Arch. Biol. Sci., Belgrade, 59 (1), 63-73, 2007. DOI:10.2298/ABS0701063T

NEW CHOROLOGICAL DATA ON SOME THREATENED AND RARE PLANTS IN SERBIA

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Abstract – We present the distribution of 10 threatened or rare plant species in Serbia based on field research and herbarium and literature data. These taxa are mapped on 10 x 10 km^2 UTM grids. The following taxa are analyzed: *Crepis nicaeensis* Balbis, *Lamium hybridum* Vill., *Lathyrus inconspicuus* L., *Kitaibela vitifolia* Willd., *Lindernia palustris* Hartm., *Veronica dillenii* Crantz, *Cyperus pannonicus* Jacq., *Milium vernale* Bieb., *Epipactis microphylla* (Ehrh.) Swartz, and *Epipogium aphyllum* Swartz. For each species, the IUCN threatened status in Serbia is given; on the basis of these estimates it is proposed that eight plants be included in the next edition of the Red Data Book of the Flora of Serbia.

Key words: Vascular flora, threatened plants, rare plants, distribution, new chorological data, Serbia.

UDC 582.35/.99 (497.11)
581.9 (497.11)

INTRODUCTION

During floristic investigations on the territory of Serbia, we obtained a new distribution data on 10 threatened or rare plant taxa in Serbia. The obtained data, in combination with a survey of herbarium collections and relevant floristic literature, enabled us to establish complete distribution patterns of these plants in Serbia. The given taxa are mapped on 10 x 10 km^2 UTM grids.

In this paper, we present our new chorological data together with unpublished data on specimens deposited in the Herbarium of the University of Belgrade (BEOU) and the Herbarium of the Natural History Museum in Belgrade (BEO). Some of the taxa are included in Preliminary Red List of Threatened Plant Species of Serbia (Stevanović et al. 1996). The following taxa are analyzed in the present paper: *Crepis nicaeensis* Balbis, *Lamium hybridum* Vill., *Lathyrus inconspicuus* L., *Kitaibela vitifolia* Willd., *Lindernia palustris* Hartm., *Veronica dillenii* Crantz, *Milium vernale* Bieb., *Cyperus pannonicus* Jacq., *Epipactis microphylla* (Ehrh.) Swartz, and *Epipogium aphyllum* Swartz.

MATERIAL AND METHODS

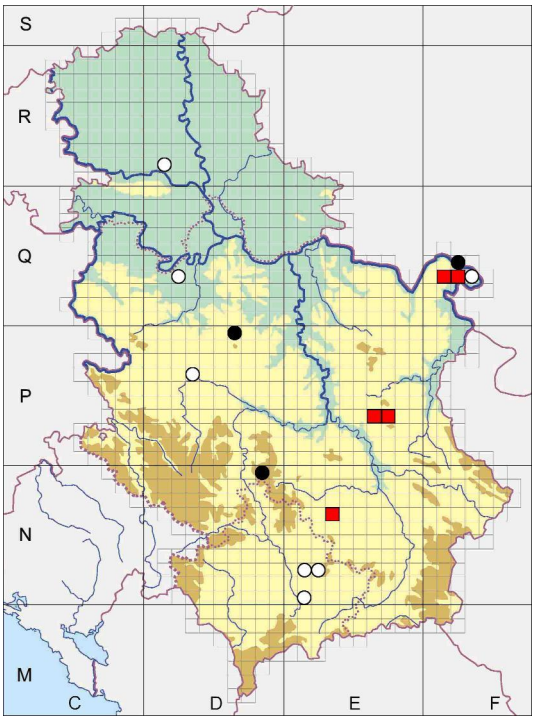
Over the last fifteen years (from 1991 to 2006), we collected plant material mostly in the regions of Central, Eastern, Southern Serbia and stored it in the Herbarium of the University of Belgrade (BEOU) and that of the Natural History Museum in Belgrade (BEO) (Holmgren and Holmgren, 1998).

Besides the field survey, we assembled all the relevant literature and herbarium distribution data for these 10 threatened or rare species in Serbia. On the basis of these efforts, we were able to create a distribution map on a 10 x 10 km^2 UTM grid for each investigated species.

For estimation of the threatened status of each species on the territory of Serbia, we used IUCN (2000) criteria and categories (for explanations, see "The Red Data Book of Flora of Serbia 1", Stevanović et al., 1999).

RESULTS AND DISCUSSION

Fam. *COMPOSITAE*



Map 1. Distribution of the species *Crepis nicaeensis* Balbis in Serbia. Indication of locations: gray (red) squares – new chorological data; black circles – both literature and herbarium data; white circles – literature data.

1. *Crepis nicaeensis* Balbis

General distribution: Southern Europe – Pyrenees, Apennines, and the Balkan Peninsula; naturalized in Central and Eastern Europe.

Distribution in Serbia: The distribution pattern of this sub-Mediterranean plant in Serbia encompasses the **Srem region:** Petrovaradin; **NE Serbia:** Kladovo (P a n č i ć, 1874); the **Šumadija region:** Obrenovac (G a j i ć, 1975) and vicinity of Kragujevac (P a n č i ć, 1856); **W Serbia:** Čačak (S i g u n o v, 1977), **C Serbia:** Mt. Kopaonik (L a k u š i ć, 1993); and the **Kosovo region:** Mt. Grmija (K r i v o š e j, 1989) and vicinity of Uroševac (H u n d o z i, 1983-1986). Inasmuch as the recorded localities are quite scattered, it is evident that the distribution of this plant on the territory of Serbia is still poorly known. It usually grows in mesophilous beech and oak forests, as well as in montane pastures.

