Spiked rampion: a perennial all season shade tolerant vegetable and one of the best edientomentals

Stephen Barstow, www.edimentals.com, Malvik, Norway; January 2019

Scientific name: *Phyteuma spicatum*
Bellflower family (*Campanulaceae*)
Norwegian: Vadderot (*subsp. spicatum* /vanlig vadderot / skogvadderot; *subsp. caeruleum* /blåvadderot)
Swedish: Vitrapunkel; rapunkel
Danish: Aks-Rapunsel
Dutch: Zwartblauwe rapunzel
Finnish: Vaaleatähkämunkki
English: Spiked rampion
French: La Raiponce en épi
German: Ährige Teufelskralle
Swiss German: Ährige Rapunzel
Italiensk: Raponzolo giallo
Polish: Zerwa kłosowa
Russisk: Кольник колосистый

The spiked rampion (*Phyteuma spicatum*) is a European long-lived perennial member of the bellflower family (*Campanulaceae*), a family with many edible plants, none of which are well known in Europe. The only species known for sure to have been cultivated for food is biennial rampion (*Campanula rapunculus)*, grown as a root vegetable as well as its leaves until the 20th century. The latter is mentioned in Norway's first gardening book *Horticultura* from 1694 (Balvoll and Weisæth, 1994) and is included in the Vilmorin-Andrieux's *The Vegetable Garden* from 1920. Both plants are also known as rapunsel (or rapunzel) and are part of the legend around the German fairy tale of the same name, popularised by the Brothers Grimm, although it's most likely that it's the vegetable *Campanula rapunculus* which is part of the story. I find no real evidence to spiked rampion having been cultivated as a vegetable in the past apart from the mention of it being a culinary plant in Gerard's Herball (1597).

The genus *Phyteuma* includes some 22 species which are more or less restricted to Europe, now that *Phyteuma japonicum* has been moved to the genus *Asyneuma*. There are two main subspecies of *Phyteuma spicatum:* white flowered *subsp. spicatum* and blue flowered *subsp. caeruleum*. Closely related *Phyteuma nigrum* was previously considered to be a subspecies of *spicatum* (*subsp. nigrum*). A hybrid between *spicatum* and *nigrum* is common where the range of the two species overlap, *Phyteuma x adulterinum*.

Spiked rampion is widespread over most of Western and Central Europe including the Pyrenees, Alps and as far east as the northern Balkans (see Figure 1). It grows in a mix of different woodland types, especially beech (Fagus) but also coniferous forests. It can be found in the lowlands in the west, but also in mountains. In the north, only the white flowered subspecies is considered to be native. It is an endangered species in the UK where it is only found in a few sites in Sussex and is decreasing due to changes in woodland management. In Norway, "skogvadderot" (*subsp. spicatum*) is limited to a

relatively small area of mountain forest in southern Norway in north and northwest Telemark (Tinn, Vinje, Tokke, Kviteseid and Seljord); see Figure 2. It is found mainly in rich forest habitats with birch and spruce but can also be found in meadows.

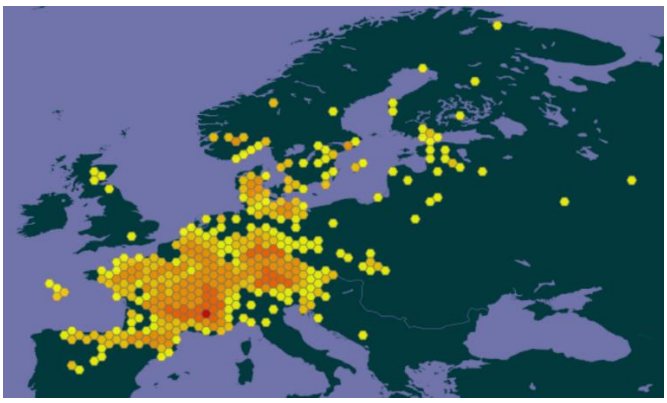

Figure 1 Distribution of Phyteuma spicatum *L. from GBIF Secretariat 2017. GBIF Backbone Taxonomy. Checklist dataset https://doi.org/10.15468/39omei*

