballium elaterium* (L.) Rich.

Cyperaceae

209. *Carex limosa* L.

210. *Scirpus sylvaticus* L.

Datisceae

211. *Datisca cannabina* L.

Dioscoreaceae

212. *Dioscorea balcanica* Košanin

213. *Dioscorea batatas* Decne.

Dipsacaceae

214. *Cephalaria gigantea* (Ledeb.) Bobrov

215. *Cephalaria leucantha* (L.) Roemer & Schultes

216. *Dipsacus laciniatus* L.

217. *Dipsacus strigosus* Willd. ex Roem & Schult

218. *Scabiosa hladnikiana* Host.

219. *Succisa pratensis* Moench

Euphorbiaceae

* 220. *Manihot palmata* Muell.

221. *Ricinus communis* L.

Fabaceae

- 222. *Desmodium canadense* (L.) DC.
- 223. *Dolichos lablab* L.
- 224. *Dolichos ornatus* Wall. 2011
- 225. *Dorycnium herbaceum* Vill.
- 226. *Glycine max* (L.) Merr. 'Lutea'
- 227. *Glycine max* (L.) Merr. 'Nigra'
- 228. *Glycyrrhiza glabra* L.
- 229. *Laburnum alpinum* (Mill.) Presl.
- 230. *Lotus ornithopodioides* L.
- 231. *Lupinus polyphyllus* Lindl.
- 232. *Medicago lupulina* L.
- 233. *Melilotus albus* Medik.
- 234. *Melilotus altissimus* Thuill.
- 235. *Phaseolus aureus* Roxbg.
- 236. *Phaseolus mungo* L.
- 237. *Trigonella gladiata* Stev.

Fumariaceae

- 238. *Corydalis cava* (L.) Schweigg. & Körte
- 239. *Corydalis lutea* (L.) DC.
- 240. *Corydalis solida* (L.) Clairv. subsp. *solida*

Gentianaceae

- 241. *Gentiana cruciata* L.

Geraniaceae

- 242. *Geranium macrorrhizum* L.
- 243. *Geranium pratense* L.
- 244. *Geranium robertianum* L.

Hamamelidaceae

- 245. *Hamamelis japonica* Sieb. & Zucc.
- 246. *Hamamelis mollis* Oliv.
- 247. *Hamamelis virginiana* L.

Hyacinthaceae

248. *Bellevalia romana* (L.) Reichenb.
* 249. *Bowiea volubilis* Harv.
250. *Muscari comosum* (L.) Miller
251. *Muscari neglectum* Guss. ex Ten.
252. *Ornithogalum sphaerocarpum* A. Kerner

Hydrophyllaceae

253. *Nemophila maculata* Lindl.
254. *Phacelia tanacetifolia* Benth.

Hypericaceae

255. *Hypericum kalmianum* L.
256. *Hypericum montanum* L.
257. *Hypericum olympicum* L.
258. *Hypericum tetrapterum* Fries

Iridaceae

259. *Crocus vernus* (L.) Hill subsp. *vernus* 2011
260. *Gladiolus palustris* Gaudin
261. *Iris graminea* L.
262. *Iris pseudacorus* L.
263. *Iris sibirica* L. subsp. *erirrhiza* (Pospichal) T. Wraber
264. *Sisyrinchium bermudiana* L.

Juglandaceae

265. *Carya ovata* (Mill.) K. Koch
266. *Pterocarya fraxinifolia* (Lam.) Spach.

Lamiaceae

267. *Ballota rupestris* (Biv.) Vis.
268. *Betonica officinalis* L.
269. *Betonica officinalis* L. subsp. *serotina* (Host) Hayek
270. *Calamintha brauneana* (Jávorka) O. Schwarz
271. *Clinopodium vulgare* L.

272. *Horminum pyrenaicum* L.
273. *Hyssopus officinalis* L.
274. *Lavandula angustifolia* Mill.
275. *Leonurus cardiaca* L.
276. *Lycopus exaltatus* L.fil.
277. *Melissa officinalis* L.
278. *Mentha aquatica* L.
279. *Mentha pulegium* L.
280. *Micromeria dalmatica* Benth
281. *Micromeria thymifolia* (Scop.) Fritsch
282. *Monarda fistulosa* L.
283. *Ocimum basilicum* L.
284. *Perilla frutescens* (L.) Britton
285. *Prunella laciniata* L.
286. *Salvia glutinosa* L.
287. *Salvia officinalis* L.
288. *Salvia sclarea* L.
289. *Salvia verticillata* L.
290. *Satureja montana* L. subsp. *variegata* (Host.) P.W.Ball
291. *Satureja subspicata* Bartl. ex Vis.
292. *Scutellaria alpina* L.
293. *Scutellaria altissima* L.
294. *Sideritis montana* L.
295. *Stachys germanica* L.
296. *Teucrium arduini* L.
297. *Teucrium chamaedrys* L.

Liliaceae

298. *Fritillaria meleagris* L.
299. *Hosta ventricosa* (Salisb.) Stearn

Linaceae

300. *Linum usitatissimum* L.

Lythraceae

301. *Cuphea lanceolata* Ait.

302. *Lythrum salicaria* L.

Malvaceae

303. *Abutilon theophrasti* Medik.

304. *Althaea armeniaca* Ten.

305. *Althaea officinalis* L.

* 306. *Gossypium arboreum* L.

* 307. *Gossypium hirsutum* L.

308. *Hibiscus esculentus* L.

309. *Hibiscus moscheutos* L. var. *roseus*

* 310. *Hibiscus sabdariffa* L. ssp. *sabdariffa*

311. *Hibiscus trionum* L.

312. *Kitaibelia vitifolia* Willd. 2011

313. *Malva sylvestris* L.

