

On the distribution of *Viola kosaninii* in the Balkan Peninsula

Rozšíření druhu *Viola kosaninii* na Balkánském poloostrově

Vladimir Stevanović¹ & Kit Tan²

Dedicated to the memory of Josef Holub

¹Botanical Institute and Garden, University of Belgrade, Takovska 43, 11000 Belgrade, Yugoslavia, e-mail: vstev@EUnet.yu; ²Botanical Institute, University of Copenhagen, Gothersgade 140, DK-1123, Copenhagen K, Denmark, e-mail: kitt@bot.ku.dk

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The distribution of *Viola* L. sect. *Delphiniopsis* W. Becker in the Balkan Peninsula is described and discussed, with emphasis on the recent discovery of *V. kosaninii* (Degen) Hayek in northern Greece which represents the southernmost limit of its range. An extensive list of material of this species is provided.

Key words: *Viola* sect. *Delphiniopsis*, *Violaceae*, Balkan and Iberian peninsulas, distribution, endemics, Greece, Tertiary relicts

Introduction

The exceptionally rich and interesting endemic Balkan flora holds some taxonomically isolated, Tertiary relicts of particular interest. Such relicts (palaeoendemics) are fairly numerous in the Balkan Peninsula and are to be expected in view of the “refugial” character of the whole area. Many of them are species which are monotypic within their respective sections or genera. Their closest relatives are either absent from the Balkan flora or are disjunct in the more distant regions of the Mediterranean particularly in Europe. Interesting disjunctions within the sections of certain genera indicate phytogeographical links between the Balkan and Iberian peninsulas. Examples of such Balkan-Iberian disjunctions within genera are not common and when they occur they pose interesting challenges to botanists on various aspects, e.g. origin, evolution, speciation and distribution. Familiar examples of such disjunctions include *Ramonda serbica* Pančić and *R. nathaliae* Pančić et Petrović in the Balkans with their nearest relative *R. myconi* (L.) Reichenb. in the Pyrénées, *Euphorbia capitulata* Reichenb. and *E. chamaebuxus* Bernard ex Gren., *Asperula doerfleri* Wettst. and *A. hirta* Ramond, *Digitalis viridiflora* Lindley and *D. parviflora* Jacq., *Saxifraga ferdinandi-coburgi* J. Kellerer et Sund. and *S. aretioides* Lapeyr. Less familiar examples belong to the woody members of *Thymus* and *Halimium*. We wish now to discuss the distribution of members of *Viola* L. sect. *Delphiniopsis* W. Becker.

The Section *Delphiniopsis*

Within the Balkans there are two species, *V. delphinantha* Boiss. and *V. kosaninii* (Degen) Hayek. The third member of the section is *V. cazortensis* Gand. which is restricted to the

southeastern part of the Iberian peninsula. The violas of sect. *Delphiniopsis* are characterized by a dwarf, suffruticose habit, small and narrow to linear-lanceolate leaves and unusual long-spurred flowers. They are clearly distinct from all other *Viola* species in the world.

Delphinoid violets have always been intriguing to botanists because of their endemic and relictual nature. It was long considered that their distribution was well known. Recent investigations, however, show this not to be the case and there have been confusing and contradictory statements in literature concerning their distribution in the Balkans (Hayek 1927, Contandriopoulos & Favarger 1975).

Background history of exploration and distribution

The first species described in *Viola* sect. *Delphiniopsis* was *V. delphinantha* Boiss. based on material collected independently by Aucher-Eloy (G, G-Boissier, W, WU) and Frivaldszky (G-Boissier, W) from Mt Athos in northeastern Greece (Boissier 1843: 7, 1867: 453). Frivaldszky's material was distributed as *Delphinium nanum* DC. (fide Raus 1986: 639). An additional species belonging to this section, *V. cazorlensis* Gand., was discovered in the Cazorla mountains nearly 60 years later, in the province of Jaén in southeastern Spain. A third taxon, *V. delphinantha* subsp. *kosaninii* Degen, was described nine years later in 1911 based on material collected by Košanin on Mt Jakupica in FYR Macedonia. This was raised to species rank by Hayek in 1917. *V. delphinantha* has pinkish or reddish-lilac flowers with an often entire lower petal and 16–18 mm long, narrow spur. It grows in limestone rock crevices, mainly in the mountains of northern Greece at altitudes of (600–) 1500–2500 m, flowering from May to August according to altitude. The distribution in southern Bulgaria and Greece, including the outlying station on Mt Chelmos in the Peloponnese, southern Greece, is given in Fig. 1. Its occurrence in northeastern Albania in the locality indicated by Contandriopoulos & Favarger (1975: 187) has not been confirmed.

