BIOLOGICA NYSSANA
7 (1) • September 2016: 11-17
DOI: 10.5281/zenodo.159099

Original Article

Received: 09 July 2015
Revised: 19 Mart 2016
Accepted: 01 June 2016

A revision of the moss collection of the University of Belgrade Herbarium (BEOU) from the Ostrozub Mountain in Serbia

Milan Veljić**, Nemanja Rajčević, Danka Bukvički

University of Belgrade, Faculty of Biology, Institute of Botany and Botanical Garden "Jevremovac", Takovska 43, 11000 Belgrade, Serbia

** E-mail: veljicm@bio.bg.ac.rs*

***Abstract*:**

Veljić, M., Rajčević, N., Bukvički, D.: ***A revision of the moss collection of the University of Belgrade Herbarium (BEOU) from the Ostrozub Mountain in Serbia. Biologica Nyssana, 7 (1), September 2016: 11-17.***

During the revision of moss collection of the University of Belgrade Herbarium from the Ostrozub Mountain which was collected in period from 1950 to 1953 it has been found that numerous specimens had not been determined. In total, 132 species were recorded: 23 liverwort, 109 moss species were found on the Mt. Ostrozub. Out of those, 38 taxa (6, 25 and 7 species belonging to Jungermanniopsida, Bryopsida and Sphagnopsida, respectively) represent new record for the Mt. Ostrozub. Nineteen species belong to the endangered species, of different endangerment degree, on the red lists of European and Serbian mosses.

Key words: liverworts, mosses, peat moss, conservation

***Apstrakt*:**

Veljić, M., Rajčević, N., Bukvički, D.: ***Revizija kolekcije mahovina iz Herbarijuma Univerziteta u Beogradu (BEOU) sa planine Ostrozub u Srbiji. Biologica Nyssana, 7 (1), Septembar 2016: 11-17.***

Tokom revizije kolekcije mahovina iz Herbarijuma Univerziteta u Beogradu prikupljene na planini Ostrozub u periodu od 1950. do 1953. godine utvrđeno je da brojni primerci nisu određeni. Ukupno je na Ostrozubu pronađeno 132 vrste, odnosno 23 Marchantiophyta i 109 Bryophyta. U materijalu su zabeležena 38 taksona do sada nepoznata na Ostrozubu, i to 6 Jungermanniopsida, 25 Bryopsida i 7 Sphagnopsida. Na crvenim listama mahovina Evrope i Srbije u različitim stepenima ugroženosti nalazi se 19 vrsta.

Key words: jetrenjače, mahovine, bele mahovine, konzervacija

Introduction

This work includes the review of the research results on the mosses from the Mt. Ostrozub and the revision of the Herbarium collection made by Ilić, Popović et al., 1950 and 1953. The material from 1950 was collected on localities: Zeleničje (1), village Ostrozub (2), near road Predejane – Ostrozub (3), the spring Srebrni kladenac (4), near road Ostrozub – Ruplje (5), village Ruplje (6), near the stream Golema Dolina (7) and peat near village Stojimirovo (8). The collection from 1953 is mainly from peatlands from the following villages: Selište (9), Preslap (10), Dobro Polje (11), Krstićevo (12), Ruplje (6), Stojimirovo (8), Kolibište (13), Čobanac (14) and Zeleničje (1). Only part of this collection