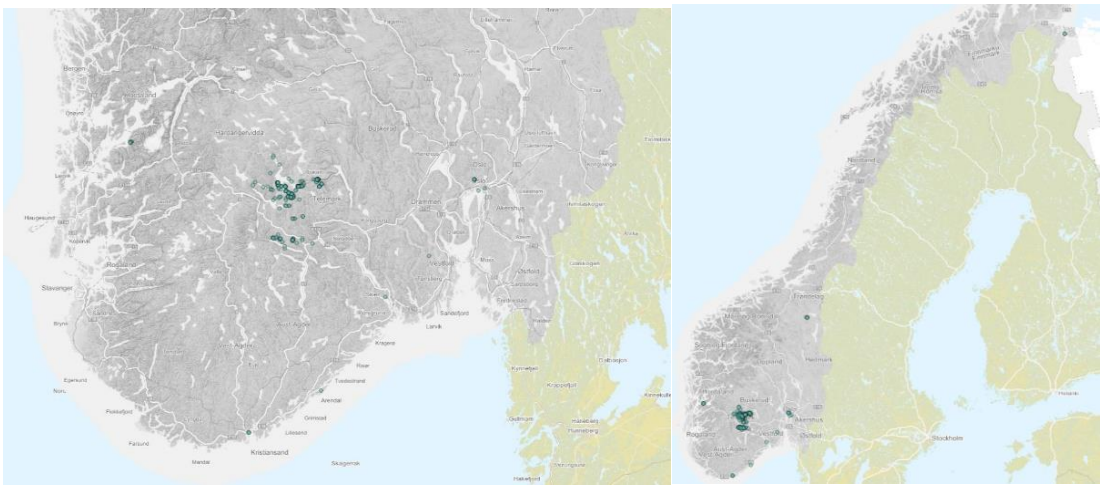

Figure 2 Distribution of Phyteuma spicatum *in Norway from Artskart /Kartverket (see https://artskart.artsdatabanken.no/app/#bookmark/43919bed-a458-4494-bf91-9058bed68b4a)*

Phyteuma spicatum is also found today in Scandinavia naturalised in old parks including one of Norway's great gardens, Barony Rosendal in Hardanger (see Figure 6; see also the film at http://www.edimentals.com/blog/?p=15680). The white flowered subspecies is also surprisingly found in one isolated area in the very far north of Norway (Sør-Varanger in Finnmark close to the Russian border; map in Figure 2, right) together with, in a separate location just a few kilometres away, *Phyteuma nigrum*. It is likely that both were originally introduced during the last world war with German horse feed! Plants with blue flowers (*subsp. caeruleum*) are also sometimes found in the northern parts of Europe, but are always garden escapes. One such location is in Røros, Norway where it has naturalised in a meadow near old farm buildings.

Spiked rampion is between 25-80cm high, the lower hairless leaves being heart or kidney shaped, the higher ones narrow. A variety with black blotches on the basal leaves is common in the Alps (see Figure 5).

Figure 3 Three different accessions of Phyteuma spicatum *in different parts of the author's garden.*

Traditional use around Europe

Numerous ethnobotanical studies have been carried out in Europe over the last 20 years notably in the Mediterranean countries including the Alps and much new knowledge has become available. This is based on research funds becoming available to study the health benefits of what has become known as the Mediterranean diet. One component was it seems that people ate a much larger diversity of plants, many of which were wild foraged and often consumed in multi-species dishes (see more in the chapter on the Mediterranean in Barstow, 2014). Already in 2006, Rivera et al. had documented over 2,300 edible plants just in the Mediterranean countries and many more have been discovered since that time. Through a literature search, 11 studies were found documenting traditional use of various *Phyteuma* species (Table 1). All parts of rampions have been wild foraged traditionally. Most frequently cited are the leaf rosettes, leaves or aerial parts (11 records), roots (6) and flower petals or inflorescences (4). The studies document five different species having been eaten, most frequently the most widespread species *Phyteuma spicatum* (10 records), *P. orbiculare*

(4), *P. ovatum* (2), *P. michelii* (1) and *P. betonicifolium* (1). All 5 have been used in Italy, 2 are documented in France and Switzerland and one each in Poland, the Czech Republic and Bosnia and Herzegovina. Plants are both eaten raw as snacks and in salads, but also cooked in soups, like spinach, stir-fried and in omelettes. In *Table 2* are given a list of plants used in two multi-species soups in which rampion species are used. *Phyteuma japonicum* (now moved to *Asyneuma*) is also included in Table 1, wild foraged in Japan.