* 314. *Pavonia spinifex* Cav. 2011

Mimosaceae

* 315. *Mimosa pudica* L.

Moraceae

316. *Maclura pomifera* (Raf.) Schneid.

Myrtaceae

* 317. *Callistemon speciosus* (Sims) DC.

* 318. *Myrtus communis* L.

* 319. *Psidium cattleianum* Sabine

Nyctaginaceae

320. *Mirabilis jalapa* L.

321. *Oxybaphus floribundus* Choisy

Oleaceae

322. *Fraxinus ornus* L.

Onagraceae

323. *Epilobium hirsutum* L.

324. *Epilobium parviflorum* Schreber
325. *Gaura biennis* L.
326. *Lopezia racemosa* Cav.
327. *Oenothera biennis* L.

Paeoniaceae

328. *Paeonia lactiflora* Pall.
329. *Paeonia officinalis* L.
330. *Paeonia romanica* Brandz.
331. *Paeonia wittmanniana* Hartw.

Papaveraceae

332. *Argemone alba* Lestib.
333. *Argemone mexicana* L.
334. *Chelidonium majus* L.
335. *Glaucium flavum* Crantz
336. *Papaver rhoeas* L.

Passifloraceae

- * 337. *Passiflora suberosa* L. 2011

Pedaliaceae

- * 338. *Proboscidea lusitanica* (Mill.) Thell.
* 339. *Sesamum indicum* L.

Plantaginaceae

340. *Plantago sempervirens* Crantz

Poaceae

341. *Andropogon gerardii* Vitman
342. *Lagurus ovatus* L.
343. *Leersia oryzoides* (L.) Swartz
344. *Melica ciliata* L.
345. *Molinia caerulea* (L.) Moench subsp. *caerulea*
346. *Panicum capillare* subsp. *capillare* L.
347. *Panicum miliaceum* L.

- 348. *Pennisetum orientale* Rich.
- 349. *Sesleria autumnalis* F. W. Schultz
- 350. *Setaria verticillata* (L.) P.Beauv
- 351. *Sorghum bicolor* (L.) Moench
- 352. *Sorghum vulgare* Pers.
- 353. *Sorghum vulgare* var. *sudanense* Hitchc.

Polemoniaceae

- 354. *Gilia capitata* Douglas.
- 355. *Gilia tricolor* Benth.
- 356. *Phlox paniculata* L.

Polygonaceae

- 357. *Fagopyrum esculentum* Moench.
- 358. *Fagopyrum tataricum* (L.) Gaertner
- 359. *Rumex salicifolius* Weinm.

Portulacaceae

- 360. *Calandrinia grandiflora* Lindl
- 361. *Portulaca grandiflora* Hook.
- 362. *Portulaca oleracea* L. subsp. *oleracea*

Primulaceae

- 363. *Anagallis arvensis* L.
- 364. *Primula columnae* Ten.

Ranunculaceae

- 365. *Aconitum lycoctonum* L. em Koelle subsp. *lycoctonum*
- 366. *Anemone hupehensis* Lemoine
- 367. *Aquilegia atrata* Koch
- 368. *Caltha palustris* L.
- 369. *Consolida regalis* S.F. Gray
- 370. *Eranthis hyemalis* (L.) Salisb.
- 371. *Helleborus atrorubens* Waldst. & Kit.
- 372. *Helleborus multifidus* Vis.
- 373. *Helleborus odorus* Waldst. & Kitt.

374. *Nigella damascena* L.
375. *Pulsatilla halleri* (All.) Willd. subsp. *slavica* (G. Reuss) Zamels
376. *Pulsatilla montana* (Hoppe) Rchb.
377. *Ranunculus millefoliatus* Vahl
378. *Semiaquilegia ecalcarata* (Maxim.) Sprague & Hutchinson

Rosaceae

379. *Agrimonia procera* Wallr.
380. *Aruncus dioicus* (Walter) Fernald
381. *Cotoneaster integerrimus* Med.
382. *Duchesnea indica* (Andr.) Focke
383. *Filipendula ulmaria* (L.) Maxim.
384. *Geum coccineum* Sibth. & Sm.
385. *Geum urbanum* L.
386. *Potentilla nivea* L.
387. *Potentilla recta* L.
388. *Potentilla rupestris* L.
389. *Potentilla thuringiaca* Bernh. ex Link.
390. *Rhodotypos scandens* (Thunb.) Mak.
391. *Rosa glauca* Pourr.
392. *Rosa multiflora* Thunb.
393. *Rosa pendulina* L.
394. *Sanguisorba minor* Scop.
395. *Sanguisorba officinalis* L.
396. *Sibiraea croatica* Degen
397. *Stephanandra tanakae* Franch. & Sav.
398. *Stranvaesia davidiana* Decne.

Rubiaceae

399. *Galium verum* L.

Rutaceae

400. *Phellodendron amurense* Rupr.
401. *Poncirus trifoliata* (L.) Raf.
402. *Ruta graveolens* L.
403. *Zanthoxylum simulans* Hance

Sambucaceae

- 404. *Viburnum lantana* L.
- 405. *Viburnum sargentii* Koehne.

Sapindaceae

- 406. *Cardiospermum halicacabum* L. 2011

Saxifragaceae

- 407. *Heuchera americana* L.
- 408. *Heuchera sanguinea* Engelm.

