

Diversity of the vascular flora of Mt Šljivovički Vis in East Serbia

Marina Jušković¹, Vladimir Randelović¹, Bojan Zlatković¹ & Vladimir Stevanović²

¹ Department of Biology and Ecology, Faculty of Sciences and Mathematics, University of Niš, 18000 Niš, Serbia, e-mail: marinaju@pmf.ni.ac.rs (corresponding author)

² Institute of Botany and Botanical Garden, Faculty of Biology, University of Belgrade, 11000 Belgrade, Serbia

Received: May 10, 2010 ▷ Accepted: November 22, 2010

Abstract. The flora of Mt Šljivovički Vis comprises 811 taxa (species and subspecies) within the framework of 376 genera and 81 families of vascular plants. The greatest number of taxa belongs to the families *Compositae*, *Leguminosae* and *Gramineae*. From a phytogeographic viewpoint, the dominant distribution type is Mediterranean-Submediterranean. The second most common type is Central European, while the Mediterranean-Submediterranean-Pontian type is the third best-represented distribution type in the flora of Mt Šljivovički Vis. The range of life forms is dominated by hemicryptophytes, therophytes and geophytes. The endemics of the Balkan Peninsula are represented by 25 taxa. The area of Mt Šljivovički Vis is inhabited by a large number of important plant species, so it was included in the proposed list of botanically important areas in the Republic of Serbia.

Kew words: Balkan Peninsula, East Serbia, flora, floristic analysis, Šljivovički Vis

Introduction

The region of East Serbia between Niš and Pirot, including the investigated area, was recognized even in the mid-19th century as one of the richest parts of Serbia from a floristic viewpoint. This fact was primarily based on the pioneer studies of the flora of this region by Pančić (1874, 1884), Petrović (1882, 1885) and particularly by Adamović (1908, 1909a, b, 1910a, b, 1911a, b), and was supported subsequently by the more recent papers of various authors (Randelović & al. 2002, 2006). In spite of this fact, some very important parts of that territory, for example, the inaccessible distant limestone peaks and cliffs, have remained so far out of the scope of botanical studies and are poorly known from floristic, phytocoenological and phytogeographic viewpoints. Certain mountain massifs, including Mt Šljivovički Vis, are still insufficiently explored in these aspects.

Mt Šljivovički Vis is situated in the central part of the Balkan Peninsula, in East Serbia, in the area between the valley of river Nišava and the massif of Mt Suva Planina (Fig. 1). This mountain chain of medium height in-

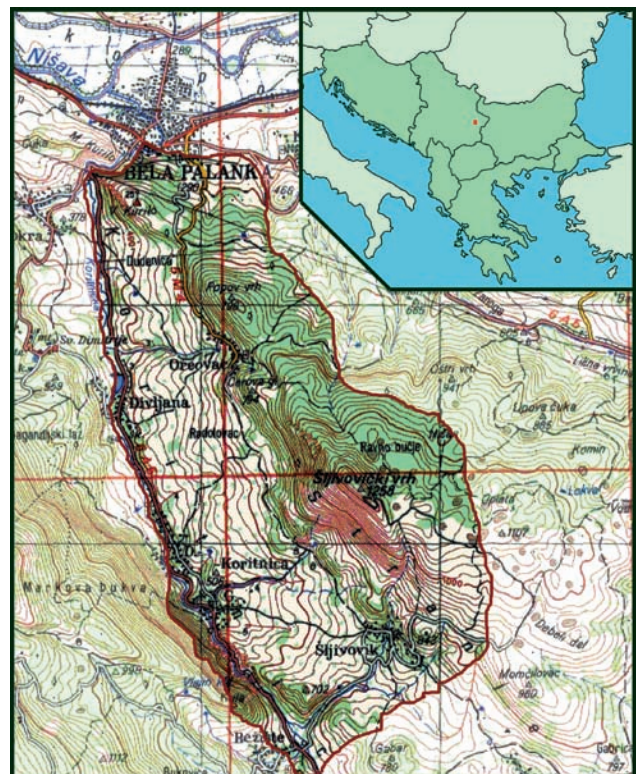


Fig. 1. Topographic map of Mt Šljivovički Vis.

cludes: Malo Kurilo (388 m), Veliko Kurilo (545 m), Popov Vrh (798 m), and Šljivovički Vrh (1256 m). The ridge of Mt Šljivovički Vis, stretching in the northwest-southeast direction, connects Mt Suva Planina with Mt Belava and separates the valleys of Bela Palanka (river Nišava) and river Koritnica. The geomorphologic diversity, extreme climatic fluctuations from the foothills to the top of the mountain, and ecological diversity of habitats have ensured the development of a very varied flora and vegetation on Mt Šljivovički Vis.

