



Threat status revision of some taxa from “The Red Data Book of Flora of Serbia 1”

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ABSTRACT This paper presents six plant species rediscovered for flora of Serbia after they were considered extinct in this territory. Therefore they were included in the publication “Red Book of Flora of Serbia 1” in the category of Extinct taxon (EX). These six species are: *Aconitum anthora* L., *Aldrovanda vesiculosa* L., *Chorisporea tenella* (Pallas) DC., *Dracocephalum ruyschiana* L., *Juncus capitatus* Weigel and *Linum nodiflorum* L. According to new IUCN criteria, the threat status estimation were made and the species were placed in the group of critically endangered within the territory of Serbia. New field observations of population stage and data of distribution are presented for 21 plants that were included in the category of critically endangered taxa in this publication. Population size of plants on the studied localities and new threatened status were presented for each taxon.

KEY WORDS: vascular flora, Serbia, extinct species, critically endangered species, distribution

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INTRODUCTION

Ten years have passed since the publication of “Red Data Book of Flora of Serbia 1” (STEVANOVIĆ 1999). It included 171 taxa with IUCN status of EX or CR category for territory of Serbia. It was assumed that 4 taxa were

extinct from the global genofund, that 46 taxa were extinct for territory of Serbia, while 121 taxa were placed in the category of critically endangered. Although the number of species extinct at the territory of Serbia is relatively high, it is a combined result of negative anthropogenous impact in last several decades and the fact that the territory

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of Serbia is still insufficiently studied from the floristic standpoint. This is further indicated by the fact that some of the extinct species were firstly discovered by Josif Pančić, and that after his time they were not recorded for this area again. Although there is a general global trend of increase in number of extinct and critically endangered taxa of vascular flora (WALTER & GILLET 1998), there is still an assumption that some of these plants might still be rediscovered in some uncharted parts of the world. This view is supported by rediscovery of certain species that were until recently considered to be extinct from Serbia, for example the species *Aldrovanda vesiculosa* L. (STANKOVIĆ, M. 2007: 35-37).

During the last decade a significant number of new or unpublished data on population/subpopulation size, distribution and habitat features of threatened plant species in Serbia was collected. The goal of this paper is to present new threat status of plants included in "Red Data Book of Flora of Serbia 1" according to 2001 IUCN Criteria and Categories. The selected species are previously considered to be extinct (EX) or supposed to be extinct in Serbia (EX-DD) or/and critically (CR) or suppose to be critically endangered (CR-DD). Estimation of threat status is based on new field observations, newly discovered localities and data from herbarium collections.

MATERIAL AND METHODS

This paper represents the continuation of intensive floristic and chorological studies of the endangered taxa of Serbian flora. Besides the field survey, checking and revision of herbarium material and numerous literature sources were used for supplementation of the distribution records. Distribution of threatened plant species in Serbia is mapped on 10 x 10 sq. km at UTM grid system (LAMPINEN 2001).

Collected material of plant species is deposited in the Herbarium of the Institute of Botany and Botanical Garden "Jevremovac", University of Belgrade (BEOU), the Herbarium of the Natural History Museum in Belgrade (BEO), the Herbarium of Department of Biology and Ecology, Faculty of Natural Sciences and Mathematics, University of Novi Sad (BUNS) (HOLMGREN *et al.* 1990; <http://sciweb.nybg.org/science2/IndexHerbariorum.asp>), as well as in the Herbarium of Faculty of Natural Sciences, University of Niš (HMN), the Herbarium Collections of Institute for Nature Conservation of Serbia (HZZPB; HIPNS) and the private collections of Bojan Zlatković (BZ) and Stanković Mihajlo (SM).

The estimation of threatened status of some of the listed species for the territory of Serbia is made according to criteria and categories of IUCN (2001).

RESULTS

Rediscovered species for the flora of Serbia

Aconitum anthora L.

SW Serbia: Priboj: Sjeverin (Sutjeska river gorge) – CP62, limestone rocks, 400-450 m a.s.l. (leg. Niketić M & Tomović G. 27985, 13-Aug-2008, BEOU; BEO) (Figs. 1, 2).

This species inhabits limestone rocky ground within plant association *Seslerio tenuifoliae-Ostryetum*. The population is represented by a small number of individuals (only 20-30), spatially restricted and requires urgent conservation measures. The closest species findings consider localities in Montenegro – Pivski Maglič (ROHLENA 1942) and East Bosnia and Herzegovina – Rakitnica river canyon near Rogatica, Banja Stijena (leg. Niketić M., 24-Jul-2004, BEO).

Threat status in Serbia – 1994 IUCN, Version 2.3: EX DD (NIKETIĆ 1999: 99);

Threat status in Serbia – 2001 IUCN, Version 3.1: CR B2ab(ii,iii,v); D (estimated by Niketić & Tomović).

Aldrovanda vesiculosa L.

NW Serbia: Šabac: Zasavica (Valjevaca-Šumareva Čuprija bridge, Preseka) – CQ87 (STANKOVIĆ M. 2007: 35-37).