Scrophulariaceae

- 409. *Cymbalaria muralis* Gaertner, Meyer & Scherbius 2011
- 410. *Digitalis grandiflora* Miller
- 411. *Digitalis lanata* Ehrh.
- 412. *Erinus alpinus* L.
- 413. *Kickxia elatine* (L.) Dumort.
- 414. *Linaria alpina* (L.) Miller
- 415. *Misopates orontium* (L.) Rafin.
- 416. *Penstemon hirsutus* Willd.
- 417. *Penstemon fruticosus* (Pursh) Greene
- 418. *Pseudolysimachion barrelieri* (Schott ex Roem. & Schult.) Holub
subsp. *barrelieri*
- 419. *Pseudolysimachion barrelieri* (Schott ex Roem. & Schult.) Holub
subsp. *incana* (L.) Walters
- 420. *Verbascum austriacum* Schott ex Roem. & Schult.
- 421. *Verbascum densiflorum* Bertol. 2011
- 422. *Veronica officinalis* L.
- 423. *Veronica prostrata* L.
- 424. *Veronica teucrium* L.
- 425. *Veronicastrum sibirica* L.

Solanaceae

- 426. *Browallia demissa* L.
- 427. *Datura inoxia* Mill. 2011

428. *Datura metel* L.
429. *Hyoscyamus niger* L. 2011
430. *Lycium chinense* Mill.
431. *Nicandra physalodes* (L.) Gaertner
432. *Nicotiana rustica* L.
433. *Nicotiana tabacum* L.
* 434. *Nicotiana tabacum* L. var. *havanensis*
435. *Nicotiana viscosa* Lehm.
436. *Physalis ixocarpa* Brot.
437. *Scopolia carniolica* Jacq.
438. *Scopolia carniolica* Jacq. f. *hladnikiana* (Biatz. & Fleischm.) E. Mayer
439. *Solanum sisymbriifolium* Lam.

Staphyleaceae

440. *Staphylea pinnata* L.

Styracaceae

441. *Halesia carolina* L.
442. *Pterostyrax hispida* Sieb. & Zucc. 2011

Taccaceae

- * 443. *Tacca chantrieri* André

Tiliaceae

444. *Tilia platyphyllos* Scop.

Tropaeolaceae

445. *Tropaeolum majus* L.

Typhaceae

446. *Typha latifolia* L.

Ulmaceae

447. *Celtis occidentalis* L.
448. *Zelkova carpinifolia* (Pall.) K. Koch

Urticaceae

449. *Parietaria officinalis* L.

450. *Urtica dioica* L.

Verbenaceae

451. *Callicarpa bodinieri* Levl. var. *giraldii* Rehd.

452. *Vitex agnus-castus* L.

* Semina plantarum in caladariis cultarum.

Horti praefectus: dr. Jože Bavcon

Seminum Curator, hortulana: Janja Makše

Semina e plantis spontaneis in loco natali annis 2012 et 2011 lecta

Jože Bavcon, Igor Dakskobler, Ljudmila Dakskobler, Branko Dolinar, Janja Makše

453. *Acer campestre* L. - Dragonja, 2012, J. B.
454. *Aconitum angustifolium* Bernh. ex Rchb. - Črna prst, 2011, L. & I. D.
455. *Aconitum variegatum* L. - Čaven, 2011, J. B.
456. *Allium sphaerocephalon* L. - Sočerga, 2011, J. B.
457. *Allium victorialis* L. - Kanin, nad pl. Gozdec, 2011, L. & I. D.
458. *Alnus glutinosa* (L.) Gaertner - Kanalski Kolovrat, 2012, L. & I. D.
459. *Angelica sylvestris* L. - Snežnik, 2011, J. B.
460. *Anthericum ramosum* L. - Prevoje, 2011, J. B.
461. *Arctostaphylos uva-ursi* (L.) Spreng. - Golica, 2012, L. & I. D.
462. *Armeria alpina* (DC.) Willd. - Veliki Babanjski skedenj, 2011, L. & I. D.
463. *Asphodelus albus* L. - Slavnik, 2012, J. B.
464. *Asphodelus albus* Mill. - Matajur, 2012, L. & I. D.
465. *Aster amellus* L. - Mrzli vrh, 2012, L. & I. D.
466. *Astrantia major* L. - Šentvid, 2011, J. B.
467. *Athamanta turbith* (L.) Brot. p.p., em. Karsten - Žabijski vrh nad Žabčami, 2011, L. & I. D.
468. *Berberis vulgaris* L. - Jezersko, 2012, J. M.
469. *Bupthalmum salicifolium* L. - Žadovinek; Krško, 2011, J. B.
470. *Bupleurum petraeum* L. - Špičasta kupa - Jehlc nad Grnatom, 2011, L. & I. D.
471. *Campanula latifolia* L. - Javornik, 2012, R. T., B. D.
472. *Capparis spinosa* L. - Piran, 2012, J. B.
473. *Chamerion dodonaei* (Vill.) Holub - Orehek (Cerkljansko), 2012, L. & I. D.
474. *Clematis recta* L. - Kavčiče, 2011, J. B.
475. *Clematis vitalba* L. - Žadovinek, 2011, J. B.