As the floristic richness and diversity of the East Serbian flora are well-known, it was assumed that Mt Šljivovički Vis could also be interesting and rich from a floristic viewpoint. This opinion was supported by the geographical position of the mountain in the Western Moesian Province within the Balkan Floristic Subregion and the Central European Floristic Region (Stevanović 1992a). The limestone-based, eroded slopes of Mt Šljivovički Vis characteristic for this part of Serbia provide a habitat for numerous Pontian and Submediterranean plants. This paper is only a brief presentation of the complex chorological range of the varied flora of this area. On the other hand, the area of Mt Šljivovički Vis is presented in literature by a negligibly small number of papers (Randelović & al. 2002, 2006).

Material and methods

Floristic investigation of Mt Šljivovički Vis was performed in the period 2002–2006. The herbarium specimens are deposited at the Institute of Botany and Botanical Garden Faculty of Biology, University of Belgrade (BEOU) and the Herbarium Moesiacum Niš, Department of Biology and Ecology, Faculty of Sciences, University of Niš, Serbia (HMN).

Identification of the collected plants was made according to *Flora Europaea* (Tutin & al. 1968–1980) and the regional Floras relevant for the investigated area, the *Flora of Serbia* (Josifović 1970–1977; Sarić & Diklić 1986; Sarić 1992) and the *Flora of Bulgaria* (Velenovský 1891; Jordanov 1963–1979; Velčev 1982–1989; Kožuharov 1995). The nomenclature follows the *Med-Checklist* (Greuter & al. 1984, 1986, 1989), *Flora Europaea* (Tutin & al. 1968–1980), as well as some new data sources such as Euro+Med Plantbase (<http://ww2.bg-bm.org/EuroPlusMed/>) and International Organization for Plant Information (<http://plantnet.rb-gsyd.nsw.gov.au/iopi/iopihome.htm>).

Classification of the floristic elements is done according to Meusel & al. (1965, 1978), Horvat & al. (1974), and Meusel & Jäger (1992), and modified for the territory of Serbia by Stevanović (1992a).

For the attribution of life forms, the criteria proposed by Raunkiaer (1934), Mueller-Dombois & Ellenberg (1974) and Stevanović (1992b) were followed.

Results and discussion

Taxonomic structure

The vascular flora of Mt Šljivovički Vis includes 811 plant taxa at the species and subspecies level. They belong to 376 genera and 81 families of vascular plants. The phylum *Magnoliophyta* is represented by 802 taxa, or 98.9% of the total flora. The class *Magnoliopsida* is the most numerous, with 673 taxa (about 83% of the total number of species). The class *Liliopsida* is represented by 129 taxa (15.9% of the total number of species).

The taxonomic analysis of the flora shows that *Compositae* is the family with the largest number of species (86 species), followed by the families *Leguminosae* (75) and *Gramineae* (62) (Fig. 2). The dominant

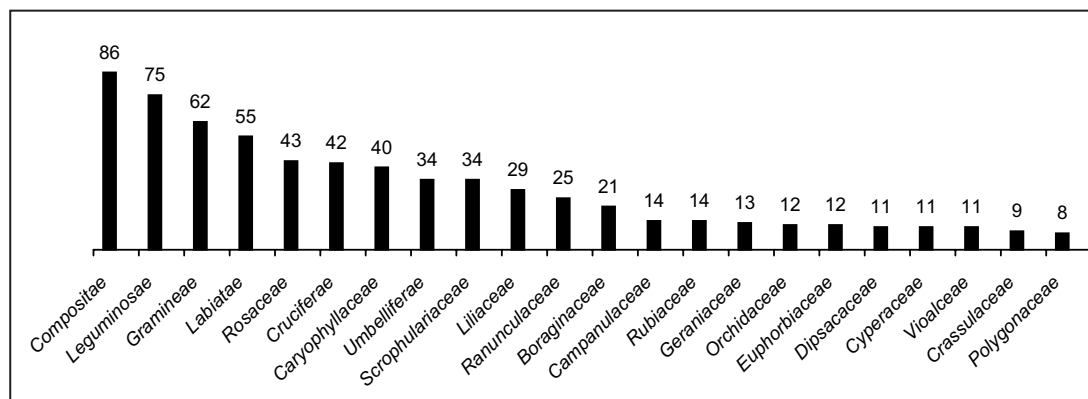


Fig. 2. Family affiliation of taxa of the flora of Mt Šljivovički Vis.

genera in the flora of Mt Šljivovički Vis are *Trifolium* (13 species), *Veronica* (13), *Lathyrus* (13), and *Vicia* (12 species).