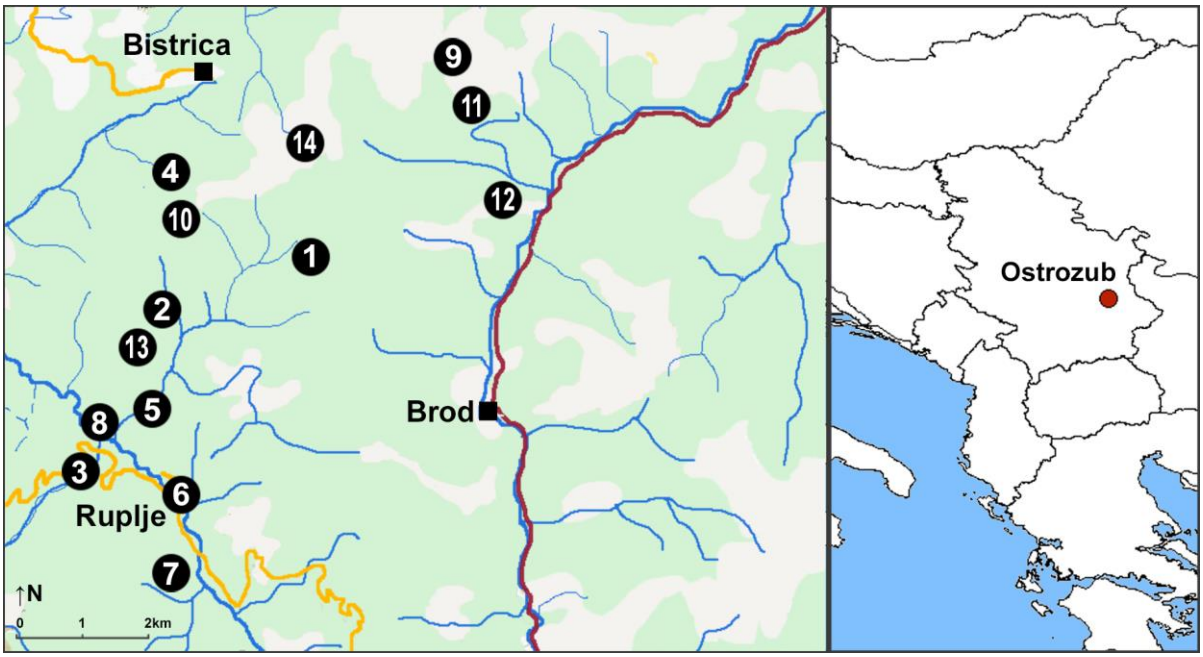

Fig. 1. Map of the Mt. Ostrozub with the study sites and its position.

was published in the papers cited bellow, the rest remained undetermined.

Investigation of the Mt. Ostrozub moss flora was performed in parallel with phytocenological research. However, the only specified article on the bryoflora is the publication on mosses in reserves and protected areas where 84 taxa have been listed (15 liverworts and 69 mosses) in the community of *Prunus laurocerasus* (Popović, 1966). Mišić et al. (1984) mentioned 38 (10 liverworts and 28 mosses), while Ilić (1951, 1952/53), mentioned several moss taxa within the community with cherry laurel.

The Mt. Ostrozub is located in the southeast of Serbia (**Fig. 1**), within the Rhodope mountain range (Avramovic et al., 2005). The area is linked to Vlasina complex in the south and Babička Gora in the north. The peaks of Čuklenik (1280 m.a.s.l.), Ostrozubska čuka (1546 m.a.s.l.), Čobanac (1496 m.a.s.l.) and Title (1487 m.a.s.l.) extend in the southwest-northeast direction. Hydrographic network consists of the rivers Ostrozubska, Rupska, Kozačka and Bistrička, and rivulets and streams Srebrni, Kladenac and Zelenički. The largest area is covered with the silicate surface. The most widely spread of soil is skeletal brown forest soil, with a weak acid reaction. Potential zonal vegetation is *Fagetum montanum* B. Jov. 1967. (Jovanović et al. 1997), i.e. subtype *Lauroceraso – Fagetum* B. Jov. 1967. (Jovanović, 1967). Regular shift of vegetation zones was observed from the foothill to the peak of the Mt. Ostrozub.

The Mt. Ostrozub drew attention of many botanists primarily because of cherry laurel (*Prunus laurocerasus* L.) discovered by Pančić (1887). After his discovery, a series of papers was created on this species and the beech forests, with which it forms a community *Lauroceraso-Fagetum* B. Jov. (Košanin, 1913; Ilić, 1951; Popović, 1952; Jovanović, 1952/53, 1967, 1973; Ranđelović et al., 1983; Mišić, et al., 1984; Jovanović et al., 1997). Zeleničje area, a part of the Mt. Ostrozub, is now protected as a nature reserve.

A rich hydrographic network and varied geological substrate enable formation of a large number of different microclimate habitats on the Mt. Ostrozub. All of the listed characteristics, as well as many others not mentioned here, suggest good conditions for the development of very diverse bryoflora on this mountain.