New and unpublished chorological data on *C. nicaeensis* in Serbia: NE Serbia: Kladovo: village of Petrovo Selo – village of Podvrška – FQ13, FQ14 (leg. *Pančić, J. 11267*, Jul-1880, BEOU); **E Serbia:** Aleksinac: Soko Banja Spa – EP63, EP73 (leg. *Pančić, J. 11264*, May-1880, BEOU); **C Serbia:** Mt. Sokolovica: Ravan – Aleksino Hill – EN36, ass. *Querco-Carpinetum orientalis silicicolum*, siliceous (andesite) rocky grounds, 750 m a.s.l. (leg. *Tomović, G., Ranđelović, V. 901*, 20-Jun-1997, BEOU) (Map 1).

IUCN threatened status in Serbia: Endangered – Vulnerable (EN B1;B2c;C2a – VU A1b;C1;D2)

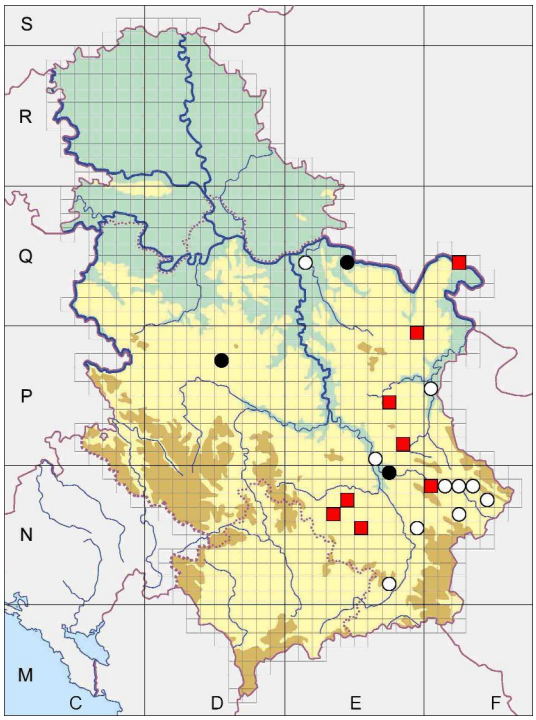
Fam. *LABIATAE*

2. *Lamium hybridum* Vill.

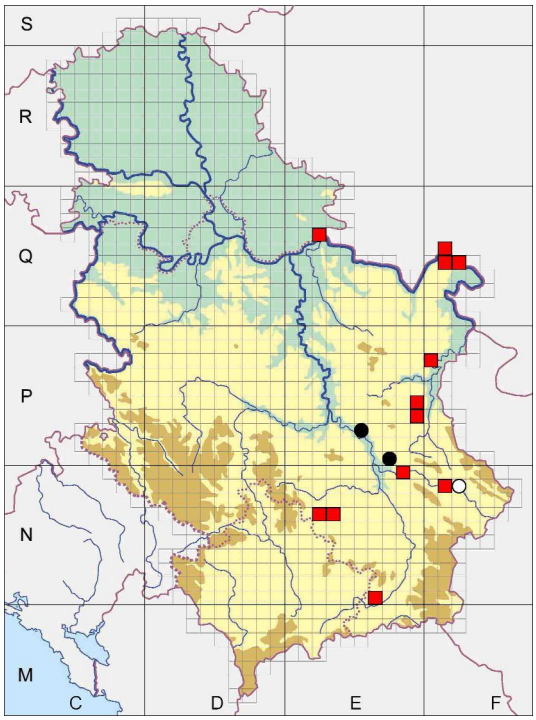
General distribution: Most of Europe (except Southeast) and North Africa (Algeria and Morocco).

Distribution in Serbia: This sub-Meditteranean species is predominantly distributed in eastern and southern parts of Serbia. It is recorded in the **Pomoravlje region:** vicinity of Požarevac (N i k o l i ć and D i k l i ć, 1986); the **Šumadija region:** Brđanska Gorge near Gornji Milanovac (P a n č i ć, 1856); **NE Serbia:** Jelenske Stene Rocks near Kruševica (P a n č i ć, 1874); **E Serbia:** Vrška Čuka Hill near Zaječar (A d a m o v i ć, 1892), vicinity of Pirot, Mt. Belava, Mt. Basara, Mt. Stol near Pirot, Mt. Vidlič (A d a m o v i ć, 1911), vicinity of Niš (P e t r o v i ć, 1882); **S Serbia:** Vranje (N i č i ć, 1893) and Vlasotince (A d a m o v i ć, 1911). However, the given species can be easily confused with the similar *L. purpureum* and according to B a l l (1972) appears to be an allopolyploid derived from *L. purpureum* and probably *L. moschatum*. It is common in shady forest habitats in sub-Mediterranean and continental regions on the Balkan Peninsula.

New and unpublished chorological data on *L. hybridum* in Serbia: NE Serbia: Bor: Mt. Stol – EP99 (leg. *Pančić, J. 14800*, 1876, sub. *L. incisum*, BEOU), Kladovo – FQ24 (leg. *Pančić, J. 14801*, May-1875, sub. *L. incisum*, BEOU); **E Serbia:** Bela Palanka, Popov Peak– FN08 (leg. *Jurišić, Ž.* Apr-1888, sub. *L. incisum*, BEOU; leg. *Bornmüller, J.* 21-May-1888, sub. *L. incisum*, BEOU), Mt. Rtanj, Mirovo Brook – EP74 (leg. *Soška, Th.* Apr-1930, sub. *L. incisum*, BEOU), Svrljig: village of Niševac – EP81 (leg. *Petrović, S.* 1879, sub. *L. incisum*, BEOU); **C Serbia:** Mt. Sokolovica: Ravan – Aleksino Hill – EN36, ass. *Querco-Carpinetum orientalis silicicolum*, siliceous (andesite) rocky grounds, 700 m a.s.l. (leg. *Tomović, G., Ranđelović, V., Vukojičić, S., Zlatković, B. 410*, 23-May-1997, BEOU), Mt. Vidojevica: below the



Map 2. Distribution of the species *Lamium hybridum* Vill. in Serbia. Indication of locations as on Map 1.