The taxonomic analysis of the flora of Mt Šljivovički Vis is based on the best-represented families (according to the number of genera and species) and the best-represented genera (according to the number of species). These results were further compared with the literature sources on floras of the Balkan Peninsula, Serbia and Mt Suva Planina (Turrill 1929; Stevanović & al. 1995; Randelović & al. 2000).

A comparison of the deviations of best-represented families (presented in percentage) from the family ranges in the floras of Mt Suva Planina, Serbia and the Balkan Peninsula (Fig. 3) shows that the floristic range of Mt Šljivovički Vis differs from the floristic ranges of Serbia and the Balkan Peninsula. The greatest level of similarity in taxonomic structure was recorded between the floras of Mt Suva Planina and Mt Šljivovički Vis, as a consequence of the natu-

ral and historic, physical and geographic and ecological characteristics of these two mountains. This is an indication that the process of florogenesis in these two areas is developed under similar or perhaps even identical conditions.

The family range in the flora of Mt Šljivovički Vis shows certain differences from the family ranges in the floras of Serbia and the Balkan Peninsula (Fig. 3). The flora of the Balkans is dominated by Mediterranean floristic and florogenetic influences, while the flora of Serbia is primarily characterized by Central European influences, followed by Alpine and Pontian ones. Therefore, the structural differences at family level are correlated with the geographic position, orographic features and history of the flora of Serbia.

The greatest deviations in percentage from the floras of Serbia and the Balkan Peninsula exist in the families *Compositae* and *Cyperaceae*. The poorer representation of the family *Compositae* in the area of Mt Šljivovički Vis is explained by the insufficient level of research into the family *Compositae*, particularly of the genus *Hieracium* as the most taxon-rich genus in the Balkans. The family *Cyperaceae* is poorly represented, indicating the insignificantly present Boreal influence on the florogenesis of that area. The suggested reason is an absence of appropriate habitats, mostly inhabited by species from this family.

Chorological analysis

According to the classification proposed by Stevanović (1992a), the vascular flora of Mt Šljivovički Vis was divided into 10 distribution types (Fig. 4) and within them into distribution subtypes and floristic elements.

The analysis of the entire floristic range of Mt Šljivovički Vis has shown that the most species-rich

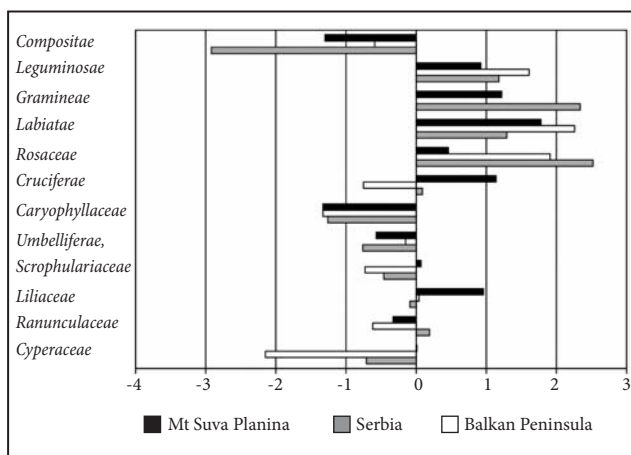


Fig. 3. Deviation of the most common families in the flora of Mt Šljivovički Vis different from the floristic range of Mt Suva Planina, Serbia and the Balkan Peninsula.

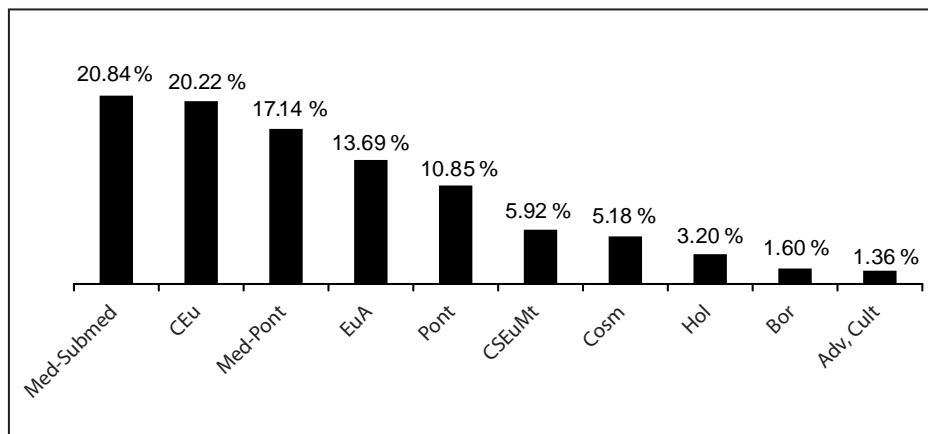


Fig. 4. Chorological spectrum of the flora of Mt Šljivovički Vis: **Med-Submed** – Mediterranean-Submediterranean; **CEu** – Central European; **Med-Pont** – Mediterranean-Pontian; **EuA** – Euroasian; **Pont** – Pontian; **CSEuMt** – Central-South-European Mountain; **Cosm** – Cosmopolitan; **Hol** – Holarctic; **Bor** – Boreal; **Adv, Cult** – Adventive and cultivated plants.