476. *Cornus mas* L. - Grgarske Ravne, 2012, L. & I. D.
477. *Coronilla emerus* L. subsp. *emeroides* - Hrastovlje, 2012, J. B.
478. *Coronilla emerus* L. subsp. *emeroides* - Lipnik, 2012, J. B.
479. *Corydalis cava* (L.) Schweigg. & Körte - Boč, 2012, J. M.
480. *Cotinus coggygria* Scop. - Dragonja, 2012, J. B.
481. *Cotoneaster integerrimus* Med. - Kobla, 2012, L. & I. D.
482. *Crataegus monogyna* Jacq. - Žadovinec, 2012, J. B.
483. *Crataegus monogyna* Jacq. - Dragonja, 2012, J. B.
484. *Crataegus monogyna* Jacq. - Roje pri Ljubljani, 2011, J. B.
485. *Crepis bocconi* P. D. Sell - Črna prst, 2012, L. & I. D.
486. *Crepis pyrenaica* (L.) W. Greuter - dolina Bale, pod Prevalo, 2012, L. & I. D.
487. *Crithmum maritimum* L. - Izola, 2011, J. B.
488. *Crocus vernus* (L.) Hill - Velika planina, 2012, J. B.
489. *Cypripedium calceolus* L. - Brlog pri Velikih Laščah, 2012, B. D., B. V.
490. *Cypripedium calceolus* L. - Jezersko, 2012, J. M.
491. *Dictamnus albus* L. - Slavnik, 2012, J. B.
492. *Echium vulgare* L. - Slavnik, 2012, J. B.
493. *Epimedium alpinum* L. - Šentjurij pri Mirni Peči, 2012, J. M.
494. *Epipactis helleborine* (L.) Crantz subsp. *orbicularis* (K. Richt.) E. Klein - Žirovski vrh, 2012, B. D.
495. *Epipactis palustris* (L.) Crantz - Logarji - Mišja dolina, 2012, B. D.
496. *Eryngium amethystinum* L. - Lipnik, 2012, J. B.
497. *Euonymus verrucosa* Scop. - Šentjurij pri Mirni Peči, 2012, J. M.
498. *Fraxinus ornus* L. - Sabotin, 2012, L. & I. D.
499. *Fraxinus ornus* L. - Sv. Volbenk, Goljevica, 2012, L. & I. D.
500. *Galium verum* L. - Lipnik, 2012, J. B.
501. *Galium verum* L. - Roje pri Ljubljani, 2012, J. B.
502. *Gentiana asclepiadea* L. - Jezersko, 2012, J. M.
503. *Gentiana lutea* L. - Ilirska Bistrica - plato, 2011, J. B.
504. *Gentiana lutea* L. subsp. *symphyandra* - Vremščica, 2012, J. B.
505. *Gentiana lutea* L. subsp. *symphyandra* - Čaven, 2011, J. B.
506. *Gladiolus illyricus* Koch - Roje pri Ljubljani, 2012, J. B.
507. *Globularia punctata* Hegetschw. - Podgorje, 2012, J. B.
508. *Grafia golaka* (Hacq.) Rchb. - Čaven, 2011, J. B.

509. *Hedera helix* L. - Šentjurij pri Mirni Peči, 2012, J. M.
510. *Helleborus niger* L. - Velika planina, 2012, J. B.
511. *Heracleum sphondylium* L. subsp. *montanum* - Bohinj, pl. Vrtača nad Vojami, 2011, L. & I. D.
512. *Hladnikia pastinacifolia* Rchb. - Poldanovec, 2012, L. & I. D.
513. *Hypericum perforatum* L. - Roje pri Ljubljani, 2012, J. B.
514. *Inula hirta* L. - Vremščica, 2012, J. B.
515. *Iris graminea* L. - Lipnik, 2012, J. B.
516. *Iris pallida* Lam. subsp. *illyrica* - Slavnik, 2012, J. B.
517. *Iris pseudacorus* L. - Mala vas pri Bovcu, 2011, L. & I. D.
518. *Iris sibirica* L. subsp. *erirrhiza* - Kojca, 2012, L. & I. D.
519. *Laserpitium siler* L. - Čaven, 2011, J. B.
520. *Libanotis sibirica* (L.) C. A. Mey - Čaven, 2011, J. B.
521. *Libanotis sibirica* (L.) C.A. Mey. subsp. *montana* (Crantz) P.W.Ball - Ilirska Bistrica - plato, 2011, J. B.
522. *Ligusticum sequieri* (Jacq.) Koch - Čaven, 2011, J. B.
523. *Ligustrum vulgare* L. - Žadovinek, 2012, J. B.
524. *Lilium carniolicum* Bernh. - Kucelj, 2011, J. B.
525. *Liparis loeselii* (L.) Rich. - mokrišče ob Savi Dolinki pod vasjo Breg pri Žirovnici, 2012, B. D.
526. *Listera ovata* (L.) R. Br. - Kamniška Bistrica, 2012, J. M.
527. *Lonicera alpigena* L. - planina za Liscem, 2012, L. & I. D.
528. *Lunaria rediviva* L. - Čaven, 2011, J. B.
529. *Lythrum salicaria* L. - Prevoje, 2012, J. B.
530. *Molopospermum peloponnesiacum* (L.) Koch subsp. *bauhinii* - Sveta Gora pri Gorici, 2012, L. & I. D.
531. *Muscari botryoides* (L.) Mill. - Nanos, 2012, J. B.
532. *Myrrhis odorata* (L.) Scop. - Črna prst, 2012, L. & I. D.
533. *Ornithogalum pyrenaicum* L. - Blehe pod Šoštanjem, 2012, L. & I. D.
534. *Ostrya carpinifolia* Scop. - Gradiška Tura, 2011, L. & I. D.
535. *Paeonia officinalis* L. - Lipnik, 2012, J. B.
536. *Paliurus spina-christi* Mill. - Osp - Socerb, 2011, A. M.
537. *Pedicularis hacquetii* Graf ex Hoppe - Ravenska planina pod Črno goro, 2012, L. & I. D.
538. *Peucedanum oreoselinum* (L.) Moench - Roje pri Ljubljani, 2012, J.