Threat status in Serbia – 1994 IUCN, Version 2.3 EX DD (JANKOVIĆ & STEVANOVIĆ 1999: 100);

Threat status in Serbia – 2001 IUCN, Version 3.1 CR A4; B1ab; B2ab (estimated by Stevanović).

Chorispora tenella (Pallas) DC.

Banat: Kikinda: Bašaid (Mali Bikač) – DR45, in a field road, 79 m a.s.l. (leg. Knežević J & Perić R. 06-Apr-2007, BEO, HIPNS, BUNS; Perić R & Knežević J. 12-Apr-2008, *field obs.*) (Figs. 3, 4).

There are 18 micro localities on small road area (about 30-33m×3-4m) with 44 individuals (12-Apr-2008, Perić R. *field obs.*) in vegetation of weeds dominated by *Sclerochloa dura* (L.) Beauv., *Cardaria draba* (L.) Desv., *Capsella bursa-pastoris* (L.) Medicus and *Lepidium ruderales* L. Population size in 2009 was 109 individuals (16-Apr-2009, Knežević, J. *field obs.*).

Threat status in Serbia – 1994 IUCN, Version 3.2: EX DD (STEVANOVIĆ V & STEVANOVIĆ B. 1999: 105);

Threat status in Serbia – 2001 IUCN, Version 3.1: CR B2ab(ii,iii) (estimated by Perić).

Dracocephalum ruyschiana L.

SW Serbia: Pešter: Duga Dolina (Doliće-Crvsko) – DN17 (LAZAREVIĆ *et al.* 2009 (*in press*)).

Threat status in Serbia – 1994 IUCN, Version 2.3: EX (DIKLIĆ 1999: 70);

Threat status in Serbia – 2001 IUCN, Version 3.1: CR B2ab(iii);C2b (LAZAREVIĆ *et al.* 2009 (*in press*)).

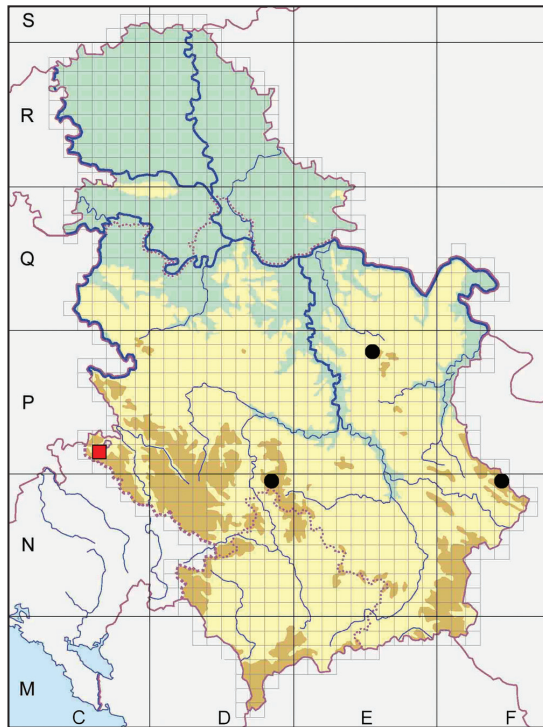


Fig. 1 Distribution of the species *Aconitum anthora* L. in Serbia. Indication of localities: red (gray) square – new chorological record; black dot – literature records



Fig. 2 *Aconitum anthora* L. (SW Serbia, Sutjeska river gorge near Priboj, photo M. Niketić)

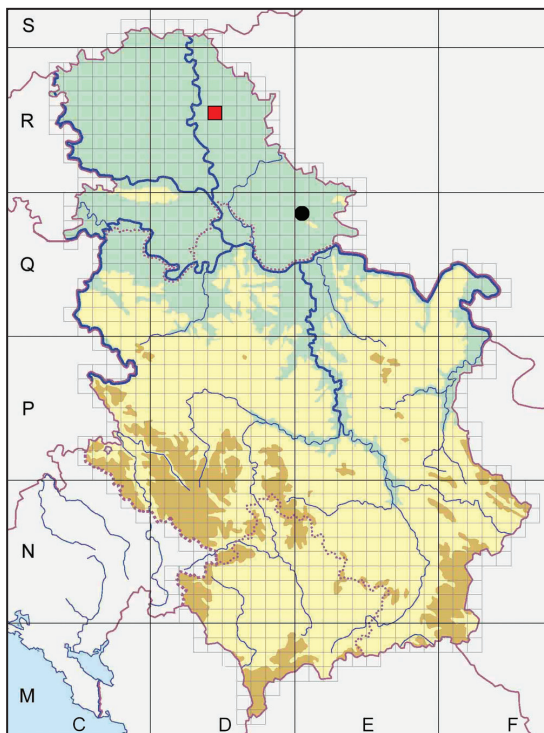


Fig. 3 Distribution of the species *Chorispora tenella* (Pallas) DC. in Serbia. Indication of localities: red (gray) square – new chorological record; black dot – literature record



Fig. 4 *Chorispora tenella* (Pallas) DC. (Banat, Mali Bikač near Kikinda, photo J. Knežević)

***Juncus capitatus* Weigel**

SE Serbia: Klenike: Vogance (Pčinja river gorge) – EM78, sandy and gravelly stream sides, as a constituent of ephemeral vegetation, silicate (leg. *Zlatković B.* 983, 15-Jul-2004, BZ; BEOU) (Figs. 5, 6).