group is the Mediterranean-Submediterranean distribution type, with 169 species (20.8 %) (Fig. 4). The high representation of species of the Mediterranean-Submediterranean distribution type is explained by the presence of large areas of thermophilous stony ground on Mt Šljivovički Vis, originating from the long-term anthropogenic degradation of potential vegetation. Such thermophilous and xerophilous habitats provide the necessary conditions for the spread and colonization of xerothermophilous plants. The present range shows that the Mediterranean-Submediterranean floristic chorion has a strong impact on the genesis of the flora in this area.

The second best-represented distribution type in the studied area's flora is the Central European distribution type with 164 species (20.2 %) (Fig. 4). The high percentage of the Central European plants may be connected to the availability of suitable habitats, such as the mesophilous and meso-xerophilous forests and their derivatives (mesophilous meadows).

The Mediterranean-Submediterranean-Pontian distribution type with 139 species (17.1 %) (Fig. 4) is the third best-represented distribution type in the flora of Mt Šljivovički Vis. Species belonging to this distribution type inhabit the Mediterranean-Submediterranean-Pontian region and the dry continental, steppe and forest-steppe areas of Eurasia.

The Eurasian distribution type participates in the floristic range of Mt Šljivovički Vis with 13.7 % (111 species). The pronounced presence of Eurasian plants could be explained by their broad ecological valence, enabling them to survive in the most varied types of habitats, mostly developed through degradation of forests. The Eurasian species reach their optimal development in the vegetation of oak forests, hillside meadows, mountain tops, on limestone, and within the ruderal vegetation of the studied area.

The plants belonging to the Pontian distribution type claim 88 species (10.9 %) in the flora of Mt Šljivovički Vis. The presence of these plants indicates some very strong steppe influences, which is characteristic in particular for the limestone terrains of East Serbia. A further increase of this number of species by a percentage of plants with a transitional type of distribution (species of the Mediterranean-Submediterranean-Pontian distribution type) may prompt the conclusion that the florogenesis of this area is caused by the strong influences of the Pontian floristic region, but also reflects some prominent human activities.

The Central-South European mountain distribution type is represented by 48 species (5.9 %). The presence of these species may be explained by the geographic position and the (averagely) small altitude of Mt Šljivovički Vis, situated between Mt Suva Planina and Mt Belava. There was a pronouncedly high presence of species with South European distribution, with preference for a limestone substrate and relatively warm, open mountain habitats. In contrast to them, the typical Central European mountain species were participating in the structure of the flora of Mt Šljivovički Vis in insignificant numbers, as these plants inhabit colder high-mountain habitats. Among the species of the Central-South European mountain distribution type there was a significant number of endemic and subendemic representatives of the flora.

The Cosmopolitan distribution type was represented by 42 species (5.2 %) and the Holarctic distribution type by 26 species (3.2 %). Their presence indicated varied habitat types in the area, suitable for the development of elements with a broad ecological valence and wide distribution. These were usually secondary habitats formed by human activity.

The Boreal distribution type was represented by 13 taxa (1.6 %) in the study area. The poor representation of the boreal taxa was to be expected on Mt Šljivovički Vis, due to the lack of adequate habitats for the development of plants characteristic of the cold and humid northern regions. The boreal species were recorded within the beech forests and in the more humid sites in the higher region of the studied area.

The adventive and cultivated plants accounted for 1.4 % (11 species) and represented a conditional chorological category. Their presence indicated anthropogenic influence in the human settlements and along roadsides in the studied area.

Endemic flora of Mt Šljivovički Vis

The flora of Mt Šljivovički Vis included 25 endemic taxa with ranges limited to the territory of the Balkan Peninsula. According to their phytogeographic position, the endemic taxa of Mt Šljivovički Vis were classified into four distribution types: Central European, Mediterranean-Submediterranean, Pontian and Central-South European mountain types (including two distribution subtypes: South European mountain and Central European mountain) (Table 1). The phytogeographic analysis has shown that most endemic taxa belonged to the Mediterranean-Submediterranean

Table 1. The list of Balkan endemic taxa of the Mt Šljivovički Vis and type of endemics.