- B.
539. *Peucedanum ostruthium* (L.) Koch - Mala Peca, 2011, I. D., B. V., A. S.
540. *Peucedanum verticillare* (L.) Koch - Idrija - Stara Meja, 2011, L. & I. D.
541. *Pistacia terebinthus* L. - Dragonja, 2012, J. B.
542. *Plantago argentea* Chaix. & Vill. subsp. *liburnica* - Otlica, Navrše, 2012, L. & I. D.
543. *Plantago holosteum* Scop. - Slavnik, 2012, J. B.
544. *Pleurospermum austriacum* (L.) Hoffm. - Črna prst, 2011, L. & I. D.
545. *Potentilla caulescens* Torn. - dolina Belce v Karavankah, 2012, L. & I. D.
546. *Prospero elisae* Speta - Dragonja, 2012, J. B.
547. *Prunus spinosa* L. - Žadovinec, 2011, J. B.
548. *Pulsatilla alpina* (L.) Delarbre subsp. *austroalpina* D. M. Moser - pod Skutnikom nad pl. Zapotok, 2011, L. & I. D.
549. *Pulsatilla montana* (Hoppe) Rchb. - Nanos, 2012, J. B.
550. *Rhamnus cathartica* L. - Roje pri Ljubljani, 2011, J. B.
551. *Rosa canina* L. - Kanalski Kolovrat, 2012, L. & I. D.
552. *Rosa gallica* L. - Kanalski Kolovrat, 2012, L. & I. D.
553. *Rosa glauca* Pourr. - Čaven, 2011, J. B.
554. *Rosa pendulina* L. - Črna prst, 2012, L. & I. D.
555. *Rosa sempervirens* L. - Dragonja 2011, 2012, J. B.
556. *Ruscus aculeatus* L. - Dragonja, 2011, J. B.
557. *Ruta divaricata* Ten. - Dol / Hrastovlje, 2012, J. B.
558. *Ruta divaricata* Ten. - Otlica, Navrše, 2012, L. & I. D.
559. *Salix waldsteiniana* Willd. - Čaven, 2012, J. B.
560. *Salvia pratensis* L. - Slavnik, 2012, J. B.
561. *Satureja subspicata* Bartl. ex Vis. - Sočerga, 2011, J. B.
562. *Scabiosa lucida* Vill. subsp. *lucida* L. - Črna prst, 2012, L. & I. D.
563. *Senecio abrotanifolius* L. - Vršič, 2012, L. & I. D.
564. *Serratula tinctoria* L. subsp. *macrocephala* - Črna prst, 2012, L. & I. D.
565. *Smyrniium perfoliatum* L. - Črnotiče, 2011, B. D.
566. *Solanum dulcamara* L. - Prevoje, 2012, J. B.
567. *Sorbus aucuparia* L. subsp. *aucuparia* - Čaven, 2011, J. B.

568. *Sorbus chamaemespilus* (L.) Crantz - Črna prst, 2012, L. & I. D.
569. *Tamus communis* L. - Lajše na Cerkljanskim, 2011, L. & I. D.
570. *Telekia speciosa* (Schreb.) Baumg. - Kalski gozd, 2012, L. & I. D.
571. *Thalictrum aquilegiifolium* L. - Vremščica, 2012, J. B.
572. *Thalictrum lucidum* L. - Kobarid, Blato, 2012, L. & I. D.
573. *Tilia cordata* Mill. - Arbidnje pri Ligu, 2012, L. & I. D.
574. *Trifolium incarnatum* L. subsp. *molinerii* (Balb.) Syme - Lipnik, 2012, J. B.
575. *Trifolium noricum* Wulfen. - Črna prst, 2012, L. & I. D.
576. *Viburnum opulus* L. - Kamno, 2012, L. & I. D.

Collectors of the wild seeds:

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dr. Igor Dakskobler (I. D.)

Ljudmila Dakskobler (L. D.)

Branko Dolinar (B. D.)

Janja Makše (J. M.)

Po nekaj semen rastlinskih vrst pa so prispevali še:

Alenka Marinček (A. M.)

mag. Andrej Seliškar (A. S.)

dr. Branko Vreš (B. V.)

Rafael Trpin (R. T.)



Gentiana lutea z nerazvitimi semeni. / *Gentiana lutea* with undeveloped seeds



Inula hirta - zasušene rastline. / *Inula hirta* - dry plants

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»Juliana« Alpine Botanical Garden in the Trenta Valley

Nada Praprotnik

Juliana is the oldest extant alpine botanical garden in the natural environment in the territory of Slovenia. It was founded in 1926 by the Trieste proprietor and merchant Albert Bois de Chesne (1871-1953), who wished to create similar living conditions for the plants as enjoyed by them in nature. In his attempts he was aided by his mountaineering friend Dr Julius Kugy. A stroll through the garden is meant as a walk from the valleys to the very peaks of the Slovene mountains.

The garden is situated in the Trenta valley on the picturesque slope of Kukla near the Church of St. Mary some 800 metres a.s.l. and just a few tens of metres above the Soča river. The garden cover 2,572 m². It is meant not only for botanists professionally engaged in plants, but especially those in love with mountains and nature.

When the Primorska region was annexed to Yugoslavia after World War II, the garden could no longer be taken care of by its owner. Initially it was looked after by Slovene botanists under the professional leadership of Dr Angela Piskernik. In 1949, its regular maintenance was temporarily entrusted to the Slovene Museum of Natural History, and finally in 1962. Since 1951, Juliana has been protected as a shaped nature monument. In 1981, when the Law on the protection of Triglav National Park was passed, the garden as a monument of shaped nature was also included in our only national park.

The majority of the plants in the garden have come from the Eastern and Western Julian Alps, Friuli Mountains, Karst hay meadows and pre-Alpine territory, and some from the Karavanke

and the Kamnik-Savinja Alps. To the left of the garden' entrance, some foreign plants not occurring in Slovenia have been planted. Owing to the low altitude and the strong impact of the Mediterranean climate reaching the area through the Soča valley, there are quite a number of high mountain plants which do not prosper well in the "Juliana" garden. Much effort and affection was thus needed for the garden to grow fully and that it has lived more than 80 years.

Juliana is home to some 600 different plant species, including a couple of those growing only in our country. From the other Alpine botanical gardens it differs in its diverse blend of Alpine and Karst plants.