The population of this rare species in Serbia is represented by not more than 50 individuals, covering area of few square meters at one single locality.

Threat status in Serbia – 1994 IUCN, Version 2.3: EX (RANĐELOVIĆ V. 1999: 74);

Threat status in Serbia – 2001 IUCN, Version 3.1: CR B2ab(i,iii,iv);D (estimated by Zlatković).

***Linum nodiflorum* L.**

SE Serbia: Klenike: Brnjare (Pčinja river gorge) – EM79, dry sandy soils and limestone marl along the valley (leg. *Zlatković B & Jušković M.* 1040, 28-Jun-2006, BEOU); Rusce – EM79, herbaceous vegetation of *Vulpio-Lotion* alliance, limestone (leg. *Zlatković B.* 1041, 15-Jul-2004, BEOU). Literature sources refer two records more: Bosilegrad and Raičilovci – FN20 (URUMOFF 1935: 53) (Figs. 7, 8).

The species is recorded at two close localities in the gorge. It is represented by fluctuated population of few hundreds individuals.

Threat status in Serbia – 1994 IUCN, Version 2.3: EX (NIKETIĆ 1999A: 78);

Threat status in Serbia – 2001 IUCN, Version 3.1: CR B2ac(i,ii,iii) (estimated by Zlatković).

New chorological records and new threatened status for the critically endangered taxa from “The Red Data Book of Flora of Serbia 1” – taxa that remained Critically Endangered (CR)

***Allium cyrilli* Ten.**

Šumadija: Beograd: Višnjička Kosa slope (Milićevo Brdo hill) – DQ66, neglected meadows near cultivated fields (leg. *Lakušić D.* 27481, 15-May-2008, BEOU); C Serbia: Niš: Azbresnica (Bresnička Salt Marsh) – EP50, salt marsh at the edge of plowed field (leg. *Niketić M.*, 09-Apr-2005, BEO).

In the locality Višnjička Kosa near Belgrade only 5-6 specimens were recorded. The population state on Bresnička Salt Marsh near Niš is slightly abundant and consists of more than 50 individuals.

Threat status in Serbia – 1994 IUCN, Version 2.3: CR B2ac;E (NIKETIĆ 1999B: 237);

Threat status in Serbia – 2001 IUCN, Version 3.1: CR A1ac; B1ab(i,ii,iii) (estimated by Stevanović).

***Allium paczoskianum* Tuzson**

SE Serbia: Trgovište – EM89, marl and limestone (leg. *Zlatković B.* 407, 16-Aug-2004, sub *A. flavum* L. subsp. *tauricum* (Besser ex Reichenb.) Stearn, BEOU); Pčinja river

gorge: Novo Selo village – EM89, thermophilous forest, silicate (leg. *Zlatković B & Anačkov G.*, 15-Jul-2004, sub *A. flavum* L. subsp. *tauricum* (Besser ex Reichenb.) Stearn, BEOU); between Novo Selo village and Šaprance village – EM89, thermophilous forest, silicate (leg. *Zlatković B & Anačkov G.*, 15-Jul-2004, sub *A. flavum* L. subsp. *tauricum* (Besser ex Reichenb.) Stearn, BUNS).

Approximately 50-100 individuals have been recorded in these localities.

Threat status in Serbia – 1994 IUCN, Version 2.3: CR B1+2ce; C2ab (ZLATKOVIĆ & RANĐELOVIĆ V. 1999: 217);

Threat status in Serbia – 2001 IUCN, Version 3.1: CR B2a; C1; C2a(ii) (estimated by Stevanović).

Astragalus excapus* L. subsp. *excapus

Bačka: Bačka Topola: Srednji Salaši-Gornja Rogatica (Duboka valley) – CR87 (45° 47' 03, 34' N, 19° 29' 32, 97' E), chernozem on loess plateau, 100m a. s. l. (leg. *Szabados K & Perić R.*, 28-Jul-2007, HIPNS); Zobnatica: loess banks of the accumulation – CR97 (*Szabados K. field obs.*).

First population in Duboka valley (BOŽA 1979: 54-55) contains approximately 100 individuals and new founded population about 70. Population in Zobnatica is represented with two isolated groups (remote about 100 m from each other). First group consists of about 13-15 reproductive individuals and the second one is somewhat richer (*Szabados K. field obs.*).

Threat status in Serbia – 1994 IUCN, Version 2.3: CR B1+2ac; C2a;E (BOŽA 1999: 218);

Threat status in Serbia – 2001 IUCN, Version 3.1: CR B1a; B2abc; C1 (estimated by Stevanović).

***Cephalorrhynchus tuberosus* (Steven) Schchian**

SE Serbia: Mt. Kozjak: Delinovica (Delinovački Rid) – EM78, rocky places in thermophilous oak forest, siliceous bedrock (leg. *Zlatković B.* 2282, 30-May-2002, BZ; BEOU).