Middle European distribution type	
Balkan distribution group	
<i>Acer intermedium</i> Pančić	W-E dinar-balk (W-E moes-N sc-pind) (temp-submerid)
<i>Fagus moesiaca</i> (K. Maly) Czezcott	E dinar-balk (temp-submerid)
Mediterranean-submediterranean distribution type	
Balkan distribution group	
<i>Scabiosa fumarioides</i> Vis. & Pančić	balk (moes-N sc-pind)
<i>Hypericum rumeliacum</i> Boiss.	balk (moes-sc-pind)
<i>Orobancha esulae</i> Pančić	balk-mac-thrac
<i>Trifolium dalmaticum</i> Vis.	illyr-balk
<i>Thymus praecox</i> Opiz subsp. <i>jankae</i> (Čelak.) J alas	illyr-balk
<i>Salvia amplexicaulis</i> Lam.	SE illyr-balk
<i>Acanthus balcanicus</i> Heywood & I. Richardson	E illyr-balk-S dac
<i>Lamium bifidum</i> Cirillo subsp. <i>balcanicum</i> Velen.	E illyr-sc-pind-moes
<i>Centaurea chrysolepis</i> Vis.	illyr-sc-pind-moes
<i>Eryngium palmatum</i> Pančić & Vis.	illyr-sc-pind-moes
<i>Linaria rubioides</i> Vis. & Pančić subsp. <i>nissana</i> Niketić & Tomović	moes
Pontian distribution type	
Balkan distribution group	
<i>Pulsatilla montana</i> (Hoppe) Reichenb. subsp. <i>bulgarica</i> Rummelsp.	W Pont (balk)
<i>Astragalus wilmottianus</i> Stoj.	W Pont (W moes)
Middle-Southern-European mountain distribution type	
Southern-European mountain distribution subtype	
Balkan distribution group	
<i>Micromeria cristata</i> (Hampe) Griseb.	balk (N sc-pind-W moes)
<i>Sesleria latifolia</i> (Adamović) Degen	balk (N sc-pind-W-CW moes)
<i>Dianthus cruentus</i> Griseb.	dinar-balk (sc-pind-moes-E hellen)
<i>Viola tricolor</i> L. subsp. <i>macedonica</i> (Boiss. & Heldr.) A. Schmidt	dinar-balk (sc-pind-W moes)
<i>Achillea ageratifolia</i> (Sm.) Benth. & Hook. f. subsp. <i>serbica</i> (Nyman) Heimerl	SE dinar-N sc-pind-W moes
<i>Edraianthus serbicus</i> Petrović	W moes
<i>Genista subcapitata</i> Pančić	moes
<i>Centaurea napulifera</i> Rochel subsp. <i>nissana</i> (Petrović) Dostál	N-C sc-pind-CW moes
Middle-European mountain distribution subtype	
Balkan distribution group	
<i>Knautia drymeia</i> Heuffel subsp. <i>nympharum</i> (Boiss. & Heldr.) Ehrend.	SC-SE dinar-balk (N-C sc-pind-C moes)
<i>Trifolium medium</i> L. subsp. <i>balcanicum</i> Velen.	dinar-balk

Legend: **balk** – Balkan; **dac** – Dacian; **dinar** – Dinaric; **hellen** – Hellenic; **illyr** – Illyrian; **mac** – Macedonian; **moes** – Moesian; **pont** – Pontian; **sc-pind** – Scardo-Pindhian; **submerid** – Submeridional; **temp** – Temperate; **thrac** – Thracian; **C** – central; **E** – eastern; **N** – northern; **S** – southern; **W** – western.

distribution type. Elements of the Central-South European mountain distribution type had an almost equal representation. Horvat & al. (1974) recognized three floristic-vegetational provinces on the Balkan Peninsula and according to that division we have defined three different groups of Balkan endemics: Illyrian, Moesian and Scardo-Pindhian (Table 1).

In the area of Mt Šljivovički Vis there were 38 taxa (4.7 % of the total flora) of relict species, such as *Prunus tenella* Batsch, *Ranunculus illyricus* L., *Waldsteinia*

geoides Willd., *Lilium martagon* L., *Crataegus pentagyna* Waldst. & Kit. ex Willd., etc.