Due to the lack of personnel, wild seeds are not gathered in nature but only in the garden. The annuals' and biannuals' seeds are planted in the so-called "kindergarten" and later on transplanted into the garden itself. From seeds, even some perennials are brought up. The majority of seeds, however, are each year sent to the Botanical Gardens in Ljubljana, which publishes the Index seminum, in which the Juliana seeds are included as well.

In Juliana, no scientific-research work is possible due to the lack of personnel, and neither are guided tours of the garden, except on very special occasions as per preliminary agreement.

Juliana has an extremely important role in the education of its visitors. In this sense, we present the plants in their natural habitats, call attention to their threat status, and to the conservation of natural heritage.

Particularly well developed are our publicity activities. In the last decade we have thus published guides and brochures in Slovenian, English, Italian, German and French languages, as well as a series of 15 postcards with various plant motifs. We have produced DVDs in five languages.

Our Juliana differs from other Alpine botanical gardens in Europe especially in the diverse mixture of its Alpine, Karst and endemic plants. As the oldest alpinum in the territory of Slovenia it also has a very high cultural and historical value.



Alpinum Juliana

Semina in horto alpino Juliana Museum historiae naturalis Sloveniae anno 2012 lecta

Nada Praprotnik, Marija Završnik, Klemen Završnik

577. *Aconitum angustifolium* Bernh. ex Rchb.
578. *Aconitum degenii* Gáyer subsp. *paniculatum* (Archang.) Mucher
579. *Aconitum lycoctonum* L. em Koelle subsp. *vulparia* (Rchb. ex Spreng.) Nym.
580. *Adenophora liliifolia* (L.) DC.
581. *Adenostyles glabra* (Miller) DC.
582. *Aethionema saxatile* (L.) R. Br.
583. *Agrimonia eupatoria* L.
584. *Agrostis alpina* Scop.
585. *Alchemilla velebitica* Borbás
586. *Alchemilla vulgaris* L.
587. *Alisma plantago-aquatica* L.
588. *Allium ericetorum* Thore
589. *Allium schoenoprasum* L. subsp. *alpinum* (DC.) Čelak.
590. *Allium senescens* L.
591. *Allium victorialis* L.
592. *Androsace villosa* L.
593. *Anemone ranunculoides* L.
594. *Anthericum ramosum* L.
595. *Aposeris foetida* (L.) Less.
596. *Aquilegia einseleana* F. W. Schultz
597. *Arabis alpina* L. subsp. *alpina*
598. *Arabis hirsuta* (L.) Scop.
599. *Arabis vochinensis* Sprengel
600. *Armeria alpina* (DC.) Willd.
601. *Aruncus dioicus* (Walter) Fernald
602. *Asarum europaeum* L.
603. *Asparagus tenuifolius* Lam.
604. *Asperula cynanchica* L.

605. *Aster amellus* L.
606. *Astragalus glycyphyllos* L.
607. *Astrantia carniolica* Jacq.
608. *Astrantia major* L.
609. *Athamanta turbith* (L.) Brot. p. p., em. H. Karst.
610. *Atropa bella-dónna* L.
611. *Aurinia petraea* (Ard.) Schur
612. *Betonica alopecuros* L.
613. *Betonica officinalis* L.
614. *Biscutella laevigata* L.
615. *Braya alpina* Sternb. & Hoppe
616. *Bupthalmum salicifolium* L.
617. *Bupleurum falcatum* L. subsp. *cernuum* (Ten.) Arcang.
618. *Bupleurum petraeum* L.
619. *Bupleurum ranunculoides* L. subsp. *ranunculoides*
620. *Calamintha nepeta* (L.) Savi
621. *Calluna vulgaris* (L.) Hull
622. *Caltha palustris* L. subsp. *palustris*
623. *Campanula carpatica* Jacq.
624. *Campanula cespitosa* Scop.
625. *Campanula glomerata* L. subsp. *glomerata*
626. *Campanula rapunculoides* L.
627. *Campanula spicata* L.
628. *Campanula trachelium* L.
629. *Carduus defloratus* L. sensu Kazmi
630. *Carlina acaulis* L. subsp. *acaulis*
631. *Centaurea alpina* L.
632. *Centaurea scabiosa* L. subsp. *fritschii* (Hayek) Hayek
633. *Centaurea scabiosa* L. subsp. *scabiosa*
634. *Centaurea triumfettii* All.
635. *Centaurea uniflora* Turra subsp. *nervosa* (Willd.) Bonnier & Layens
636. *Cephalanthera longifolia* (L.) Fritsch
637. *Cephalanthera rubra* (L.) L. C. Rich.
638. *Cephalaria leucantha* (L.) Roemer & Schultes

639. *Cerintho glabra* Miller subsp. *glabra*
640. *Chaerophyllum hirsutum* L.
641. *Chamaecytisus hirsutus* (L.) Link
642. *Chamaecytisus purpureus* Scop.
643. *Chenopodium bonus-henricus* L.
644. *Cirsium erisithales* (Jacq.) Scop.
645. *Cirsium montanum* (Waldst. & Kit. ex Willd.) Sprengel
646. *Cirsium oleraceum* (L.) Scop.
647. *Cirsium x linkianum* Löhr (*C. erisithales* (Jacq.) Scop. x *C. pannonicum* (L. f.) Link)
648. *Clinopodium vulgare* L.
649. *Convallaria majalis* L.
650. *Coronilla coronata* L.
651. *Coronilla emerus* L.
652. *Cotoneaster dielsianus* E. Pritz.
653. *Crepis slovenica* Holub
654. *Crocus vernus* (L.) Hill subsp. *albiflorus* (Kit.) Ascherson & Graebner
655. *Crocus vernus* (L.) Hill subsp. *vernus*
656. *Cypripedium calceolus* L.
657. *Cytisus pseudoprocumbens* Markgr.
658. *Dactylorhiza maculata* (L.) Soó
659. *Daphne cneorum* L.
660. *Dianthus hyssopifolius* L.
661. *Dianthus sanguineus* Vis.
662. *Dianthus sternbergii* Sieber
663. *Dianthus sylvestris* Wulfen
664. *Dianthus tergestinus* (Rchb.) Kerner
665. *Dictamnus albus* L.
666. *Digitalis ferruginea* L.
667. *Digitalis grandiflora* Miller (= *D. ambigua* Murray)
668. *Digitalis laevigata* Waldst. & Kit.
669. *Dorycnium germanicum* (Gremli) Rikli
670. *Draba aizoides* L.
671. *Drypis spinosa* L. subsp. *jacquiniana* Murb. et Wettst.