According to contemporary taxonomic views (GREUTER & RAAB-STRAUBE 2008: 513), this taxon has been treated as *Lactuca hispida* DC. After the very first reports on this species in the Red Data Book of the Flora of Serbia (NIKETIĆ 1999C: 182-184) this record is the second known locality of this species in Serbia. Even it is confirmed for larger area, it is still occasional and represented by not more than 50 mature individuals in new population.

Threat status in Serbia – 1994 IUCN, Version 2.3: CR B1;C2ab;D (NIKETIĆ 1999C: 182);

Threat status in Serbia – 2001 IUCN, Version 3.1: CR B1a; B2a; C 2a(i,ii); D (estimated by Stevanović).

***Utricularia minor* L.**

SW Serbia: Pešter: Peštarsko Polje-Begov Lug – DN36, puddle on peat-bog, 1160 m a.s.l. (leg. *Lazarević P.*, 17-May-2006, BEOU).

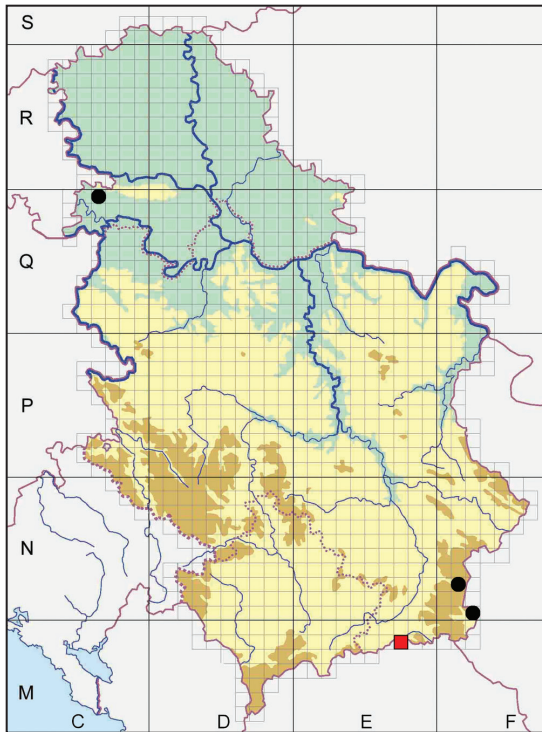


Fig. 5 Distribution of the species *Juncus capitatus* Weigel in Serbia. Indication of localities: red (gray) square – new chorological record; black dot – literature records



Fig. 6 *Juncus capitatus* Weigel (SE Serbia, Pčinja river gorge, photo B. Zlatković)

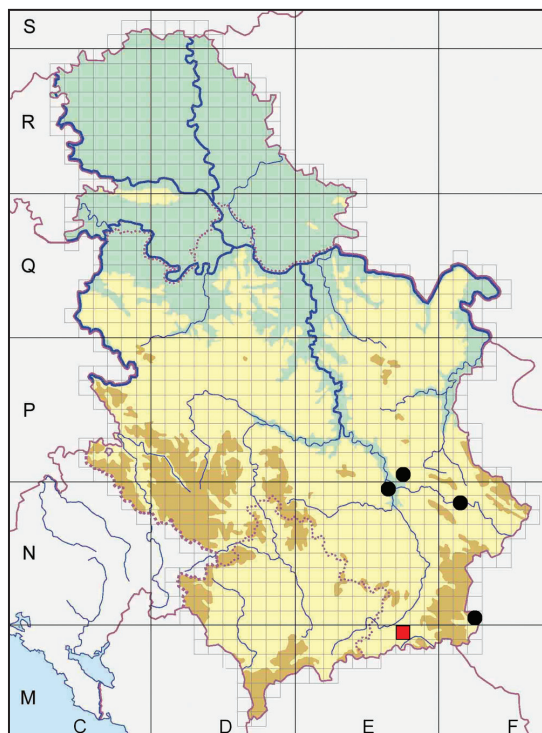


Fig. 7 Distribution of the species *Linum nodiflorum* L. in Serbia. Indication of localities: red (gray) square – new chorological record; black dot – literature records



Fig. 8 *Linum nodiflorum* L. (SE Serbia, Pčinja river gorge, photo B. Zlatković)

Estimated subpopulation size in Pešter is c.100 specimens.
Threat status in Serbia – 1994 IUCN, Version 2.3: CR A1cde+2cde;B1+2c;C1+2b;E (BLAŽENČIĆ J & BLAŽENČIĆ Ž. 1999: 233);

Threat status in Serbia – 2001 IUCN, Version 3.1: CR A1ac; A3,4; B1ab(i,ii,iii,iv); B2 ab(i,ii,iii,iv) (estimated by Stevanović).

New chorological records and new threatened status for the critically endangered taxa from “The Red Data Book of Flora of Serbia 1” – taxa that are estimated as Endangered (EN)

***Allium atrovioleaceum* Boiss.**

Srem: Sremski Karlovci: Kovilj (Gardinovci) – DR30 (leg. Božin B., 25-Jun-2008, det. G. Anačkov, BUNS).