Figure 4 Phyteuma nigrum *was planted in the author's garden in 2003 and allowed to self-seed. Initially, the plants had this attractive dark colour but now (bottom row) there is a mix of colours probably due to hybridizing with* Phyteuma spicatum; see *Figure 3 (more pictures and a video can be seen at the bottom of the following page - http://www.edimentals.com/blog/?p=11910)*

Abbet et al. (2012; 2013), considering *Phyteuma* species as possible future cultivated vegetables have analysed the chemical constituents of *Phyteuma orbiculare* with positive results. First, no toxicological risk was found in consuming the plant and the investigation revealed that *P. orbiculare* possesses interesting nutritive properties: *"The large amounts of potassium, calcium and magnesium present could help consumers to attain the recommended dietary intakes of these minerals. The leaves are particularly rich in ascorbic acid and contain, compared to the flowers,*

Figure 5 A variety of Phyteuma spicatum *with black blotches on the leaves is common in the Alps and is known as Cul-noir in France (Picture: Stans, Switzerland)*

higher amounts of beta-carotene, minerals and a nutritionally more favourable ratio of omega 3 to omega 6 fatty acids. On the other hand, the content of total phenolic compounds is higher in the flowers and correlates with a stronger antioxidant capacity. The chromatographic profiles revealed similar phytochemical compositions of P. orbiculare, P. spicatum and P. ovatum. This finding corroborates the parallel use of these three species as traditional food plants. Based on their chemical composition combined with pleasant gustatory properties, rampion species may be considered for future cultivation as food plants"
(Dalin (1957) informs that spiked rampion has double the Vitamin-C as carrots!)

Abbet notes also that the leaf rosettes are characterised by a pleasant nutty taste and that the flowers were eaten as sweets by young shepherds. Similarly, Picchi and Pieroni describe the taste as similar to hazelnut when cooked but more like radish when eaten raw. Others describe the leaves as having a sweet nutty taste. This is also my experience of the taste of young leaves of giant bellflower, *Campanula latifolia.*

A glowing review of the gourmet nature of spiked rampion is given on the Narrative Environments web site https://www.narrativeenvironments.ch/kultur/teufelskrallen-blutenknospen as follows: *"The light green buds can be processed both as a salad, as well as delicate vegetables fresh - but also preserves canned in vinegar. The young leaves are also edible and give a fine salad in spring with an almost sweet, nutty taste. Personally, I find the canned flower buds a pure feast for the eyes, which make each cold plate a special feature"*

Comprehensive German foraging book *"Essbare Wildpflanzen"* gives many suggestions for eating *Phyteuma species*: *"Simply lay the young leaves as a topping on a sandwich, as stewed or steamed vegetables, as purée, spinach, in veggie soup, goulash, enriching scrambled eggs, omelettes and pizzas. Young closed flowering shoots are used as asparagus, flower buds and flowers in salads, flowers are battered, also candied; roots cooked in the oven, in oil.* P. spicatum, P. betonicifolium, P. orbiculare *and* P. ovatum *are mentioned as well as* P. hemisphaericum *and* P. globulariifolium, *the latter two not docuemented used in the ethnobotanical studies".*

Couplan (1983) has a good description of the different uses and mentions *P. spicatum*, *ovatum*, *betonicifolium* and *orbiculare* as well as another species not previously mentioned, *Phyteuma scorzoneriifolium.*

Figure 6 Phyteuma spicatum subsp. spicatum *has naturalised in the great garden at Barony Rosendal (Baroniet Rosendal) which is an historic estate and manor house on the Hardangerfjord in Norway dating back to the 1650s (see also the video at http://www.edimentals.com/blog/?p=15680)*

Cultivation in Norway

The most successful of the half dozen *Phyteuma* species I've tried in my shady garden has been a plant received as *Phyteuma nigrum,* black rampion or (Norwegian) svartvadderot. It has much darker flowers than *Phyteuma spicatum*, sometimes almost black. Black flowered ornamentals are relatively seldom and highly desirable by some gardeners. Other black or nearly black flowered ornamentals include *Papaver somniferum* "Black Cloud", *Veratrum nigrum*, *Viola "Bowles Black", Alcea rosea*

Figure 7 The 2013 harvested roots of Phyteuma spicata *were of a good size and delicious! The same applies to* P. orbiculare *(bottom)*

"Black Beauty" and the dark form of *Allium wallichii.* Apart from toxic *Veratrum*, all can be classified as edimentals.[1] All, including *Phyteuma nigrum* are sometimes cultivated in Norwegian gardens. Note that they often only appear black in certain light conditions and are in reality better described as dark purple.