Map 3. Distribution of the species *Lathyrus inconspicuus* L. in Serbia. Indication of locations as on Map 1.

peak – EN48, *Fagus* forest (leg. *Nikolić, V.* 15-May-1959, BEO); **S Serbia:** Lebane – EN55 (leg. *Niketić, M., Tomović, G.* 09-Mar-2001, BEO) (Map 2).

IUCN threatened status in Serbia: Lower Risk (LR)

Fam. *LEGUMINOSAE*

3. *Lathyrus inconspicuus* L.

General distribution: Spain, France, Italy, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Bulgaria, Albania, Greece, and Turkey.

Distribution in Serbia: This sub-Meditteranean plant is predominantly distributed in **E Serbia:** vicinity of Pirot and Kraljevo village near Aleksinac (N i k o l i ć et al., 1986a), Humsko Hill near city of Niš (K o j i ć, 1972). The species is very common in ruderal and semi-ruderal habitats in Mediterranean and sub-Mediterranean regions of the Balkan Peninsula. However, its distribution is not well documented in our country, since untill now it was recorded only in three UTM squares.

New and unpublished chorological data in Serbia: Pomoravlje: Veliko Gradište, Ramska Sands – EQ26, sand dunes (leg. *Diklić, N.* 12-Jun-1960, BEO); **NE Serbia:** Zaječar, Timok River Gorge, village of Gradskovo – FP07, limestone (leg. *Niketić, M., Tomović, G.* 01-Jun-2005, BEO), Đerdap Gorge, Tekija – Hajdučka Vodenica – FQ14, FQ15, pastures (leg. *Nikolić, V., Diklić, N.* 07-Jun-1970, BEO), vicinity of Kladovo, – FQ24 (leg. *Adamović, Ž.* Jun-1968, BEO); **E Serbia:** Niš, Koritnik Peak above Niška Banja Spa – EN89 (leg. *Lindtner, V.* 24-Jun-1955, sub. *L. sphaericus*, BEO), Mt. Tupižnica, Bučje – Lasovo, above the village – EP93, EP94, *in agris* (leg. *Lindtner, V.* 30-Jun-1955, sub. *L. incospicuus* var. *stans*, BEO), Bela Palanka, Klenje – FN18, limestone rocky grounds (leg. *Niketić, M., Tomović, G. 16574*, 01-May-2003, BEOU, BEO); **C Serbia:** Mt. Sokolovica, village of Mala Lubnica – EN26, EN36, roadsides, siliceous (andesite) grounds, 500 m a.s.l. (leg. *Tomović, G., Niketić, M. 1142*, 02-May-1998, BEOU); Pupavce village – EN36, meadows, siliceous (andesite) grounds, 850 m (leg. *Tomović, G., Ranđelović, V. 915*, 20-Jun-1997, BEOU); **S Serbia:** Vranje, below the village of Vrtogoš – EN60 (leg. *Pančić, J. 5316*, May-1886, BEOU) (Map 3).

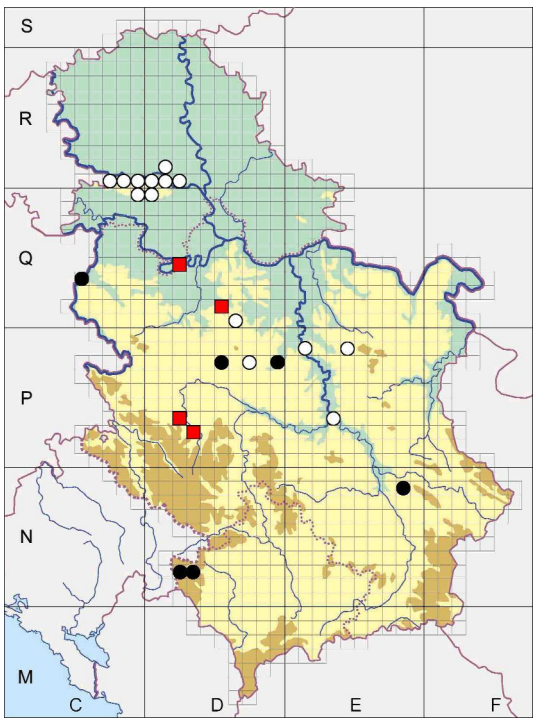
IUCN threatened status in Serbia: Vulnerable (VU B1;C2)

Fam. *MALVACEAE*

4. *Kitaibela vitifolia* Willd.

General distribution: Croatia, Bosnia and Herzegovina, Montenegro, Serbia and R Macedonia. This plant is cultivated in Hungary and Romania.

Distribution in Serbia: *Kitaibela vitifolia* was described from Serbia (**Srem and Banat regions**) in 1800 by Waldstein and Kitaibel (Obradović, 1966; Obradović et al., 1991). Later (Stevanović et al., 1991), this plant was recorded in the **Pomoravlje region:** vicinity of Jagodina and Stalać; the **Šumadija region:** vicinity of Kragujevac, Gornji Milanovac, and Aranđelovac; **E Serbia:** Suva Planina Mountains; and the **Kosovo region:** vicinity of Peć. Recently, it was also found in a semi-ruderal habitat in the city of Loznica in **NW Serbia** (Jovanović and Mitrović, 1998). The species grows in low brush, thickets, and xero-thermophile and mesophile forest fringes, as well as in semi-open oak forests.



Map 4. Distribution of the species *Kitaibela vitifolia* Willd. in Serbia. Indication of locations as on Map 1.

New and unpublished chorological data in Serbia: Šumadija: Obrenovac**:** Grabovac, Velika Bara – DQ24 (leg. *Lakušić, D., Krga, M. 8495*, 27-Jun-1998, BEOU), Lazarevac: Darosava – DQ50 (leg. *Pančić, J. 3487*, 1877, BEOU); **SW Serbia**: Ivanjica – DP32 (leg. *Pančić, J. 3486***,** 1875, BEOU), between Ivanjica and Požega – DP23 (leg. *Jurišić, Ž.* 1887, BEOU) (Map 4).