Material and methods

The bryophyte samples were collected from fourteen localities in 1950 and 1953 in Mt. Ostrozub. For identification of taxa, the relevant bryology literature was used (Petrov, 1975, Landwehr & Barkman, 1966; Landwehr & Gradstein, 1980; Smith, 1990, 2006). The nomenclature is in accordance with Grolle & Long (2000) and Hill et al. (2006). The lists of the moss taxa are summarized according to classification by Jonathan & Karen (2004) while genera are given in the alphabetical order. Literature sources (*) and new data on localities (**) are given for each

Table 1. List of bryophyte species on the Mt. Ostrozub with the literature and new data.

Species	*Literature data (1,2,3,4)	**New data
Marchantiophyta		
Marchantiopsida		
Conocephalum conicum (L.) Dum. (3)		Zeleničje
Marchantia polymorpha L. (3,4)		Zeleničje, peatland near Stojimirova
Jungermanniopsida		
Apometzgeria pubescens (Schrank) Kuwah. (3,4)		
Bazzania trilobaia (L.) Gray. (3,4)		
Blepharostoma trichophyllum (L.) Dum. (3)		Zeleničje
Calypogeia azurea Stotler & Crotz (4)		
•*C. mulleriana* (Schiffn.) Mull. Frid.		Zeleničje, stream Golema Dolina
Chiloscyphus pallescens (Ehrh. ex Hoffm.) Dum. (3)		
C. polyanthos (L.) Corda var. *polyanthus* (3,4)		Near road Ostrozub - Ruplje
•*Frullania dilatata* (L.) Dum.		Zeleničje
•*Jungermannia leiantha* Grolle		Zeleničje, Srebrni kladenac
Lophocolea bidentata (L.) Dum. var. *bidentata* (3)		Zeleničje
Metzgeria furcata (L.) Dum. (3)		
•*Pedinophyllum inerruptum* (Nees.) Kaal.		Zeleničje
Pellia epiphylla (L.) Corda. (3,4)		Srebrni kladenac
Plagiochila asplenioides (L. emend. Taylor) Dum. (3,4)		
•*P. porelloides* (Torrey ex Nees) Lindeb.		Zeleničje, stream Golema Dolina
•*Porella cordaeana* (Hub.) Moore		Zeleničje
P. platyphylla (L.) Pfeiff. (3,4)		
Radula complanata (L.) Dum. (3)		Near road Ostrozub - Ruplje
Scapania nemorea (L.) Grolle (4)		Zeleničje
S. undulata (L.) Dum. (3)		Zeleničje
Trichocolea tomentella (Ehrh.) Dum. (1,3,4)		Zeleničje
Bryophyta		
Bryopsida		
Abietinela abietina (Hedw.) M. Fleisch. (4)		
•*Amblistegium serpens* (Hedw.) Schimp.		Near road Predejane - Ostrozub
Antitrichia curtipendula (Hedw.) Brid. (3,4)		Zeleničje
Atrichum angustatum (Brid.) Bruch & Schimp. (3)		
A. undulatum (Hedw.) P. Beauw. (4)		Zeleničje, near road Predejane - Ostrozub
Barbula bicolor (Bruch & Schimp.) Lindb. (3)		
B. convoluta Hedw. (3)		
B. unguiculata Hedw. (3)		
Bartramia ityphylla Brid. (3)		Stream Golema Dolina
B. pomiformis Hedw. (3,4)		
•*Brachythecium albicans* (Hedw.) Schimp.		peak of Ostrozub
•*B. rivulare* Schimp.		Zeleničje, stream Golema Dolina
B. rutabulum (Hedw.) Schimp. (3)		Near road Predejane - Ostrozub
Bryum alpinum Huds. ex With. (3)		
B. caespiticium Hedw. (3)		Zeleničje, Stream Golema Dolina
B. capillare Hedw. (3)		Near road Predejane - Ostrozub, stream Golema Dolina
B. archangelicum Bruch & Schimp. (3)		
B. intermedium (Brid.) Blandow (3)		
•*B. pallescens* Schleich. ex Schwarg		Stream Golema Dolina
•*B. pseudotriquetrum* (Hedw.) P. Gaertn. & al.		Zeleničje
Calliergonella cuspidata (Hedw.) Loeske (3)		Peatland near Stojimirovo
Ceratodon purpureus (Hedw.) Brid. (3)		Stream Golema Dolina
Climacium dendroides (Hedw.) F. Weber & D. Mohr. (3,4)		Zeleničje
•*Cratoneuron filicinum* (Hedw.) Spruce		Zeleničje
Ctenidium molluscum (Hedw.) Mitt. (3,4)		Zeleničje, near road Predejane - Ostrozub
Dichodontium palustre (Dicks.) M. Stech (3)		
Dicranella crispa (Hedw.) Schimp. (3)		Zeleničje
D. heteromalla (Hedw.) Schimp. (3)		Zeleničje, stream Srebrni izvor
Dicranum scoparium Hedw. (2,3,4)		Zeleničje, Near road Predejane - Ostrozub, Ruplje, stream Golema Dolina