672. *Echinops ritro* L. subsp. *ruthenicus* (Bieb.) Nyman.
673. *Epilobium montanum* L.
674. *Epimedium alpinum* L.
675. *Epipactis atrorubens* (Hoffm. ex Bernh.) Besser
676. *Epipactis helleborine* (L.) Crantz
677. *Erigeron caucasicus* Steven
678. *Erinus alpinus* L.
679. *Eryngium amethystinum* L.
680. *Euonymus latifolia* (L.) Mill.
681. *Euphorbia angulata* Jacq.
682. *Euphorbia triflora* Schott, Nyman & Kotschy subsp. *triflora*
683. *Filipendula ulmaria* (L.) Maxim.
684. *Filipendula vulgaris* Moench
685. *Frangula rupestris* (Scop.) Schur
686. *Galanthus nivalis* L.
687. *Galium odoratum* (L.) Scop.
688. *Galium purpureum* L.
689. *Galium sylvaticum* L.
690. *Galium verum* L.
691. *Genista radiata* (L.) Scop.
692. *Genista sericea* Wulfen
693. *Genista sylvestris* Scop.
694. *Gentiana angustifolia* Vill.
695. *Gentiana asclepiadea* L.
696. *Gentiana clusii* Perr. & Song.
697. *Gentiana cruciata* L.
698. *Gentiana verna* L. subsp. *verna*
699. *Gentianella germanica* (Willd.) E. F. Warburg in Clapham, Tutin & E. F. Warburg
700. *Geranium macrorrhizum* L.
701. *Geranium nodosum* L.
702. *Geranium phaeum* L. subsp. *phaeum*
703. *Geranium pratense* L.
704. *Geranium sanguineum* L.

705. *Geum rivale* L.
706. *Geum speciosum* Alboff
707. *Gladiolus illyricus* Koch
708. *Globularia cordifolia* L.
709. *Grafia golaka* (Hacq.) Rchb.
710. *Gymnadenia conopsea* (L.) R. Br.
711. *Gypsophila repens* L.
712. *Hacquetia epipactis* (Scop.) DC.
713. *Helianthemum alpestre* (Jacq.) DC.
714. *Helianthemum nummularium* (L.) Mill. subsp. *grandiflorum* (Scop.)
Schinz & Thell.
715. *Heliosperma alpestre* (Jacq.) Griseb.
716. *Helleborus odorus* Waldst. & Kit.
717. *Hemerocallis lilioasphodelus* L.
718. *Hepatica nobilis* Mill.
719. *Hesperis candida* Kit.
720. *Hieracium gymnocephalum* Griseb. ex Pant.
721. *Hieracium porrifolium* L.
722. *Hieracium valdepilosum* Vill.
723. *Hippocrepis comosa* L.
724. *Hippophaë rhamnoides* L.
725. *Hladnikia pastinacifolia* Reichenb.
726. *Hypochoeris maculata* L.
727. *Inula spiraeifolia* L.
728. *Iris graminea* L.
729. *Iris sibirica* L. subsp. *sibirica*
730. *Kernera saxatilis* (L.) Reichenb.
731. *Knautia arvensis* (L.) Coulter
732. *Knautia drymeia* Heuffel
733. *Knautia fleischmannii* (Hladnik ex Reichenb.) Pacher
734. *Knautia illyrica* G. Beck
735. *Laserpitium latifolium* L.
736. *Laserpitium siler* L.

737. *Lathyrus occidentalis* (Fisch. & Meyer) Fritsch var. *montanus* (Scop.)
Fritsch
738. *Lathyrus pannonicus* (Jacq.) Garcke subsp. *varius* (C. Koch) P. W. Ball
739. *Leontodon hispidus* L.
740. *Leontopodium alpinum* Cass.
741. *Leucojum vernum* L.
742. *Libanotis sibirica* (L.) C. A. Mey. subsp. *montana* (Crantz) P. W. Ball
743. *Ligusticum seguieri* (Jacq.) Koch
744. *Lilium carniolicum* Bernh.
745. *Linaria alpina* (L.) Miller
746. *Listera ovata* (L.) R. Br.
747. *Lithospermum officinale* L.
748. *Lloydia serotina* (L.) Reichenb.
749. *Lunaria rediviva* L.
750. *Lychnis flos-cuculi* L. subsp. *flos-cuculi*
751. *Lycopus europaeus* L.
752. *Lysimachia punctata* L.
753. *Lysimachia vulgaris* L.
754. *Malaxis monophyllos* (L.) Sw.
755. *Medicago lupulina* L.
756. *Mentha longifolia* (L.) Huds.
757. *Meum athamanticum* Jacq.
758. *Micromeria thymifolia* (Scop.) Fritsch
759. *Minuartia capillacea* (All.) Graebn.
760. *Minuartia gerardii* (Willd.) Hayek
761. *Muscari botryoides* (L.) Miller
762. *Mycelis muralis* (L.) Dumort. (= *Cicerbita muralis* (L.) Wallr.)
763. *Myrrhis odorata* (L.) Scop.
764. *Narcissus poeticus* L. subsp. *radiiflorus* (Salisb.) Baker
765. *Omalotheca sylvatica* (L.) Schultz Bip. & F. W. Schultz in F. W.
Schultz
766. *Omphalodes verna* Moench
767. *Orchis militaris* L.
768. *Origanum vulgare* L.