IUCN threatened status in Serbia: Endangered – Vulnerable (EN B1;C2a – VU D2;E). *Kitaibela vitifolia* is on the List of Internationally Important Species (Stevanović et al., 1995).

Fam. *SCROPHULARIACEAE*

5. *Lindernia palustris* Hartm.

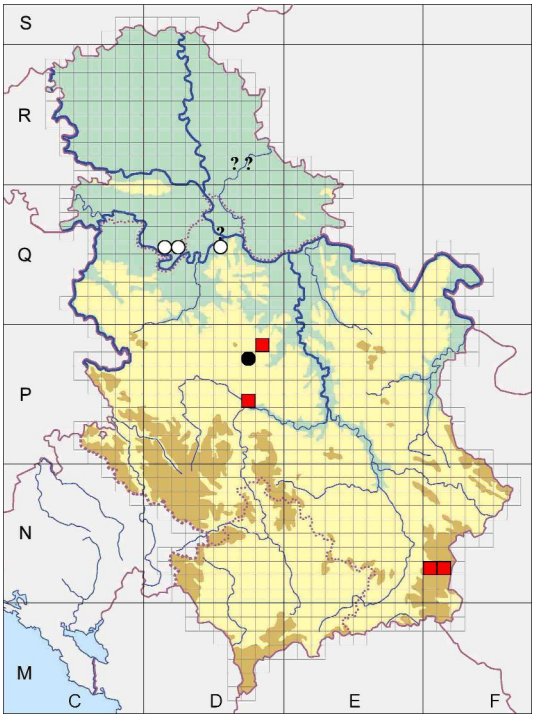
General distribution: Central Europe, Central and Eastern Balkans, Central and East Asia (from Siberia to Japan).

Distribution in Serbia: There are only a few published data on the distribution of *L. palustris* in Serbia. Pančić was the first botanist to find this plant in Serbia: in the vicinity of Kragujevac: village of Sobovica (Pančić, 1856) and Belgrade: village of Rakovica (Pančić, 1892). After almost a hundred years, the given taxon was recorded from the **Srem region:** between Kupinovo, Obrež, and Ašanja; the **Bačka region:** Obrovac – Gajdobra (Slavnić, 1953; Atanacković, 1958); and the **Šumadija region:** Veliko Ratno Ostrvo near Belgrade (Petrović, 1996). *Lindernia palustris* inhabits wet, sandy places, river banks, and bottoms of dried ponds.

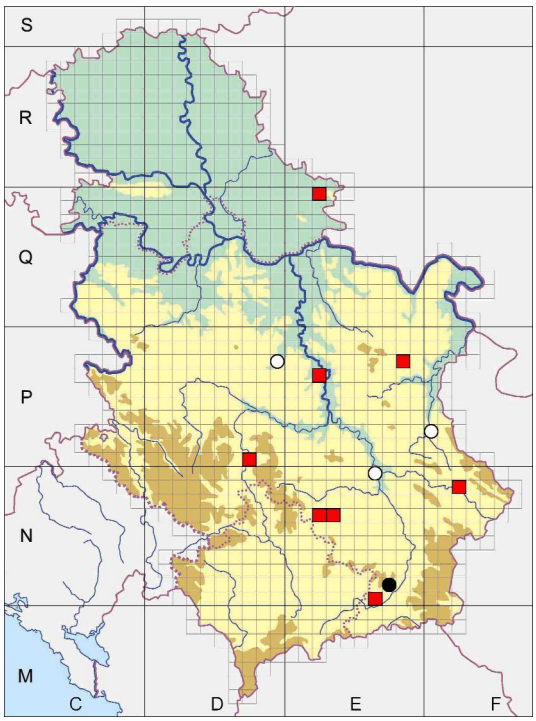
New and unpublished chorological data in Serbia: C Serbia: Kraljevo ("Karanovac") – DP74 (sub. *Lindernia pyxidaria*, leg. *Pančić, J. 7715*, 1869, BEOU); Sobovica, Bele Bare – DP88 (sub. *Lindernia pyxidaria*, leg. *Pančić, J. 7714*, 1851, BEOU); **SE Serbia**: Vlasina – FN02, FN12 (sub. *Lindernia*, leg. *Pančić, J. 7712*, 1880, BEOU); **Banat**: Tomaševac – Orlovat – DR61, DR71 (comm. *Savić, D. in* Vukojičić, 1997) (Map 5).

IUCN threatened status in Serbia: Critically Endangered – Endangered (CR B2b,c,d – EN B1;E)

Note: Two *Lindernia* species grow in Serbia: the native *Lindernia palustris* Hartm. (= *L. procumbens* (Krocker) Philcox, *L. pyxidaria* All.) and the similar but neophytic *L. dubia* (L.) Pennell. The first species was es-



Map 5. Distribution of the species *Lindernia palustris* Hartm. in Serbia. ? – doubtful data. Other locations as on Map 1.



Map 6. Distribution of the species *Veronica dillenii* Crantz in Serbia. Indication of locations as on Map 1.

tablished for the Serbia in 1851 by *J. Pančić* and the second one in 2005 by *V. Ranđelović*, *B. Zlatković, and M. Jušković* (R a n đ e l o v i ć et al., 2006).

Lindernia dubia is a North American species colonizing mainly the muddy banks of large rivers. It was imported into Europe in the middle of the 19th century. The species has been extending its range from France and Italy into Central and Eastern European countries, probably being spread by waterfowl and by man. In the Czech Republic *L. dubia* was first found in 1989 in Southern Bohemia, and in 1984 it was recorded in Bulgaria (H o r á k o v á et al., 2005; S t o j c h e v and C h e s h m e d z i e v, 2005).