The population is estimated to consist of not more than 250 individuals.

Threat status in Serbia – 1994 IUCN, Version 2.3: CR B2c (IGIĆ & MARIN 1999: 269);

Threat status in Serbia – 2001 IUCN, Version 3.1: EN A1ace, A3; B1a(i,ii,iii), C1 (estimated by Stevanović).

***Allium guttatum* Steven subsp. *dalmaticum* (A. Kerner ex Janchen) Stearn**

C Serbia: Prokuplje: near Oblačinsko Jezero lake – EN59, wet meadows (leg. Nikolić V, Diklić N & Bogdanović M., 24-Jul-1974, det. N. Diklić, sub *A. sphaerocephalum* L., rev. G. Tomović, BEO); SE Serbia: Vranje: Aleksandrovac (Aleksandrovačka Salt Marsh) – EN70, salt marsh (leg. Zlatković B., 05-Jun-2005, BUNS).

The locality near Prokuplje, salt marsh close to village Bresničić – EN38 was published by ZLATKOVIĆ *et al.* (2005: 25). The species inhabits fragile, permanently changed and destroyed salt marsh habitats so the number of individuals at all localities in Serbia continuously decreased. The subpopulation in Aleksandrovac Salt Marsh near Vranje is reduced to the minimum and estimated to contain less than 50 individuals. Also, close to Bresničić exist not more than 100-150 individuals. Having in mind that record of this species presence from Oblačina Salt Marsh near Prokuplje originates from herbarium collection (BEO), it is not possible to estimate the population size in this locality.

Threat status in Serbia – 1994 IUCN, Version 2.3: CR B1+2c+3d (NIKETIĆ 1999D: 323);

Threat status in Serbia – 2001 IUCN, Version 3.1: EN B1ab(i,ii,iii,iv); B2ab(i,ii,iii,iv); C2a(ii) (estimated by Stevanović).

***Astragalus monspessulanus* L. subsp. *illyricus* (Bernh.) Chater**

E Serbia: Sukovo: Vlasi (Jerma river gorge) – FN36 (leg. Zlatković B & Jović D., 21-May-2003, BZ); Petačinci – FN34 (leg. Zlatković B., 12-May-2007, BZ).

Although new findings of this rare species in Serbia refer the same gorge as the literature sources, the new data on population size are obtained. The population is represented by several hundred individuals that grow in dense, but distant and fragmented subpopulations. Neglected literature data: Sukovo: between Držina and Željuša – FN36; FN46 (TOŠEV 1903: 57, sub *A. vandassii* Vel.) and Poganovo (Kukla) – FN35 (TOŠEV 1903: 234, sub *A. vandassii* Vel.).

Threat status in Serbia – 1994 IUCN, Version 2.3: CR B2cd;D (RANĐELOVIĆ V & RANĐELOVIĆ N. 1999: 172);

Threat status in Serbia – 2001 IUCN, Version 3.1: EN B1a, B2a (estimated by Stevanović).

***Blackstonia acuminata* (Koch & Ziz) Domin**

Bačka: Apatin: Kučka, sand excavation site – CR36 (leg. Perić R., 04-Jun-2007, BEO, HIPNS); Kovilj – DR20 (leg. Marčetić M. 1703, 20-Jul-1953, HIPNS); Srem: Petrovaradin – DR11, wet meadows (leg. Babić N. 1702, 13-Jun-1952, HIPNS).

The population in Apatin is estimated to several thousand individuals, while populations in Kovilj and Petrovaradin are not recently checked in the field.

Threat status in Serbia – 1994 IUCN, Version 2.3: CR E (BUDAČ 1999: 274);

Threat status in Serbia – 2001 IUCN, Version 3.1: EN B1abc; B2a (estimated by Stevanović).

***Draba siliquosa* Bieb.**

Metohia: Mt. Šar-planina: Kobilica range-Vrtop – DM86, high mountain rocky ground, limestone, 2450 m a.s.l. (leg. Duraki Š. 801, 09-Jun-2007, BEOU); Treskavec – DM86, rocky ground, silicate/limestone, 2350 m a.s.l. (leg. Duraki Š. 802, 14-Jun-2002, BEOU); Surduk – DM86, rocky ground, silicate/limestone, 2200 m a.s.l. (leg. Duraki Š. 803, 10-Aug-2003, BEOU); Surduk – DM86, rocky ground near the crease, silicate/limestone, 2100 m a.s.l. (leg. Duraki Š. 805, 30-Apr-2007, BEOU); Karaula – DM86, rocky ground near the lake, silicate/limestone, 2100 m a.s.l. (leg. Duraki Š. 804, 20-Aug-2006, BEOU); Karaula – DM86, rocky ground near the crease, silicate/limestone, 2150 m a.s.l. (leg. Duraki Š. 806, 30-Apr-2007, BEOU).

Population, occurring in Kobilica range, consists of few subpopulations containing several hundred individuals.

Threat status in Serbia – 1994 IUCN, Version 2.3: CR B1 (AMIDŽIĆ & KRIVOŠEJ 1999: 336);

Threat status in Serbia – 2001 IUCN, Version 3.1: EN B1; B2a (estimated by Stevanović).