769. *Ornithogalum pyrenaicum* L.
770. *Paederota bonarota* (L.) L.
771. *Paeonia mascula* (L.) Mill.
772. *Paeonia officinalis* L.
773. *Papaver alpinum* L. subsp. *ernesti-mayeri* Markgraf
774. *Papaver alpinum* L. subsp. *keneri* (Hayek) Fedde
775. *Paris quadrifolia* L.
776. *Parnassia palustris* L.
777. *Peltaria alliacea* Jacq.
778. *Petasites albus* (L.) Gaertner
779. *Petasites paradoxus* (Retz.) Baumg.
780. *Petrocallis pyrenaica* (L.) R. Br.
781. *Petrorhagia saxifraga* (L.) Link
782. *Peucedanum austriacum* (Jacq.) Koch var. *rablense* (Wulfen) Koch
783. *Peucedanum cervaria* (L.) Lapeyr.
784. *Peucedanum oreoselinum* (L.) Moench
785. *Peucedanum schottii* Besser
786. *Peucedanum verticillare*
787. *Physoplexis comosa* (L.) Schur
788. *Phyteuma orbiculare* L.
789. *Platanthera bifolia* (L.) Rich.
790. *Polemonium caeruleum* L.
791. *Polygonatum verticillatum* (L.) All.
792. *Polygonum bistorta* L.
793. *Polygonum viviparum* L.
794. *Potentilla alba* L.
795. *Potentilla anserina* L.
796. *Potentilla caulescens* L.
797. *Potentilla erecta* (L.) Raeusch.
798. *Potentilla rupestris* L.
799. *Prenanthes purpurea* L.
800. *Primula elatior* (L.) Hill.
801. *Primula farinosa* L.
802. *Primula veris* L. subsp. *columnae* (Ten.) Lüdi in Hegi

803. *Primula x venusta* Host (*P. auricula* L. x *P. carniolica* Jacq.)
804. *Prunella vulgaris* L.
805. *Pseudofumaria alba* (Miller) Lidén subsp. *alba*
806. *Pulmonaria officinalis* L.
807. *Pulsatilla alpina* (L.) Delarbre subsp. *austroalpina* D. M. Moser
808. *Ranunculus montanus* Willd.
809. *Ranunculus platanifolius* L.
810. *Reseda lutea* L.
811. *Rhodiola rosea* L.
812. *Rhododendron ferrugineum* L.
813. *Rhododendron hirsutum* L.
814. *Rhodothamnus chamaecistus* (L.) Reichenb.
815. *Rumex scutatus* L.
816. *Ruta divaricata* Ten.
817. *Salvia glutinosa* L.
818. *Salvia verticillata* L.
819. *Sanguisorba minor* Scop.
820. *Sanguisorba officinalis* L.
821. *Sanicula europaea* L.
822. *Saponaria ocymoides* L.
823. *Saponaria officinalis* L.
824. *Satureja montana* L. subsp. *variegata* (Host) P. W. Ball
825. *Satureja subspicata* Bartl. ex Vis. subsp. *liburnica* Šilić
826. *Saxifraga burseriana* L.
827. *Saxifraga caesia* L.
828. *Saxifraga crustata* Vest
829. *Saxifraga hostii* Tausch
830. *Scabiosa caucasica* Bieb.
831. *Scabiosa graminifolia* L.
832. *Scabiosa hladnikiana* Host
833. *Scabiosa lucida* Vill. subsp. *stricta* (Waldst. & Kit.) Jasiewicz
834. *Scrophularia vernalis* L.
835. *Sedum album* L.
836. *Senecio abrotanifolius* L.

837. *Seseli gouanii* Koch
838. *Silene dioica* (L. em Mill.) Clairv.
839. *Silene hayekiana* Hand.-Mazz. & Janchen
840. *Silene latifolia* Poiret
841. *Silene nutans* L.
842. *Silene vulgaris* (Moench) Garcke subsp. *glareosa* (Jordan) Marsden-Jones & Turill
843. *Silene vulgaris* (Moench) Garcke subsp. *vulgaris*
844. *Solidago virgaurea* L. subsp. *virgaurea*
845. *Spiraea decumbens* Koch subsp. *decumbens*
846. *Stachys recta* L.
847. *Stachys sylvatica* L.
848. *Tanacetum corymbosum* (L.) Schultz Bip. subsp. *clusii* (Fischer ex Reichenb.) Heywood
849. *Taraxacum officinale* agg.
850. *Taxus baccata* L.
851. *Telekia speciosa* (Schreber) Baumg.
852. *Tephrosia pseudocrispa* (Fiori) Holub
853. *Teucrium montanum* L.
854. *Thalictrum minus* L.
855. *Tofieldia calyculata* (L.) Wahlenb.
856. *Trifolium montanum* L.
857. *Trifolium rubens* L.
858. *Trollius europaeus* L.
859. *Tussilago farfara* L.
860. *Valeriana montana* L.
861. *Valeriana officinalis* L.
862. *Veronica aphylla* L.
863. *Veronica fruticulosa* L.
864. *Veronica maritima* L.
865. *Veronica officinalis* L.
866. *Veronica urticifolia* Jacq.
867. *Viburnum opulus* L.
868. *Vicia oroboides* Wulfen

869. *Vincetoxicum hirundinaria* Medik.

Curator: dr. Nada Praprotnik

Hortulani: Marija Završnik & Klemen Završnik, dipl. inž. agr. in h.

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Alpski botanični vrt Juliana v Trenti je odprt od 1. maja do 30. septembra vsak dan od 8.30 do 18.30.

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