Populations of neophytic *L. dubia* have frequently been found together with the native species *L. procumbens* on exposed bottoms of storage ponds, in wet sandy places, or in the puddles. Also, *L. dubia is* often erroneously identified as *L. palustris*. Therefore, a significant amount of chorological information about *L. palustris* published without herbarium deposits stands in need of needs confirmation (S t o j c h e v and C h e s h m e d z i e v, 2005; H o r á k o v á et al., 2005).

6. *Veronica dillenii* Crantz

General distribution: Central and Eastern Europe, Eastern Balkans, Anatolia, Caucasus, Russian Federation.

Distribution in Serbia: This Pontic-sub-Mediterranean plant has been known from only a few localities in Serbia, despite recent reports of its findings (F i s c h e r and F i s c h e r , 1981). Until now, it was recorded from the **Šumadija region:** Kragujevac (D i k l i ć, 1974); and **E Serbia:** vicinity of cities Knjaževac and Niš (F r i t s c h, 1918), **S Serbia:** surroundings of Vranje (D i k l i ć, 1974). It can be easily confused with the very similar *V. verna*, and this fact must be taken into account when collecting plant material in the field in order to redefine the distribution areas of these two species in Serbia. The given plant inhabits cultivated fields, vineyards, ruins, and fragmented sub-Mediterranean habitats at lower altitudes.

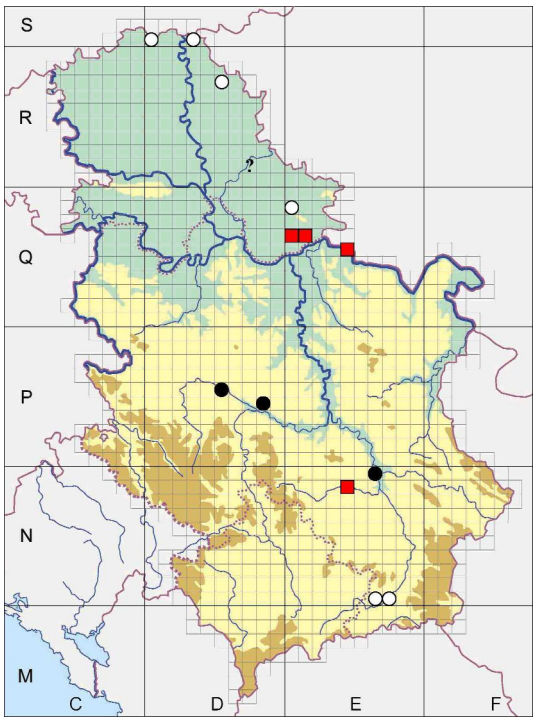
New and unpublished chorological data in Serbia: Banat: Vršac, Misa – EQ29 (leg. *Tereščenko, M. 18717*, 29-Apr-1927, sub. *V. verna*, rev. *Fischer, M.*, 19-Oct-1983, BEO); **NE Serbia:** Bor, Brestovac – EP87

(leg. *Pančić, J. 7723*, 1872, BEOU); **E Serbia:** Pirot, Temštica River Gorge – FN28, 500 m a.s.l, S exp. (leg. *Jovanović, S., Lakušić, D. 439/91*, 30-Jun-1991, BEOU); **Pomoravlje:** Jagodina, Đurđevo Hill – EP26 (leg. *Pančić, J. 7876*, May-1847, BEOU); **C Serbia:** Mt. Kopaonik, Jošanička Banja Spa – DP70 (leg. *Pančić, J. 7828*, Jul-1864, BEOU), Mt. Sokolovica, Ravan – Aleksino Hill – EN36, siliceous (andesite) rocky grounds, 700 m a.s.l., (leg. *Tomović, G., Vukojičić, S., Ranđelović, V., Zlatković, B. 402*, 23-May-1997, BEOU); village Rudare – EN26, ass. *Festuco-Chrysopogonetum grylli*, siliceous (andezite) rocky grounds, 450 m a.s.l., SW exp. (*Tomović, G., Vukojičić, S., Ranđelović, V., Zlatković, B.* 23-May-1997, *obs.!*); **S Serbia:** Vranje, village of Vrtogoš – EN60 (leg. *Pančić, J. 7873*, May-1886, sub. *V. verna*, BEOU); Markovo Kale Hill – EN71, siliceous rocky grounds (leg. *Niketić, M., Tomović, G. 19056*, 20-Jun-2004, BEOU, BEO) (Map 6).

IUCN threatened status in Serbia: Lower Risk (LR)

Fam. *CYPERACEAE*

7. *Cyperus pannonicus* Jacq.



Map 7. Distribution of the species *Cyperus pannonicus* Jacq. in Serbia. Indication of locations as on Map 1.

General distribution: Central and Southeast Europe (Austria, Czechoslovakia, Hungary, Albania, Bulgaria, countries of the former Yugoslavia, Romania), Caucasus.

Distribution in Serbia: Until now, there were only a few records on the distribution of *C. pannonicus* in Serbia. The first data indicating the presence of this rare halophytic plant in our country originated from P a n č i ć (1856, 1874), who found it in the **Šumadija region:** vicinity of Kragujevac - villages of Vitanovac and Slatina. Later, it was also recorded in the **Banat region:** between Palić and Ludaš Lakes, village of Čoka, vicinity of Kikinda and Novi Kneževac, Deračka Bara (S l a v n i ć, 1939; K n e ž e v i ć, 1994); the **Srem region:** (S l a v n i ć, 1953a); and the **Bačka region:** Slano Lake (G a j i ć, 1986). It was recorded by S l a v n i ć (1940) in the vicinity of Vranje, Aleksandrovac, and Bujanovac (**S Serbia**). Recently, this spesies was also recorded for **E Serbia:** Lalinačka Saline near Niš (M i l o s a v l j e v i ć et al., 2002). *Cyperus pannonicus* inhabits wet, salty meadows, as well sandy river banks at lower altitudes (Map 7).