I originally planted *Phyteuma nigrum* from seed propagated plants in 2003. Since that time, plants have self-sowed freely. The original plants (upper pictures in Figure 1) were dark coloured. However, these original plants seem to have hybridised with other accessions of *Phyteuma spicatum* that I have in my garden (with white and blue flowers). There is now a mix of colours in the original spot I planted *nigrum*.

I tried *Phyteuma spicatum* as a root vegetable for the first time in 2013 and was struck by their pleasant sweet taste (Figure 7) and similarly smaller round-headed rampion *P. orbiculare.* As the plants weren't grown systematically under controlled conditions, it's difficult to judge how old the individual plants were. In late July 2018 I harvested all the plants on the area where *Phyteuma nigrum* had naturalised and hybridised and replanted and I was again impressed by the good size of roots and the resulting stir-fried dish was excellent (see Figure 8).

I believe that both spiked and round-headed rampion would be useful plants in an edible forest

[1] edible ornamentals

garden as it produces carbohydrates and edible leaves in shady conditions. However, like Jerusalem artichoke and yacon, plants in the bellflower family to which Phyteuma belongs, contain the diabetic friendly but poorly digestable carbohydrate inulin.

Figure 8 In 2018, the plants on the area where Phyteuma nigrum *had originally been planted and let to grow and self-seed without thinning was dug and replanted. The yield was pretty good in this shady part of the garden which only gets 2-3 hours of sunshine in midsummer. A tasty stir-fry was made with the roots together with* Allium carinatum "Pulchellum" *bulbs and tops of perennial buckwheat,* Fagopyrum acutatum *(bottom left)*

Figure 9 Phyteuma spicatum *seed heads and seeds*

Phyteuma: one of the best edientomentals

There is one more reason to grow rampions in our gardens and that is that they are also favourite plants for bees and other insects. When in flower in June, my black rampion is one of the best pollinator plants in my garden as Figure 13 indicates. One could considet that the most useful plants in a garden are those that not only provide food and beauty (***edimentals***) but those that additionally are insect friendly and we can call these plants ***edientomentals***!) Further perennials such as *Phyteuma* are more climate friendly than annuals (see Barstow, 2014).

Propagation and seed

Phyteuma species are best propagated by seed which requires stratification for 12 weeks in order to germinate. I have offered seed to members of Norwegian Seed Savers (KVANN) in the last couple of years.

Further accessions of *Phyteuma spicatum* have recently been ordered from the German seed bank (IPK Gatersleben), two wild accessions from Switzerland have been acquired by the Ringve Botanical Garden in Trondheim where I'm a visiting researcher. No botanical garden in Norway seems to have material from the wild Telemark populations nor the war spread populations in Finnmark, northern Norway. I am working to remedy this situation. It is planned to test different accessions in KVANN's (Norwegian Seed Savers) garden Væres Venner in Trondheim.

Figure 10 I saw Phyteuma spicatum *in the wild for the first time in St. Koloman, Austria in the Alps in June 2017 (see http://www.edimentals.com/blog/?p=11483); growing in open woodlands.* Phyteuma orbiculare *grew on the edge of the same woodland (right).*

*Figure 11 The unopened flower heads can also be used as a vegetable (from Wikimedia commons; see https://commons.wikimedia.org/wiki/File:Phyteuma_spicata_young_flowers_cooking.jpg). However, I suspect that this is actually a picture of similar looking Bath Asparagus flower heads (*Ornithogalum pyrenaicum*) which are also eaten in the Alps (see Barstow, 2014). The lower picture above shows bath asparagus (above) with common asparagus ready for the pot in the author's garden; top right are flowers of the (probable) P. nigrum x P. spicatum hybrid in my garden.*