Viola kosaninii differs from *V. delphinantha* by its paler pink flowers with emarginate lower petal and much shorter spur, 8–10 (–11) mm in length. From literature and herbarium material available we know that it occurs in central FYR Macedonia, northern and northeastern Albania. It is disjunct in all three parts of its range (Fig. 1). The largest populations occur in FYR Macedonia in the vicinity of Mt Jakupica and in the ravines and gorges of the tributaries to the right of the Treska river. The linear distance between the most disjunct populations in Albania and FYR Macedonia is c. 80–90 km. In 1911, Košanin had stated that Mt Jakupica, then the only known locality of *V. kosaninii*, was the northernmost limit of sect. *Delphiniopsis*. With the more recent discovery of the species in the Albanian part of Mt Prokletije (Rapša), the limit shifted substantially by several degrees of latitude to 42°33' N.

Published information on the distribution of members of sect. *Delphiniopsis* in the Balkans is somewhat unreliable and contradictory. Hayek, for instance, stated that *V. delphinantha* occurs in Macedonia and *V. kosaninii* in Montenegro and Albania (Hayek 1925: 508). It is true that *V. kosaninii* occurs in Albania but it does not occur in Montenegro. The locality of Rapša given by Hayek (1924: 129) is at the extreme border of Albania and Montenegro. The locus classicus of *V. kosaninii* lies in Macedonia.

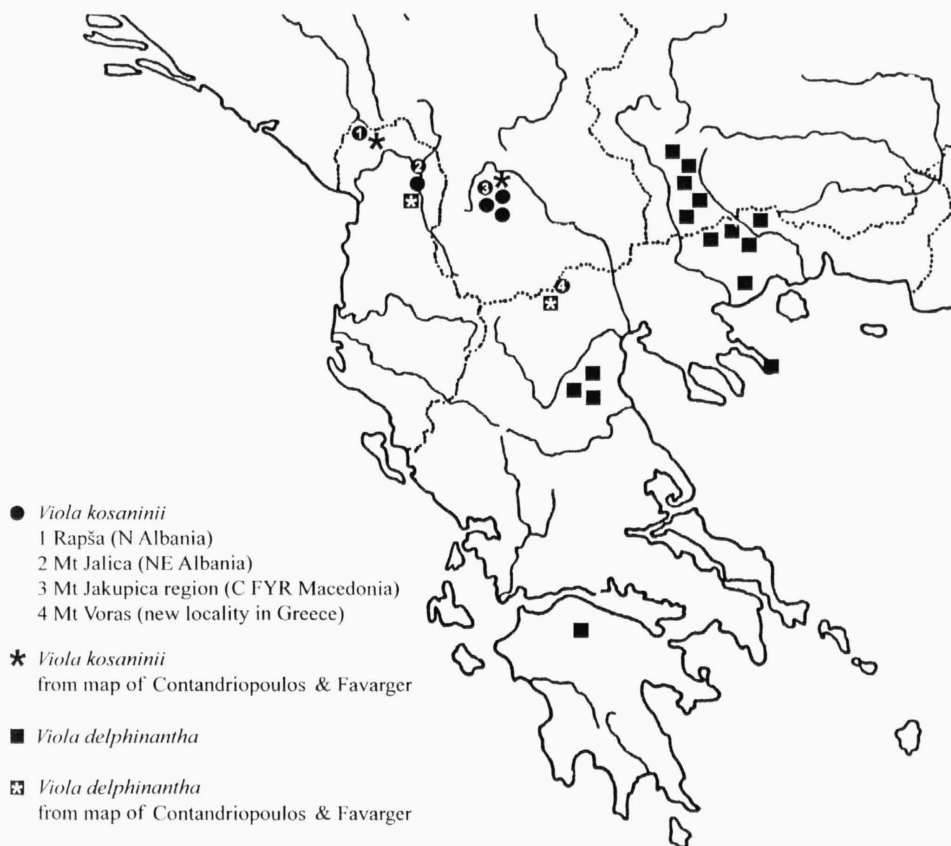


Fig. 1. – Map of Balkans showing total distribution of *Viola kosaninii* and *V. delphinantha*.