New and unpublished chorological data in Serbia: Pomoravlje: Požežena Sands: village of Vince – EQ45 (leg. *Pančić, J. 12352*, 1886, BEOU); **Banat**: Zrenjanin, village of Tomaševac – DR71 (comm. *Savić, D. in* Vukojičić 1997); Deliblato Sands: Gaj – Šumarak – EQ06, EQ16 (leg. *Stevanović, V. 13046*, 1998, BEOU) (Map 7); **C Serbia:** Prokuplje: Suva Česma Brook – EN48 (leg. *Niketić, M., Tomović, G.* 01-Oct-2000, BEO).

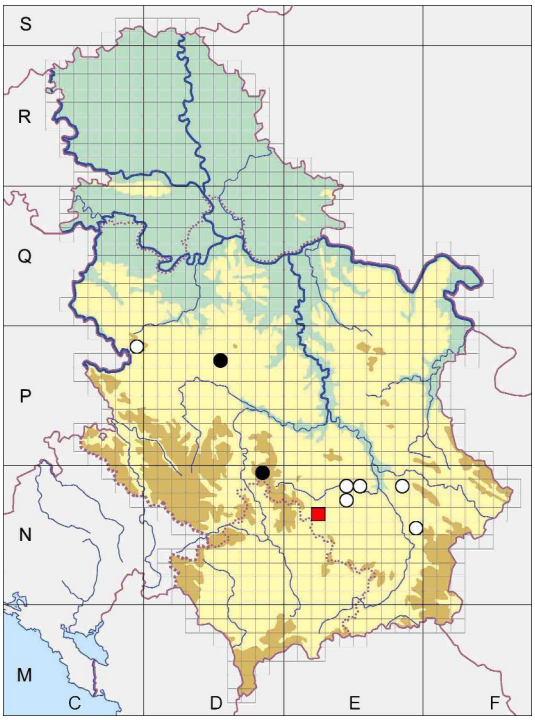
IUCN threatened status in Serbia: Critically Endangered – Endangered (CR B2a,b,c;B3a,b – EN E). This species is protected by law as a natural rarity in Serbia (gazetted under No 50/93).

Fam. *GRAMINEAE*

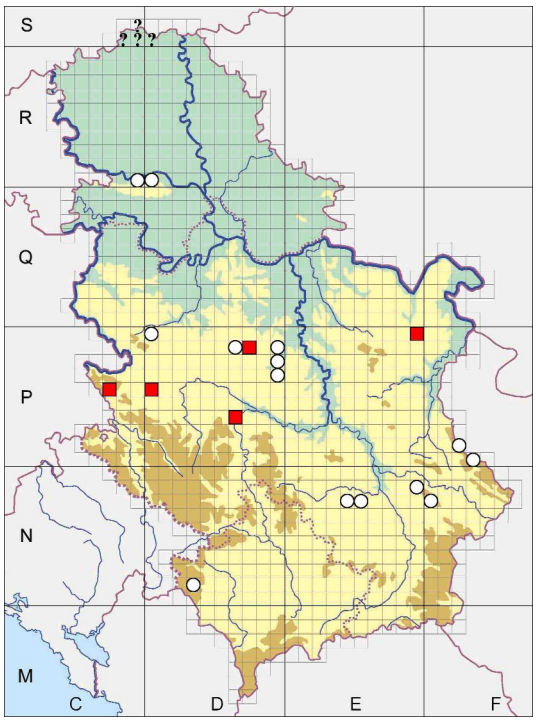
8. *Milium vernale* Bieb.

General distribution: Central and Southern Europe, Balkan Peninsula, Crimea, Caucasus, Western and Central Asia, North Africa.

Distribution in Serbia: This Eurasian plant is not very common in Serbia. It has been recorded only at eight localities in Serbia: **Šumadija region:** Brđanska Gorge near Gornji Milanovac (F r i t s c h, 1909), **NW Serbia:** Mt. Povlen (G a j i ć and G a j i ć, 1962), **C Serbia:** Mt. Kopaonik (L a k u š i ć, 1993), Mt. Pasjača (R u ž i ć, 1983), vicinity of Prokuplje (N i k o l i ć et al., 1986), **E**



Map 8. Distribution of the species *Milium vernale* Bieb. in Serbia. Indication of locations as on Map 1.



Map 9. Distribution of the species *Epipactis microphylla* (Ehrh.) Swartz in Serbia. Indication of locations as on Map 5.

Serbia: Mt. Seličevica (P e t r o v i ć, 1885), **S Serbia:** Vlasotince (A d a m o v i ć, 1908). There are only a few herbarium specimens in BEOU and BEO (from Mt. Kopaonik and the Brđanska Gorge) confirming its presence in our country. However, there are many records of the species in the literature, making it necessary to inquire further into the complete pattern of the plant's distribution in Serbia. It mainly grows on serpentine and siliceous (andesite) soils in zones of thermophilous oak forests.

New chorological data in Serbia: C Serbia: Mt. Sokolovica, village of Rudare – EN26, ass. *Festuco-Chrysopogonetum grylli*, siliceous (andesite) rocky grounds, 450 m a.s.l., SW exp. (leg. *Tomović, G. 168*, 01-May-1997, BEOU) (Map 8).

IUCN threatened status in Serbia: Vulnerable (VU B1;C2a;D2)

Fam. *ORCHIDACEAE*

9. *Epipactis microphylla* (Ehrh.) Swartz

General distribution: Southern and Central Europe, Caucasus, Asia Minor.