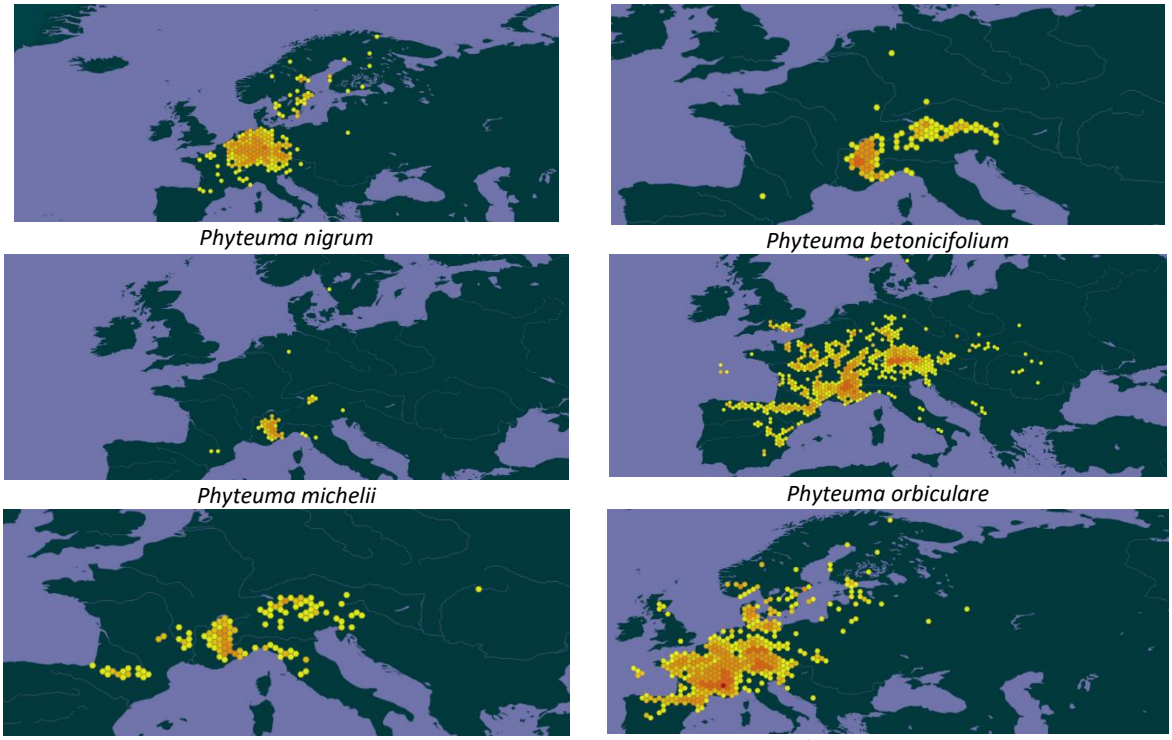

Figure 12 Distribution of various Phyteuma *species in Europe (from GBIF Secretariat 2017. GBIF Backbone Taxonomy. Checklist dataset https://doi.org/10.15468/39omei).*

Figure 13 Phyteuma nigrum *(and* spicatum*) are amongst my favourite so-called* ***edientomentals*** *(plants that are both edible, insect-friendly and ornamental); the plants are full of bees during the flowering season!*

Table 1 Traditional food use of wild species in the genus *Phyteuma* documented in ethnobotanical studies.

Botanical name	*Local name*	*Country*	*Plant part used*	*Use*	*Reference*
Phyteuma orbiculare		*Lower and central Valais, Switzerland*	*Flower petals and leaf rosettes*	*Salads, raw snacks*	*Abbet C et al. 2013*
Phyteuma spicatum		*Lower and central Valais, Switzerland*	*Flower and leaf rosettes*	*Salads, cooked vegetables*	*Abbet C et al. 2013*
Phyteuma spicatum		*Poland*	*Root*		*Łuczaj Ł 2010*
Phyteuma spicatum	*Lucca*	*Italy (Piedmont)*	*Young leaves and shoots*	*Soups*	*Bellia and Pieroni 2015*
Phyteuma orbiculare	*Zvonečník hlavatý*	*Czech Republic*	*Aerial parts*	*Raw in salads*	*Simkova and Polesny 2015*
Phyteuma spicatum	*Zvonečník klasnatý*	*Czech Republic*	*Aerial parts*	*Raw in salads*	*Simkova and Polesny 2015*
Phyteuma michelii	*Rampoun, garell*	*Italian Alps*	*Spring shoots and young inflorecences, roots*	*Consumed cooked, as spinach; chopped in soups; leaves and big roots in salads*	*Pieroni and Quave 2014 (Mattirolo 1918)*
Phyteuma orbiculare	*Rampoun, garell*	*Italian Alps*	*Spring shoots and young inflorecences, roots*	*Consumed cooked, as spinach; chopped in soups; leaves and big roots in salads*	*Pieroni and Quave 2014 (Mattirolo 1918)*
Phyteuma spicatum	*Rampoun, garell*	*Italian Alps*	*Spring shoots and young inflorecences, roots*	*Consumed cooked, as spinach; chopped in soups; leaves and big roots in salads*	*Pieroni and Quave 2014 (Mattirolo 1918)*
Phyteuma betonicifolium	*Chúc, Man del diaul*	*Alta Valtellina, Italy*	*Young aerial parts*	*Boiled and stir-fried in butter*	*Vitalini et al. 2015*