***Fibigia clypeata* (L.) Medicus**

SW Serbia: Tutin: Batrage (near the crossroads from Ribariće to Tutin and Montenegro) – DN45, foothill of limestone rocks near the main road (leg. Lazarević P & Lazarević M. 16330, 03-May-2008, BEOU).

Three localities for the Kosovo province were previously

published by PRODANOVIĆ *et al.* (2004: 54-55): Kosovska Mitrovica: Pridvorica village (Šiljicka Mahala, above the house of Nestorović family) – DN86; Mt. Rogozna: Gnježdane village (near Gnježdanska river and toward mine Crnac) – DN77; Vojmisliće village – DN75, below limestone rock on scree. The subpopulation in the vicinity of Tutin (Batrage) is poor in individuals, being restricted to only ten specimens. Estimated subpopulation size in the surroundings of Kosovska Mitrovica (Pridvorica village) is more than five hundred specimens. The subpopulation in Mt. Rogozna is comparatively large, being estimated between 1000 and 1200 individuals.

Threat status in Serbia – 1994 IUCN, Version 2.3: CR B1+2c; C2b (NIKETIĆ & KRIVOŠEJ 1999: 225);

Threat status in Serbia – 2001 IUCN, Version 3.1: EN B1a; B2a (estimated by Stevanović).

***Heliosperma nikolicii* (A. Seliger & Wraber)**

Niketić & Stevanović

(NIKETIĆ & STEVANOVIĆ 2007: 56); (*Silene nikolicii* (Seliger & T. Wraber) Stevanović & Niketić, comb. inval., 2007: 56)

Metohia: Mt. Šar-planina: Kobilica range, Ljubinjka Pećina cave – DM86, rocks in the cave, limestone, 1650 m a.s.l. (leg. Duraki Š. 259, 18-Oct-2003, BEOU); rocky crevices, limestone, 1600 m a.s.l. (leg. Duraki Š. 260, 01-May-2006, BEOU).

Population size in the entrance of the cave and surrounding limestone rocks at new discovered locality is estimated to less than 300 mature individuals.

Threat status in Serbia – 1994 IUCN, Version 2.3: CR B2c (NIKETIĆ & KRIVOŠEJ 1999A: 155);

Threat status in Serbia – 2001 IUCN, Version 3.1: EN B1a; B2a; C2a(I) (estimated by Stevanović).

***Hottonia palustris* L.**

NW Serbia: Drina river valley: between Badovinci and Otoka – CQ65, CQ75, stagnant tributary (leg. Lazarević P & Stojanović V. 16293, 13-Nov-2008, BEOU); Salaš Crnobarski-backwater Starača: backwater of Drina river – CQ76, channel with marsh peat substrate, 85 m a.s.l. (leg. Lazarević P & Stojanović, V. 16294, 13-Nov-2008, BEOU); Šabac: Zasavica, Široka Bara pond – CQ77 (leg. Stanković M., 02-Aug-1996, SM); junction of the river Batar – CQ77 (leg. Stanković M., 31-Mar-2000, SM); Batar – CQ77 (leg. Stanković M., 06-Apr-2003, SM); Banovo Polje, Vrtače, river Batar – CQ77, shallow with *Ranunculus sceleratus* L. (leg. Stanković M & Perić R., 24-Apr-2005, HIPNS; leg. Stanković M., 26-Aug 2005, SM); Raševića Čuprija bridge – CQ77 (leg. Stanković M., 22-Apr 2006, SM); Prekopac – CQ77 (leg. Stanković M., 24-Apr 2006, SM), Valjevac – CQ87 (leg. Stanković M., 21-Jul-1998, SM); Noćaj-Sadžak – CQ87, zone of emersed vegetation (leg. Stanković M., 31-May-2001, SM); Preseka – CQ87 (leg. Stanković M., 20-

May-2003, 02-Oct-2004, SM); Šumareva Čuprija bridge – CQ87 (leg. Stanković M., 22-Apr-2005, SM); Cerik – CQ87 (leg. Stanković M., SM); Koljšanski Kanal channel – CQ87 (leg. Stanković M., 06-May 2006, SM); Sadžak – CQ87 (leg. Stanković M., 01-Aug 2006, SM); Turske Livade – CQ87 (leg. Stanković M., 22-Apr 2007, SM).

The subpopulations in the Zasavica marsh is estimated more than 1000 mature individuals.

Threat status in Serbia – 1994 IUCN, Version 2.3: CR B2ac (BUTORAC 1999: 299);

Threat status in Serbia – 2001 IUCN, Version 3.1: EN B1ab(i,ii,iii); B2ab(i,ii,iii) (estimated by Stevanović).

Juncus triglumis* L. subsp. *triglumis

Metohia: Mt. Šar-planina: Beli Kamen-Karanikolica (Zaprešački stream) – DM86, moist open places near stream, at siliceous soil, 1880-1900 m s.m. (leg. Niketić M & Duraki Š. 20060819, 22-Aug-2006, BEO); Record from Mt. Metohijske Prokletije (AMIDŽIĆ & PANJKOVIĆ 2003: 173) is without herbarium evidence and seems to be erroneous.