According to Hayek's phytogeographical division of the Balkans, Macedonia encompassed FYR Macedonia, southwestern Bulgaria and northern Greece, including Athos. Hayek's failure to mention that *V. delphinantha* also occurs outside Macedonia is strange because the species had already been recorded by Boissier (1867) and Halácsy (1901, 1908) from Thessaly (Mt Olimbos) and southern Greece (Mt Chelmos). The distribution map sketched by Contandriopoulos & Favarger (1975: 186–187) indicates two localities for *V. delphinantha*, one in northeastern Albania, the other in northern Greece. However, there are no references to herbarium vouchers or to published literature. It is likely that these are localities for *V. kosaninii* rather than for *V. delphinantha* and the one in northeastern Albania actually coincides with the known locality of *V. kosaninii* on Mt Jalica. The other locality for *V. delphinantha* in northern Greece corresponds approximately to Mt Vitsi (Vernon), to the west of Mt Voras. Until now there is no evidence that any member of sect. *Delphiniopsis* is known from this or other nearby localities in Greece, Albania and FYR Macedonia.

Thus it was with some interest that we recorded the presence of *V. kosaninii*, collected by one of us (KT) from the vicinity of Mt Voras in northern Greece (Tan Kit et al. 1998). The plants were growing in crevices of 30 m tall, vertical limestone cliffs at an altitude of 680 m, and flowering profusely in mid-May. This Greek locality extends the southernmost limit of the known species' range, representing a new disjunction with a linear distance of c. 100 km away from the closest locality on Mt Jakupica in central FYR Macedonia. This discovery makes it more plausible that the Contandriopoulos and Favarger's record is erroneous and refers to *V. kosaninii* rather than to *V. delphinantha*.

Ecology of *Viola kosaninii*

V. kosaninii is a true chasmophyte, inhabiting limestone and dolomitic cliffs at altitudes of 600 to 2500 m. We have never found it in meadows as stated by Valentine et al. (1968). Its occurrence in the gorges of the Treska river and its tributaries and also on Mt Jakupica indicate habitat similarities with some Tertiary relicts such as *Ramonda nathaliae* and indeed, on northeasterly exposed rocks, *V. kosaninii* grows together with *R. nathaliae*. The gorges on the lower slopes of Mt Jakupica house many relict species, some endemic in nature. Among them may be mentioned *Ramonda nathaliae*, *Micromeria cristata*, *Saxifraga scardica*, *S. grisebachii*, *S. frederici-augusti*, *Asperula aristata*, *Hieracium pannosum*, *Campanula versicolor*, *Seseli rigidum*, *Draba lasiocarpa*, etc. Horvat (1936) described such a community as *Micromerieto-Violetum kosaninii* (Association *Viola kosaninii*-*Micromeria cristata* Horvat 1936). In the foothills of Voras, west of Orma in northern Greece, *V. kosaninii* was found in shaded rock crevices in a sheltered gorge together with the following species: *Ramonda nathaliae*, *Edraianthus graminifolius*, *Achillea ageratifolia*, *Saxifraga grisebachii* and *Campanula versicolor*. From the montane region of Mt Jakupica, Košanin (1911a) lists in addition, *Potentilla apennina*, *Saxifraga frederici-augusti*, *S. coriophylla*, *S. paniculata*, *S. adscendens*, *Saponaria bellidifolia*, *Anthyllis aurea*, *Daphne oleoides*, *Pedicularis orthantha*, *Globularia bellidifolia*, *Thymus boissieri* and *Asperula doerfleri*.

Conclusion

V. kosaninii has been recorded in several localities, remote from each other, in Albania and FYR Macedonia. Its recent discovery on Mt Voras is a new disjunction and represents the southernmost limit of its distribution. It is also the first record for Greece. *V. delphinantha* is also discontinuously distributed in southwestern Bulgaria [Ali Botuš (Mt Orvilos)], northeastern Greece (Mts Pangeon, Falakron), the Athos peninsula (Mt Athos), northcentral Greece (Mt Olimbos) and in the Peloponnese (Mt Chelmos) but its distribution is to the northcentral and northeast. *V. kosaninii* has a more northwesterly distribution. Both species represent ancient Tertiary Mediterranean mountain taxa. The existence of *V. cazorensis* (the third species in sect. *Delphiniopsis*) in the Iberian Peninsula indicates an ancient link between the Balkan and Iberian floras which probably had a common "centre" on Gondwanaland during the Miocene upheaval and stage of differentiation of the Mediterranean basin.