Phyteuma spp	*Viucca*	*Piedmont, Italy*	*Whorls and roots*	*Boiled*	
Phyteuma orbiculare	*Grif*	*Western Italian Alps*	*Aerial parts; roots*	*Aerial parts boiled and cooked in omelette; raw roots in salads?*	*Mattalia et al. 2013*
Phyteuma ovatum		*Tuscany, Italy*	*Aerial parts*	*Soup*	*Guarrera and Savo 2016*
Phyteuma spicatum		*Friuli, Italy*	*Leaves and flowers*	*Multi-species soup*	*Paoletti et al., 1995*
Phyteuma spicatum	*Zerwa kłosowa*	*Poland*	*Root*	*Eaten by child shepherds*	*Łuczaj and Szymanski 2007*
Phyteuma spicatum	*Zečica*	*Bosnia-Herzegovina*	*Young shoot*	*Cooked*	*Redzic 2006*
Phyteuma spicatum	*Raiponce en épi*	*Savoie, France*	*Roots*		*Couplan 1983*
Phyteuma ovatum		*Savoie, France*	*Roots*		*Couplan 1983*
Phyteuma spicatum (variety with black spots on the leaves)	*Cul-noir*	*Haute Savoie, France*	*Leaves*	*Cooked like spinach*	*Couplan 1983*
Asyneuma japonicum (syn Phyteuma japonicum)		*Japan*	*Young stems and leaves*	*With sesame dressing*	*Hashimoto 2007*

Table 2 Multi-species dishes in which rampion is documented used, both are from Italy

Zuppa di Magro (Guarrera and Savo, 2016)	Andryala integrifolia, Bellis perennis, Borago officinalis, Bunias erucago, Campanula rapunculus, Clinopodium nepeta, Daucus carota, Ficaria verna, Foeniculum vulgare, Helminthotheca echioides, Humulus lupulus,Knautia integrifolia,Laurus nobilis, Leontodon tuberosus,Malva sylvestris,Melilotus officinalis, Mentha aquatica, Mentha pulegium, Mentha suaveolens, Nasturtium officinale, Oenanthe pimpinelloides, Origanum vulgare, Papaver rhoeas, ***Phyteuma ovatum***, Primula vulgaris, Raphanus raphanistrum, Reichardia picroides, Rumex acetosa, Rumex acetosella, Sanguisorba minor, Satureja montana, Silene vulgaris, Sonchus oleraceus, Taraxacum campylodes, Thymus vulgaris, Urospermum dalechampii, Urtica dioica, marjoram
Pistic (multi-species soup from Friuli) (Paoletti et al., 1995)	Papaver rhoeas, Silene vulgaris, Valerianella locusta, Aristolochia pallida, Aruncus dioicus, Bellis perennis, Campanula trachelium, Capsella bursa-pastoris, Cardamine hirsuta, Carum carvi, Cirsium oleraceum, Ficaria verna, Filipendula vulgaris, Galium mollugo, Humulus lupulus, Hypochoeris radicata, Hypochoeris maculata, Leontodon hispidus, Ornithogalum pyrenaicum, ***Phyteuma spicatum,*** Ranunculus repens ,Rubus ulmifolius, Rumex obtusifolius, Salvia pratensis, Silene sp., Sonchus sp., Tragopogon pratensis, Urtica dioica, Veronica beccabunga, Viola mirabilis

Acknowledgements

Thanks to Norwegian Landbruksdirektoratet who supported my project «Kartlegging – innsamling-dokumentasjon og vurdering av genetisk mangfold av spiselige planter i Norge» (2016-2018).