Ecological analysis

The ecological analysis of the studied area's flora shows a dominant hemicyptophytic character, similarly to the floras of Serbia (Diklić 1984) and the Balkan Peninsula (Turill 1992) (Table 2). Hemicyptophytes were represented by 43.9 %, followed by therophytes – 25.4 % and geophytes – 10.1 %

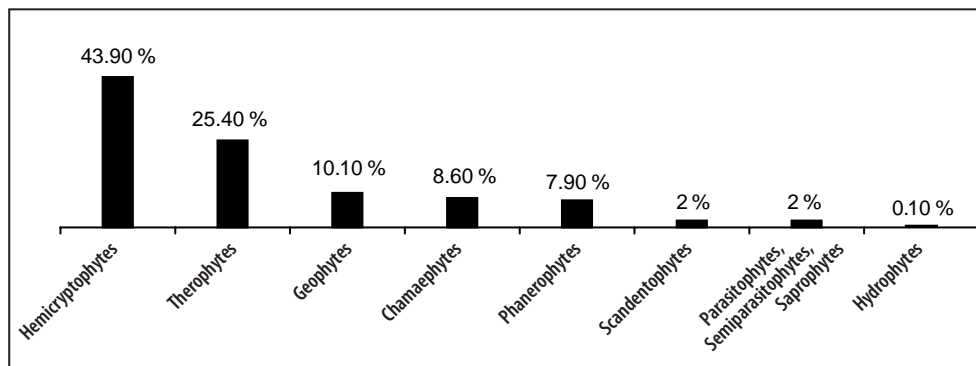


Fig. 5. Life forms range of the flora of Mt Šljivovički Vis.

Table 2. Life-form range of the flora of Mt Šljivovički Vis, Serbia and the Balkan Peninsula: H – hemicryptophytes; T – therophytes; G – geophytes; Ch – chamaephytes; P – parasites; Hyd – hydrophytes

	H %	T %	G %	Ch %	P %	Hyd %
Šljivovički Vis	43,9	25,4	10,1	8,6	7,9	0,1
Serbia	46,8	18,5	10,0	9,8	7,4	4,0
Balkan Peninsula	44,4	21,2	9,1	15,2	7,2	2,8

(Fig. 5). The dominance of hemicryptophytes can be explained by the climate features of the studied area. The climate of this region has certain peculiarities, as this is the most arid area in Southeast Serbia (Petrović 1998). According to the climatic classification (Walter & Leith 1967), the studied area is closest to the IV 7 type of the Submediterranean-Continental climate, with a pronounced semiarid period, medium precipitation and under simultaneous influence of the Aegean, Mediterranean and the Continental steppe climate. The presence of suitable, primarily arid degraded habitats explains the high participation level of therophytes.

Conservational aspects

The area of Mt Šljivovički Vis is characterized by intensive and varied anthropogenic activity, which threatens the plant life. Three threatened taxa from the area of Mt Šljivovički Vis were included in the World Red List: *Astragalus wilmottianus* Stoj., *Delphinium fissum* Waldst. & Kit. and *Scabiosa fumarioides* Vis. & Pančić (Walter & Gillett 1998). Two plant taxa, *Delphinium fissum* and *Scabiosa fumarioides*, are included in the European Red List (ECCNNR-EC 1983; ECONOMIC COMMISSION FOR EUROPE 1991). There are 17 taxa in the species group of international importance (Stevanović & al. 1995), while 48 species could be placed in some threatened status category at national level (Stevanović 1999; Stevanović & al. unpubl.).

As the massif of Mt Šljivovički Vis is characterized by pronounced floristic diversity, it is necessary to implement certain conservation measures, in order to protect its plant life. One of the suggested conservation measures was to proclaim officially this area as protected by law. The area of Mt Šljivovički Vis is planned to be included in the list of botanically important areas in the Republic of Serbia (Stevanović & Šinžar-Sekulić 2009).

Acknowledgements. This study was supported by funding from the Ministry of Science, Republic of Serbia (Grant no. 143015, project: Diversity of flora and vegetation in the Central Balkan Peninsula - distribution, ecology and conservation).