Distribution in Serbia: The first data indicating the existence of this rare orchid species in Serbia were published by P a n č i ć (1874), but without precise location information. Additional distribution data were given by numerous authors: **E Serbia:** Stara Planina Mountains (A d a m o v i ć, 1911); **E Serbia:** Suva Planina Mountains; **Kosovo region:** Ločanska Bistrica Gorge; **Srem region:** Mt. Fruška Gora; **Šumadija region:** vicinity of Kragujevac (D i k l i ć, 1976), Mt. Rudnik (G a j i ć, 1959); **NW Serbia:** Gradac River Gorge (Đ o r đ e v i ć, 1997); **C Serbia:** Mts Pasjača and Vidojevica (R u ž i ć, 1983). The data for the **Bačka region:** Subotičko-Horgoška Sands (M i l i n and G a j i ć, 1984) are questionable, since sandy habitats are not typical for this orchid species. The given plant grows in shady mountain forests, in scrub communities, and in mountain meadows, mostly on limestone.

New and unpublished chorological data in Serbia: Šumadija: Ramaća Hill near Kragujevac – DP78 (leg. *Pančić, J. 14360*, 1850, BEOU)**; W Serbia**: Mt. Mokra Gora – CP75 (leg. *Pančić, J. 14357*, BEOU)**,** Užice – DP05 (leg. *Pančić, J. 14358*, BEOU)**; NE Serbia:** Mt. Stol – EQ90 (leg. *Pančić, J. 14361*, 1872, BE-

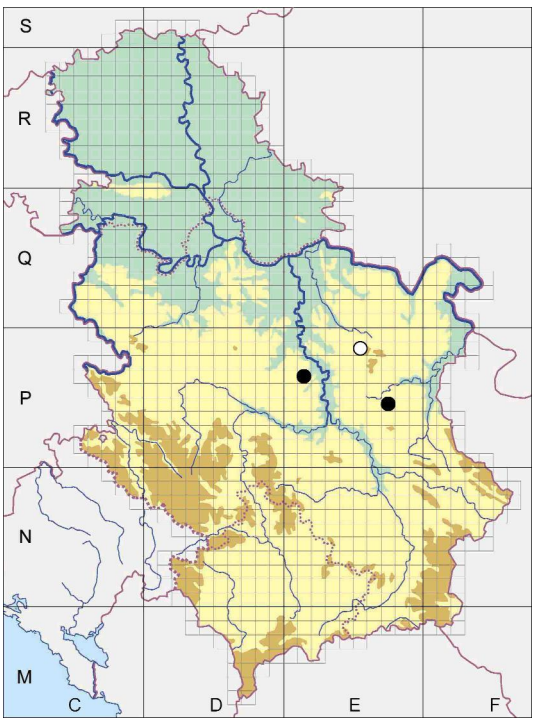
OU); **C Serbia:** Kraljevo**:** Bogutovačka Banja Spa, Lopatnica River Gorge – DP63, limestone rocks (leg. *Stevanović, V.*, *Niketić, M.*, *Vukojičić, S.*, *Tomović, G. 18847*, 03-May-2004, BEOU) (Map 9).

IUCN threatened status in Serbia: Endangered – Vulnerable (EN B1;B2b,c,e;C2a – VU D2;E). This plant is on the CITES list and in the List of Internationally Important Species (Stevanović et al., 1995).

10. *Epipogium aphyllum* Swartz

General distribution: Northern Scandinavia, Central and Southeast Europe, Caucasus, Siberia.

Distribution in Serbia: The first record of the presence of *E. aphyllum* in Serbia was published by Pančić (1856), who recorded it from Montis Belica near Jagodina. However, in Pančić's later publications (1874, 1884), this finding was neglected, and only Mt. Rtanj was cited. In "Flora SR Srbije", Diklić (1976) again mentioned two localities (Mt. Rtanj and Mt. Beljanica), but he obviously also neglected Pančić's citation for Montis Belica. This rare orchid species lives wet swampy habitats, shady mountain forests, and places near of streams and springs.



Map 10. Distribution of the species *Epipogium aphyllum* Swartz in Serbia. Indication of locations as on Map 1.

Neglected chorological data in Serbia: Pomoravlje: Jagodina**: Mt.** Belica – EP16 (sub. *Epipogium gmelinii* Swartz, leg. *Pančić, J. 14373*, 1847, BEOU) (Map 10).

IUCN threatened status in Serbia: Critically Endangered (data deficient) – CR (DD). This plant is on the CITES list and the List of Internationally Important Species (S t e v a n o v i ć et al., 1995).

CONCLUSIONS

During our floristic investigations in Serbia, we collected abundant herbarium material and assembled numerous unpublished and new chorological data for 10 threatened or rare plant species on this territory. The available herbarium collections and comprehensive literature data were examined in order to complete distribution maps for these 10 plant taxa in Serbia. On the basis of these maps, we can draw the following conclusions:

The five new localities of *Crepis nicaeensis* fit into the known range of this species in Serbia. However, our field observations showed that this plant is not very abundant in its natural habitats.

The discovery of eight new localities of *Lamium hybridum*, in conjunction with extensive herbarium and literature data, supports the opinion that this plant is distributed mostly in eastern and southern regions of Serbia.

The species *Lathyrus inconspicuus* was found at 12 new localities, predominantly in the northeast, east, and southeast regions of Serbia. With the aid of these records, we complied a map of the distribution in our country of this plant, which until now was known from only three localities.

Despite the fact that there are many published papers on the distribution of *Kitaibela vitifolia* in Serbia, the four new or unpublished distribution records from the Šumadija region (vicinity of Obrenovac and Lazarevac) and Western Serbia (vicinity of Ivanjica) are certainly important for a better knowledge of the species' distribution pattern in Serbia.

Since there were only a few records of *Lindernia palustris* in Serbia, new findings in Central Serbia (vicinity of Kraljevo and Sobovica), Banat region (village of Tomaševac), and Southeast Serbia (Vlasina Plateau) represent an important contribution to the chorology of this very rare plant in Serbia.

The distribution of *Veronica dillenii* in our country is poorly known. We recorded eight new localities, seven of which are situated in Serbia proper. The southernmost locality of the species' distribution in Serbia is a new one in the vicinity of Vranje.

There are only a few herbarium specimens in BEOU and BEO (from the Brđanska Gorge) confirming the presence of *Milium vernale* in our country. However, there are many records of the species in the literature, and the new location on Mt. Sokolovica is the third herbarium proof of its presence in Serbia.