References

Abbet C et al. 2012 Chemical constituents of *Phyteuma orbiculare*, a Forgotten Food Plant of Valais.. Proc. 1st IS on Med., Arom. & Nutraceut. Pl. Mountainous Areas (Eds.: C. Carlen et al.) Acta Hort. 955, pp72-78

Abbet C et al. 2013 Comprehensive analysis of *Phyteuma orbiculare* L., a wild Alpine food plant. Food Chemistry Vol 136, pp595-603

Alm T, M Piirainen and A Often 2000 Krigsspredte arter i Sør-Varanger, Finnmark: vadderot *Phyteuma spicatum* og svartvadderot *P. nigrum*. Blyttia, Vol58, pp46-54

Balvoll G og G Weisæth 1994 Horticultura: Norwegian gardening book from 1694 by Trondheim's town gardener Christian Gartner. Landbruksforlaget

Bellia G and A. Pieroni 2015 Isolated, but transnational: the glocal nature of Waldensian ethnobotany, Western Alps, NW Italy. J. Ethnobiology and Ethnomedicine Vol11, pp19

Couplan F 1983 Le Régal Végétal: Plantes Sauvages Comestibles, Debard

Dalin O 1957 Vadderot, *Phyteuma spicatum*. Naturen Vol81, pp310- 319

Gerard J 1597 *The Herball or Generall Historie of Plantes*. London

Fleischhauer SG et al. 2013 *Enzyklopädie essbare Wildpflanzen. 2000 Pflanzen Mitteleuropas. Bestimmung, Sammeltipps, Inhaltsstoffe, Heilwirkung, Verwendung in der Küche.* AT Verlag.

Ghirardini MP et al. 2007 The importance of a taste. A comparative study on wild food plant consumption in twenty-one local communities in Italy. J. Ethnobiology and Ethnomedicine. Vol3, 14pp

Hashimoto I 2007 *Wild plants lexicon, Japan* ISBN 4760131876

Łuczaj Ł 2010 Plant identification credibility in ethnobotany: a closer look at Polish ethnographic stu dies. J. Ethnobiology and Ethnomedicine Vol6, pp16

Łuczaj Ł and W Szymanski 2007 'Wild vascular plants gathered for consumption in the Polish countryside: a review. J. Ethnobiology and Ethnomedicine Vol3, pp17-39

Mattalia G, CL Quave and A Pieroni 2013 Traditional uses of wild food and medicinal plants among Brigasc, Kye, and Provencal communities on the Western Italian Alps. Genet Resour Crop Evol Vol 60, pp587–603

Mattirolo O 1918 *Phytoalimurgia Pedemontana ossia Censimento delle Specie vegetali alimentari della Flora spontanea del Piemonte*. Turin: Vincenzo Bona.

Paoletti MG, AL Dreon and GG Lorenzoni 1995 Pistic: traditional food from western Friuli, N.E. Italy. Econ. Bot. Vol49, pp26-30

Picchi G and A Pieroni 2005 *Atlante dei prodotti tipici*. Le erbe.Istituto Nazionale di Sociologia Rurale, RAI, Agra ed., Roma

Pieroni A and C.L. Quave 2014 Pioneering Ethnobotanists in Italy: Early studies on folk plant uses in Piedmont (1880–1960). In Pioneers in European Ethnobiology (Ed. Svanberg I and Ł Łuczaj). Uppsala University

Redzic SJ 2006 Wild Edible Plants and Their Traditional Use in the Human Nutrition in Bosnia-Herzegovina. Ecology of Food and Nutrition, Vol45, pp189-232

Rivera D, C Obón, M Heinrich, C Inocencio, A Verde and J Fajardo 2006 Gathered Mediterranean Food Plants – Ethnobotanical Investigations and Historical Development. In: Local Mediterranean Food Plants and Nutraceuticals. Heinrich M, Müller WE, Galli C (eds). Forum Nutr. Basel, Karger, vol 59, pp18-74

Simkova K and Z Polesny 2015 Ethnobotanical review of wild edible plants used in the Czech Republic. J. Applied Botany and Food Quality. Vol88, pp49-67

Wheeler BR and MJ Hutchings 2002 *Phyteuma spicatum* L. J. Ecology Vol. 90, pp581-591

Vilmorin-Andrieux & co 1920 *The Vegetable Garden.* E.P. Dutton & Co.

Vitalini S., C Puricelli, I Mikerezi and M Iriti 2015 Plants, people and traditions: ethnobotanical survey in the Lombard Stelvio National Park and neighbouring areas (Central Alps, Italy). J. Ethnopharmacology Vol 173, pp435–458