D. viride (Sull. & Lesq.) Lindb. (3)	
Diphyscium foliosum (Hedw.) D. Mohr (3)	
Ditrichum flexicaule (Schwagr.) Hampe (3)	
•*D. pallidum* (Hedw.) Hampe	Stream Golema Dolina
Drepanocladus aduncus (Hedw.) Warnst. (3)	Zeleničje
•*Eurhynchium angustirete* (Broth.) T. J. Kop.	Zeleničje
E. striatum (Hedw.) Schimp. (3,4)	
Fissidens adianthoides Hedw. (3)	
Fontinalis antipyretica Hedw. (3,4)	
Funaria hygrometrica Hedw. (3,4)	Zeleničje, stream Golema Dolina
•*Grimmia hartmanii* Schimp.	peak of Ostrozub
G. ovalis (Hedw.) Lindb. (3)	
•*G. pulvinata* (Hedw.) Sm.	Village Ostrozub
Hedwigia ciliata (Hedw.) P. Beauv. (3)	
•*Herzogiella seligeri* (Brid.) Z. Iwats.	Stream Golema Dolina
Homalothecium lutescens (Hedw.) H. Rob. (3,4)	
•*H. philippeanum* (Spruce) Schimp.	Zeleničje
Hylocomium splendens (Hedw.) Schimp. (2,3,4)	Zeleničje, Ruplje, stream Golema Dolina
•*Hymenoloma crispulum* (Hedw.) Ochyra	Stream Golema Dolina
Hypnum cupressiforme Hedw. (3,4)	Zeleničje, stream Golema Dolina
Isothecium alopecuroides (Lam. ex Dubois) Isov. (4)	Zeleničje, near road Predejane - Ostrozub, stream Golema Dolina
•*Kindbergia praelonga* (Hedw.) Ochyra	Zeleničje
•*Leskea polycarpa* Hedw.	Near road Predejane - Ostrozub, stream Golema Dolina
Leucobrium glaucum (Hedw.) Ĺngstr. (2)	
Leucodon sciuroides (Hedw.) Scwaegr. (3)	Zeleničje
Mnium marginatum (Dicks.) P. Beauv. (3)	
Neckera crispa Hedw. (4)	Stream Golema Dolina
Orthothecium rufescens (Dicks. *ex* Brid.) Schimp. (4)	
Orthotrichum pulchellum Brunt. (3)	
•*O. speciosum* Nees.	Village Ostrozub
•*Oxyrrhynchium schleicheri* (R. Hedw.) Roll	Near road Predejane - Ostrozub
Palustriela commutata (Hedw.) Ochyra var. *commutate* (3)	Zeleničje
Philonotis fontana (Hedw.) Brid. (3)	Peatland near Stojimirovo
Plagiomnium cuspidatum (Hedw.) T. J. Kop. (3,4)	Near road Predejane - Ostrozub
P. undulatum (Hedw.) T. J. Kop. (1,3,4)	Zeleničje, near road Predejane - Ostrozub, stream - Golema Dolina
Plagiothecium denticulatum (Hedw.) Schimp. (3,4)	Zeleničje
P. nemorale (Mitt.) A. Jaeg. (3)	
Platyhypnidium riparioides (Hedw.) Dixon (3)	
Pleurozium schreberi (Willd. ex Brid.) Mitt. (3)	
Pogonatum aloides (Hedw.) P. Beauv. (3)	Zeleničje
P. urnigerum (Hedw.) P. Beauv. (3)	Zeleničje, stream Golema Dolina
Polytrichastrum formosum (Hedw.) G. L. Sm. (3)	Zeleničje
Polytrichum commune Hedw. (2,3,4)	Zeleničje, near road Predejane - Ostrozub, peatland near Stojimirovo, Selište, Kolibište
P. juniperinum Hedw. (3)	Zeleničje
P. piliferum Hedw. (3)	
Psedoleskea incurvata (Hedw.) Loeske (3)	Zeleničje
•*Pseudoleskeella nervosa* (Brid.) Nyholm	Stream Golema Dolina
Pseudoscleropodium purum (Hedw.) M. Fleich. (3,4)	Zeleničje
Pterigynandrum filiforme Hedw. (3)	Zeleničje
Rhizomnium punctatum (Hedw.) T. J. Kop. (1,3,4)	Zeleničje, stream Golema Dolina
Rhytidiadelphus loreus (Hedw.) Warnst. (3,4)	Zeleničje
•*R. squarrosus* (Hedw.) Warnst.	Zeleničje, stream Golema Dolina
R. triquetrus (Hedw.) Warnst. (2,4)	Zeleničje, stream Golema Dolina, Ruplje
•*Sanionia uncinata* (Hedw.) Loeske	Stream Golema Dolina
Schistidium apocarpum (Hedw.) Bruch & Schimp. (3)	Zeleničje, stream Golema Dolina
•*Sciuro-hypnum populeum* (Hedw.) Ignatov & Huttunen	Zeleničje
•*S. reflexum* (Hedw.) Ignatov & Huttunen	Zeleničje
Syntrichia latifolia (Bruch ex Hartm.) Huebener (3)	