Known localities for *Viola kosaninii*: **Fyr Macedonia**: UTM: EM 21: Gorge of rivulet Oča, on the left tributary of the Treska river, western slopes of Karadžica mountain towards Vražija vodenica, Feov dol, 27 October 1934, leg./det. H. Em (BEOU); UTM: EM 31: Mt Jakupica, northeastern steep slopes of stony mountain ridge, growing together with *Ramonda nathaliae*, 1800–2150 m, N. Košanin (1911a: 238, 1911b: 115); Mt Jakupica, on mountain crest above 2000 m, 30 June 1910, leg./det. N. Košanin (BEOU); UTM: EM 21–31: Mt Jakupica, in chasmophytic communities together with *Ramonda nathaliae*, on limestone and dolomitic rocks, 700–1900 m, ann. 1967, leg. H. Em; UTM: EM 12: Kapina: Perunika (leg. Oehm); Kapina: Leska (leg. Oehm & Lindtner); gorge of the rivulet Oča, on the right tributary of the Treska river, western slopes of Karadžica mountain towards Kapina, leg./det. H. Em (BEO); gorge of rivulet Oča, left tributary of the Treska river, western slopes of Karadžica mountain towards Vražija vodenica, c. 750 m, 9 May 1937, leg./det. V. Lindtner (BEO); two records from the same locality, July 1938, leg./det. T. Soška (BEO); c. 600 m, ann. 1936, leg./det. V. Lindtner (BEO); UTM: EM 22: Treska river basin, Pusta Breznica, limestone crevices in *Pinus pallasiana* forest, 28 August 1939, leg. P. Černjavski (BEO); Treska river basin, supra loc. Kapina, in saxosis calcareis, c. 800 m, 7 August 1945, leg./det. O. Grebenščikov (BEO); UTM: EM 12–22: Treska river basin, Poreče region, between Kula and Kapina, limestone rocks, growing together with *Ramonda nathaliae*, *Saxifraga grisebachii*, etc., c. 800 m, 10 May 1937, leg./det. V. Lindtner (BEO). **Albania**: UTM: DM 54: An Felsen am Sudwestabhang der Gaelic Looms, zirka 1600–1700 m, Zerny (Hayek 1924: 134); UTM: DM 55: M. Djalica Ljums, ad latera rupium faucis "Škala Bičajt", 800 m, rarissima, leg. Kummerle (Jávorka et al. 1926: 250–251) sub nom. *Viola delphinantha* Boiss. subsp. *Kosaninii* Degen; Mt Galica, Scala Bicaj, district of Kukes, 800–1200 m, (Herb. Tirana); UTM: CN 80: An feuchten Felsen (nur and den Nordwänden) in der Schlucht bei Rapša vereinzelt (Hayek 1917: 129); gorge of the Rapša, 800 m, 1 August 1929, leg. Br. Schütt /det. N. Košanin (BEOU); Cemi i Selces, north of Skutari near village of Vermosh (A. Mullaj, pers. comm. 1999); Malcija, an feuchten, schattigen Felswänden in der Schlucht von Rapša, c. 750 m, 11 May 1914, I. Dörfler 116 (Plants Albanie et Dalmatie, Albanisch-montenegrischen Grenzgebiete i Jahr 1914). **Greece**: UTM: EL 84: Nomos Pella, Eparchia Almopia: c. 2 km west of Orma, foothills of the Voras range, shady limestone cliffs, c. 680 m, 13 May 1993, Kit Tan & G. Vold 12910 (herb. Kit Tan, herb. G. Sfikas).

Souhrn

V práci je podrobně popsáno a diskutováno rozšíření druhů rodu *Viola* L. ze sekce *Delphiniopsis* W. Becker s ohledem na nedávné objevení *V. kosaninii* (Degen) Hayek v severním Řecku. Lokalita *V. kosaninii* se v severním Řecku vyskytuje na jižní hranici areálu. Vzhledem k významu výskytu druhu je podrobně popsáno rozšíření druhu v Albánii, Makedonii a Řecku.

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