For the species *Cyperus pannonicus*, four new or unpublished records are presented: in the Pomoravlje region (Vince near the Požežena Sands), the Banat region (vicinity of the village of Tomaševac and Deliblato Sands), and Central Serbia (vicinity of Prokuplje).

Inasmuch as the distribution of *Epipactis microphylla* is insufficiently known, the discovery of this plant in Šumadija (Ramaća Hill near Kragujevac), Central Serbia (Bogutovačka Banja Spa near Kraljevo), Western Serbia (Mt. Mokra Gora and vicinity of Užice), and Northeast Serbia (Mt. Stol near Bor) significantly contributes to a better understanding of the species' distribution in our country.

Epipogium aphyllum is an orchid species rare on the territory of Serbia. The long-standing confusion about the presence and distribution of this plant in our country was resolved by establishing the existence of herbarium specimens in BEOU from Mt. Rtanj and Mt. Belica near Jagodina.

Using the new IUCN (2000) criteria, we estimated the threatened status of these 10 species in Serbia. On the basis of these criteria, we consider that the following species should be included in the next edition of the Red Data Book of the Flora of Serbia: *Crepis nicaeensis* Balbis, *Lathyrus inconspicuus* L., *Kitaibela vitifolia* Willd., *Lindernia palustris* Hartm., *Cyperus pannonicus* Jacq., *Milium vernale* Bieb., *Epipactis microphylla* (Ehrh.) Swartz, and *Epipogium aphyllum* Swartz.

Acknowledgements – This research was supported by the Ministry of Science and Environment Protection of the Republic of Serbia (Grant 143015, "Diversity of Flora and Vegetation of the Central Balkans – Ecology, Chorology, and Conservation").

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НОВИ ХОРОЛОШКИ ПОДАЦИ О НЕКИМ УГРОЖЕНИМ И РЕТКИМ БИЉКАМА У СРБИЈИ

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Током петнаестогодишњих флористичких истраживања на територији Србије сакупљен је обиман хербаријумски материјал, на основу којег се дошло до нових података о распрострањењу биљних врста у нашој земљи. Преглед постојећих хербаријумских збирки као и обимне флористичке литературе допринео је комплетирању података и изради ареал карата за одабраних 10 таксона који припадају угроженим или ретким биљкама у Србији. На основу увида у сваку појединачну карту ареала могуће је закључити следеће:

Пет нових локалитета врсте *Crepis nicaeensis* налазе се у оквиру већ познатог ареала ове врсте у Србији. Међутим, наша теренска запажања су показала да ова биљка није врло бројна на њеним природним стаништима.

Откриће 8 нових локалитета таксона *Lamium hybridum*, заједно са бројним хербарским и литературним подацима, иде у прилог мишљењу да је ова врста распрострањења углавном у источном и јужном региону Србије.

За врсту *Lathyrus inconspicuus* установљено је 12 нових налаза углавном локализованих на територији североисточне, источне и југоисточне Србије. На основу ових података комплетирано је распрострањење ове биљке у нашој земљи, која је иначе до сада била константована на само три локалитета у Србији.

Упркос чињеници да постоји пуно објављених радова о распрострањењу врсте *Kitaibela vitifolia* у Србији, 4 нова или непубликована налаза за подручје Шумадије (околина Обреновца и Лазаревца) и западне Србије (околина Ивањице) су свакако значајна за боље познавање ареала ове врсте у Србији.

С обзиром да постоји само неколико података о распрострањењу *Lindernia palustris* у Србији, нови налази из централне Србије (околина Краљева и Собовице), Баната (село Томашевац) као и југоисточне Србије (Власинска висораван) су врло значајни допринос у познавању хорологије ове ретке биљке у Србији.

Рапрострањење врсте *Veronica dillenii* у нашој земљи је мало познато. Ми смо констатовали 8 нових локалитета од којих се 7 налазе на територији уже Србије (најјужнији и нови локалитет ове врсте је околина Врања).

Постоји само неколико хербарских примерака у Хербаријумима BEOU и BEO са локалитета Брђанска клисура који потврђују присуство врсте *Milium vernale* у нашој земљи. И поред великог броја литературних цитата, нови локалитет на планини Соколовица је трећи сигуран налаз ове врсте у Србији јер је поткрепљен хербарским примерком смештеним у Хербаријуиму BEOU.

За врсту *Cyperus pannonicus* презентована су 4 нова или непубликована налаза: регион Поморавља (Винце у близини Пожеженске пешчаре), Банат (околина села Томашевац, као и Делиблатска пешчара) и централна Србија (околина Прокупља).

Имајући на уму да је распрострањење врсте *Epipactis microphylla* недовољно познато, њени налази у Шумадији (брдо Рамаћа код Крагујевца), централној Србији (Богутовачка бања у близини Краљева), западној Србији (Мокра Гора и околина Ужица) као и североисточној Србији (Стол код Бора) значајно доприносе бољем разумевању хорологије ове орхидеје у нашој земљи.

Epipogium aphyllum је ретка врста орхидеје на територији Србије. Дуго присутна конфузија која се односи на присуство и распрострањење ове биљке у нашој земљи решена је присуством хербарских примерака у Хербаријуму BEOU са локалитета Ртањ и Белица код Јагодине.

На основу нових IUCN (2000) критеријума, установљени су статуси угрожености ових 10 врста у Србији, на основу којих сматрамо да следеће врсте треба укључити у наредни волумен Црвене књиге флоре Србије: *Crepis nicaeensis* Balbis, *Lathyrus inconspicuus* L., *Kitaibela vitifolia* Willd., *Lindernia palustris* Hartm., *Cyperus pannonicus* Jacq., *Milium vernale* Bieb., *Epipactis microphylla* (Ehrh.) Swartz и *Epipogium aphyllum* Swartz.