References

- Adamović, L. 1908. Flora of Southeastern Serbia. – Rad Jugoslav. Akad. Znan., 175(44): 153-214 (in Serbo-Croatian).
- Adamović, L. 1909a. Flora of Southeastern Serbia. – Rad Jugoslav. Akad. Znan., 177(45): 193-240 (in Serbo-Croatian).
- Adamović, L. 1909b. Flora of Southeastern Serbia. – Rad Jugoslav. Akad. Znan., 179(46): 125-176 (in Serbo-Croatian).
- Adamović, L. 1910a. Flora of Southeastern Serbia. – Rad Jugoslav. Akad. Znan., 181(47): 325-336 (in Serbo-Croatian).
- Adamović, L. 1910b. Flora of Southeastern Serbia. – Rad Jugoslav. Akad. Znan., 183(48): 83-176 (in Serbo-Croatian).
- Adamović, L. 1911a. Flora of Southeastern Serbia. – Rad Jugoslav. Akad. Znan., 185(49): 194-242 (in Serbo-Croatian).
- Adamović, L. 1911b. Flora of Southeastern Serbia. – Rad Jugoslav. Akad. Znan., 188 (50): 84-140 (in Serbo-Croatian).
- Diklić, N. 1984. The life forms of plants and biological diversity of the flora of SR Serbia. – In: Sarić, M. (ed.), Vegetation of SR Serbia. Vol. 1, pp. 291-316. Serbian Acad. Sci. & Arts, Belgrade.
- ECCNNR-EC. 1983. List of rare, threatened and endemic plants in Europe. Council of Europe, European Committee for Conservation of Nature and Natural Resources, Strasbourg.
- ECONOMIC COMMISSION FOR EUROPE. 1991. European Red List of Globally Threatened Animals and Plants and Recommendations on its Application as Adopted by the Economic