Population size in Mt. Šar-planina is small and consist less than 300 individuals.

Threat status in Serbia – 1994 IUCN, Version 2.3: CR B2c (LAKUŠIĆ 1999: 345);

Threat status in Serbia – 2001 IUCN, Version 3.1: EN B1a; B2a (estimated by Stevanović).

***Nonea pallens* Petrović**

SE Serbia: New records refer to localities in the gorge of Pčinja river, between Trgovište and Monastery St. Prohor Pčinjski: Šaince – EM89, ruderal habitats at limestone marl (leg. Zlatković B. 247, 02-May-2005, BZ; BEOU), Brnjare – EM79 (leg. Zlatković B. 674, 16-Apr-2005, BZ; BEOU) and Šaprance – EM89, ruderal places along the road (leg. Zlatković B. 548, 02-May-2005, BZ; BEOU). Kosovo: Gnjilane: Domorovce (Crveni Breg hill) – EN50 (STANKOVIĆ J. *et al.* 2008: 121).

Population in Crveni Breg near Domorovce and in the gorge of Pčinja river are small consisting c. 50 - 100 individuals, each.

Threat status in Serbia – 1994 IUCN, Version 2.3: CR B2cd+3b (NIKETIĆ 1999E: 303);

Threat status in Serbia – 2001 IUCN, Version 3.1: EN A1ce; A2; B1ab(i,ii,iii); B2ab(i,ii,iii) (estimated by Stevanović).

***Ranunculus lingua* L.**

Bačka: Bezdán: chanel “Sirota” in Karapandža (STOJŠIĆ & PANJKOVIĆ 2001: 28); NW Serbia: Šabac: Zasavica, Zasavica I-Šumareva Čuprija bridge – CQ87 STANKOVIĆ M. (2005: 34-35; 2006).

Additional field observations at known localities of the species in Serbia – Zasavica marsh (STOJŠIĆ & PANJKOVIĆ 2001) and new one in surrounding of Bezdán, several dense

but fragmented subpopulations are confirmed. Their size is estimated to be c. 1000 mature individuals in total.

Threat status in Serbia – 1994 IUCN, Version 2.3: CR 2ac+3ab (STOJŠIĆ & PANJKOVIĆ 1999: 305);

Threat status in Serbia – 2001 IUCN, Version 3.1: EN B1ab(i,ii,iii,iv); B2 (i,ii,iii,iv) (estimated by Stevanović).

Saussurea alpina* (L.) DC. subsp. *alpina

Metochia: Mt. Šar-planina: Kobilica range, Treskavec – DM86, limestone, 2400 m a.s.l. (leg. *Duraki* Š. 529, 29-Jul-2003, BEOU); plateau, 2350 m a.s.l. (leg. *Duraki* Š. 531, 01-Aug-2007, BEOU); Surduk – DM86, rocky ground, 2350 m a.s.l. (leg. *Duraki* Š. 530, 10-Aug-2003, BEOU).

Due to the fact that the species had not been rediscovered in the last 50 years, this plant was included in the group of taxa supposed to be critically endangered (STEVANOVIĆ 1999A: 377-378). Estimated population size on the Mt Šar-planina is less than 1000 mature individuals.

Threat status in Serbia – 1994 IUCN, Version 2.3: CR DD (STEVANOVIĆ 1999A: 377);

Threat status in Serbia – 2001 IUCN, Version 3.1: EN B1a; B2ab(ii,iii,v); C2A(i) (estimated by Stevanović).

***Triglochin maritimum* L.**

Bačka: Bački Vinogradi-Horgoš: Galamboš Bara pond – DS10 (46° 06' 28 34' N, 19° 55' 05 47' E), saline chernozem above sand, 89-90 m. a. s. l. (leg. *Szabados K & Perić R.*, 27-May-2007, HIPNS).

Approximately 40-50 individuals have been recorded in this locality.

Threat status in Serbia – 1994 IUCN, Version 2.3: CR B2bcd (BUTORAC 1999A: 317);

Threat status in Serbia – 2001 IUCN, Version 3.1: EN A1c; A3; B1ab(i,ii,iii); B2ab(i,ii,iii) (estimated by Stevanović).

***Triglochin palustre* L.**

SW Serbia: Pešter: Koštam-Polje field (Jaz Potok stream) – DN47, flooded area near the stream, 970 m a.s.l. (leg. *Lazarević P.*, 04-Aug-2001, BEOU); Sjenica: Štavalj, peat-bogs near river Knešnica – DN29, with *Menyanthes trifoliata*, 1050 m a.s.l. (leg. *Lazarević P.*, 18-Jun-2004, HZZPB); Tutin: Štavica – DN45, Dubovo – DN46, ass. *Eriophoro-Phragmitetum communis*, alevium, 950 m a.s.l. (PETKOVIĆ 1983: 68, Tab. 1); Pope – DN45, ass. *Equiseto-Eriophoretum latifolii* subass. *menyanthetosum*, alevium, 980 m a.s.l., S, SE exp. (PETKOVIĆ 1983: 80, Tab. 4).