- Commission for Europe at its Forty-Sixth Session (1991) by Decision D (46). United Nations, New York.
- Greuter, W., Burdet, H.M. & Long, G.** (eds). 1984. Med-Checklist. A Critical Inventory of Vascular Plants of the Circum-Mediterranean Countries. Vol. 1. (*Pteridophyta, Gymnospermae, Dicotyledones: Acanthaceae-Cneoraceae*). Conservatoire et Jardin Botanique, Med-Checklist trust of OPTIMA, Genève & Berlin.
- Greuter, W., Burdet, H.M. & Long, G.** (eds). 1986. Med-Checklist. A Critical Inventory of Vascular Plants of the Circum-Mediterranean Countries. Vol. 3. Dicotyledones (*Convolvulaceae-Labiatae*). Conservatoire et Jardin Botanique, Med-Checklist trust of OPTIMA, Genève & Berlin.
- Greuter, W., Burdet, H.M. & Long, G.** (eds). 1989. Med-Checklist. A Critical Inventory of Vascular Plants of the Circum-Mediterranean Countries. Vol. 4. Dicotyledones (*Lauraceae-Rhamnaceae*). Conservatoire et Jardin Botanique, Med-Checklist trust of OPTIMA, Genève & Berlin.
- Horvat, I., Glavač, V. & Ellenberg, H.** 1974. Vegetation Südosteuropas. – In: **Tuxen, R.** (ed.), *Geobotanica Selecta*. Vol. 4. Gustav Fischer Verlag, Stuttgart.
- Jordanov, D.** (ed.). 1963–1979. Flora Reipublicae Popularis Bulgaricae. Vols 1-7. In *Aedibus Acad. Sci. Bulgaricae, Serdicae* (in Bulgarian).
- Josifović, M.** (ed.). 1970–1977. Flore de la Republique Socialiste de Serbie. Vols 1-9. Acad. Serbe Sci. & Arts, Belgrade (in Serbo-Croatian).
- Kožuharov, S.** (ed.). 1995. Flora Reipublicae Bulgaricae. Vol. 10. Editio Acad. "Prof. Marin Drinov", Serdicae (in Bulgarian).
- Meusel, H., Jäger, E. & Weinert, E.** 1965. Vergleichende Chorologie der zentraleuropäischen Flora. Vol. 1. Karten & Text. Gustav Fischer, Jena.
- Meusel, H., Jäger, E. & Weinert, E.** 1978. Vergleichende Chorologie der zentraleuropäischen Flora. Vol. 2. Karten & Text. Gustav Fischer, Jena.
- Meusel, H. & Jäger, E.** 1992. Vergleichende Chorologie der zentraleuropäischen Flora. Vol. 3. Text & Karten, Literatur, Register. Gustav Fischer, Jena, Stuttgart, New York.
- Mueller-Dombois, D. & Ellenberg, H.** 1974. Aims and Methods of Vegetation Ecology. John Wiley & Sons, New York.
- Pančić, J.** 1874. Flora of the Principality of Serbia. State Printing House, Belgrade (in Serbo-Croatian).
- Pančić, J.** 1884. Contribution to the Flora of the Principality of Serbia. Royal Serbian State Printing House, Belgrade (in Serbo-Croatian).
- Petrović, B.J.** 1998. Nature of Bela Palanka and Secondary Ponišavlja. Institute of Geography, Faculty of Science, Novi Sad (in Serbian).
- Petrović, S.** 1882. The Flora of Niš Surroundings. The Royal Serbian State Printing House, Belgrade (in Serbo-Croatian).
- Petrović, S.** 1885. Contribution to the Flora of Niš Surroundings. The Royal Serbian State Printing House, Belgrade (in Serbo-Croatian).
- Randelović, V., Zlatković, B. & Jušković, M.** 2000. The endemic flora of Mt Suva Planina in eastern Serbia. – In: Proc. 6th Symp. Fl. SE Serbia and Neighbouring Regions. Pp. 61-73. Fac. Sci. Math. Univ. Niš, Biol. Soc. "Dr Sava Petrović", Niš (in Serbian).
- Randelović, V., Zlatković, B. & Jušković, M.** 2002. *Astragalus wilmotianus* Stoj. – a new species in the flora of Serbia. – In: Proc. 7th Symp. Fl. SE Serbia and Neighbouring Regions. Pp. 1-5. Fac. Sci. Math. Univ. Niš, Biol. Soc. "Dr Sava Petrović", Niš (in Serbian).
- Randelović, V., Zlatković, B., Randelović, N. & Jušković, M.** 2006. *Campanula moravica* (Spitzn.) Kovanda, *Lindernia dubia* (L.) Pennell, *Cyperus rotundus* L., *Poa timoleonis* Heldr. ex Boiss. – In: **Vladimirov, V. & al.** (eds), New floristic records in the Balkans: 1. – Phytol. Balcan., 12(1): 123.
- Raunkiaer, C.** 1934. The Life Forms of Plants and Statistical Plant Geography. Clarendon, London.
- Sarić, M.R.** (ed.). 1992. The Flora of Serbia. Ed. 2. Vol. 1. Serbian Acad. Sci. & Arts, Belgrade (in Serbian).
- Sarić, M. & Diklić, N.** (ed.). 1986. Flore de la Republique Socialiste de Serbie. Vol. 10. Acad. Serbe Sci. & Arts, Belgrade (in Serbian).
- Stevanović, V.** 1992a. Floristic division of the territory of Serbia with the review of higher chorion and appropriate floristic elements. – In: **Sarić, M.** (ed.), The Flora of Serbia. Ed. 2. Vol. 1, pp. 47-66. Serbian Acad. Sci. & Arts, Belgrade (in Serbian).
- Stevanović, V.** 1992b. Classification of plant life forms in the flora of Serbia. – In: **Sarić, M.** (ed.), The Flora of Serbia. Ed. 2. Vol. 1, pp. 37-49. Serbian Acad. Sci. & Arts, Belgrade (in Serbian).
- Stevanović, V.** (ed.). 1999. Red Data Book of Vascular Flora of Serbia. Vol. 1. Ministry of Environment, Faculty of Biology, University of Belgrade and Institute for Nature Protection of Serbia (in Serbian).
- Stevanović, V., Jovanović, S., Lakušić, D. & Niketić, M.** 1995. Diversity of the vascular flora of Yugoslavia and an overview of internationally important species. – In: **Stevanović, V. & Vasić, F.V.** (eds), Biodiversity of Yugoslavia with an Overview of Internationally Important Species. Pp. 183-217. Ecolibri, Belgrade (in Serbian).
- Stevanović, V. & Šinžar-Sekulić, J.** 2009. Serbia. – In: **Radford, E.A. & Ode, B.** (eds), Conserving Important Plant Areas: Investing in the Green Gold of South East Europe. Pp. 63-68. Plantlife International, Salisbury.
- The Euro+Med Plantbase** – the information resource of Euro-Mediterranean plant diversity (<http://ww2.bgbm.org/EuroPlusMed/>).
- The International Organization for Plant Information (IOPI)** – (<http://plantnet.rbgsyd.nsw.gov.au/iopi/iopihome.htm>).
- Turrill, W.B.** 1929. The Plant-Life of the Balkan Peninsula. Clarendon, Oxford.
- Tutin, T.G., Heywood, V.H., Burges, N.A., Moore, D.M., Valentine, D.H., Walters, S.M. & Webb, D.A.** (eds). 1968–1980. Flora Europaea. Vols 2-5. Cambridge Univ. Press, Cambridge.
- Velčev, V.** (ed.). 1982–1989. Flora Reipublicae Popularis Bulgaricae. Vols 8-9. In *Aedibus Acad. Sci. Bulgaricae, Serdicae* (in Bulgarian).
- Velenovský, J.** 1891. Flora bulgarica. Prague.
- Walter, S. & Gillett, H.** (eds). 1998. 1997 IUCN Red List of Threatened Plants. IUCN. The World Conservation Union, Gland & Cambridge.
- Walter, H. & Leith, H.** 1967. Klimadiagramm-Weltatlas. Vol. 1. Lieferung 1964. VEB Gustav Fisher Verlag, Jena.