The subpopulations in Pešter (Koštam-Polje field), as well as in the vicinity of Sjenica (Štavalj), are poor in individuals, being restricted to only 30 and 20 specimens respectively.

Threat status in Serbia – 1994 IUCN, Version 2.3: CR B2c (BOŽA 1999A: 319);

Threat status in Serbia – 2001 IUCN, Version 3.1: EN A3; B1ab(i,ii,iii); B2 ab(i,ii,iii); C1 (estimated by Stevanović).

***Tulipa serbica* Tatić & Krivošej**

Kosovo: Ibarska river gorge: Kamenica (motel “Simonida”-Kamenica bridge) – DN86, xerophilous meadows (leg. *Prodanović D & Krivošej Z.*, 2003, 2004, 2005, HZZPB); Ložište (above the village) – DN85, brush-wood, (leg. *Prodanović D & Krivošej Z.*, 2003, 2004, 2005, HZZPB).

In the locality Ložište only 10 specimens were recorded. The population size in the surrounding of the village Kamenica is significantly larger, estimated to be 1500-2000 individuals.

Threat status in Serbia – 1994 IUCN, Version 2.3: CR B2c (TATIĆ & KRIVOŠEJ 1999: 159);

Threat status in Serbia – 2001 IUCN, Version 3.1: EN B1a; B2a (estimated by Stevanović).

***Typha shuttleworthii* Koch & Sonder**

NE Serbia: Bor: Rgotina (Crna Reka gorge) – EP 97 (*Bogosavljević S & Zlatković B.*, 09-Sep-2007, field obs.).

Recent literature record of this species refers: E Serbia: Svrlijig: Svrlijski Timok gorge – EP91, EP92 (*BOGOSAVLJEVIĆ et al.* 2008: 52). *T. shuttleworthii* forms relatively small beds over the muddy banks along the rivers at both localities, and it is usually mixed with *T. angustifolia*. SE Serbia: Bosilegrad: Topli Dol – FN12; Musulj – FN00 (URUMOFF 1935: 211).

Threat status in Serbia – 1994 IUCN, Version 2.3: CR DD (RANĐELOVIĆ V. 1999A: 384);

Threat status in Serbia – 2001 IUCN, Version 3.1: EN B1 ab(i,ii,iii); B2ab(i,ii,iii); C1 (estimated by Stevanović).

CONCLUSIONS

This paper presents six plant species that were rediscovered for flora of Serbia, and which were supposed to be extinct from the territory and therefore included in the “Red Data Book of Flora of Serbia 1” in the category Extinct Taxon (EX-DD or EX). These species are: *Aconitum anthora* L., *Aldrovanda vesiculosa* L., *Chorispora tenella* (Pallas) DC., *Dracocephalum ruyschiana* L., *Juncus capitatus* Weigel and *Linum nodiflorum* L. The estimation of their threatened status was made according to new 2001 IUCN criteria and they were assigned the status of critically endangered taxa at the territory of Serbia.

New field data are presented for 21 plants that were included in the category of critically endangered taxa in this publication. Additionally, population size on the studied localities and new threatened status were presented for each taxon.

For 16 plant species, previously determined as regionally CR (Critically Endangered) in Serbia, threat status is changed into EN (Endangered). Additional field investigations will make possibility of new estimation of threat status for plant species from “Preliminary Red List of Vascular flora of Serbia”.

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REZIME

Revizija statusa ugroženosti taksona iz publikacije “Crvena knjiga flore Srbije 1”

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U ovom radu je predstavljeno šest biljnih vrsta koje su ponovo otkrivene u flori Srbije, a za koje se smatralo da su iščezle sa njene teritorije, pa su u skladu sa tom činjenicom bile uključene u publikaciju „Crvena knjiga flore Srbije 1“ u kategoriji iščezao taxon (EX). To su sledeće vrste: *Aconitum anthora* L., *Aldrovanda vesiculosa* L., *Chorispora tenella* (Pallas) DC., *Dracocephalum ruyshiana* L., *Juncus capitatus* Weigel i *Linum nodiflorum* L. Na osnovu novih IUCN kriterijuma date su procene ugroženosti i određen im je status krajnje ugroženih taksona na teritoriji Srbije. Pored toga, za 21 takson koji je u navedenoj publikaciji uvršten u kategoriju krajnje ugroženog taksona, predstavljeni su novi terenski podaci o rasprostranjenju. Za svaki pojedinačni takson, data je procena veličine populacije za svaki novi lokalitet i urađena nova procena statusa ugroženost. Za 16 biljnih vrsta, koje su bile u kategoriji krajnje ugroženog taksona (CR) u publikaciji “Crvena knjiga flore Srbije 1”, promenjen je status ugroženosti i one su uvrštene u kategoriju ugroženih taksona (EN). Dodatna terenska istraživanja omogućila bi nove procene ugroženosti biljnih taksona iz “Preliminarne liste vaskularne flore Srbije”.

KLJUČNE REČI: vaskularna flora, Srbija, iščezle vrste, krajnje ugrožene vrste, distribucija