S. montana Nees (3)	
S. ruralis (Hedw.) F. Weber & D. Mohr (3)	
Tetraphis pellucida Hedw. (3)	
•*Thamnobryum alopecurum* (Hedw.) Gangulee	Stream Golema Dolina
•*Thuidium recognitum* (Hedw.) Lindb.	Near road Predejane - Ostrozub, stream Golema Dolina
T. tamariscinum (Hedw.) Schimp. (4)	Zeleničje
Tortella humilis (Hedw.) Jenn. (3)	
T. tortuosa (Hedw.) Limpr. (3)	
Tortula lanceola R. H. Zander (3)	
T. muralis Hedw. (3)	
•*T. subulata* Hedw.	Stream Golema Dolina, near road Predejane - Ostrozub
Warnstorfia fluitans (Hedw.) Loeske (4)	
Sphagnopsida	
•*Sphagnum angustifolium* (C. E. O. Jens. ex Russ.) C. E. O. Jens.	Selište
•*S. capillifolium* (Ehrh.) Hedw.	Stojimirovo
S. cuspidatum Ehrh. ex Hoffm. (3)	Ruplje
•*S. fallax* (H. Klinggr.) H. Klinggr.	Selište, Stojimirovo
•*S. flexuosum* Dozy & Molk.	Selište, Stojimirovo
•*S. inundatum* Russ.	Selište, under Preslapa, Čobanac, Krstićevo, Zeleničje, Dobro polje,
S. palustre L. (3)	Selište, under Preslap, Kolibište, Dobro polje, Krstićevo, Stojimirovo
•*S. squarrosum* Crome	Under Preslap, Kolibište
S. subsecundum Nees (3)	Zeleničje, Čobanac, Krstićevo
•*S. teres* (Schimp.) Angstr.	Golema Dolina

* Literature data: 1 - (Ilić, 1951, 1952/53), 2 - (Jovanović , 1952/53), 3 - (Popović, 1966), 4 - (Mišić et al., 1984)
** Data from the herbarium material collected in 1950 and 1953
• New species in the flora of the Mt. Ostrozub

taxon. New species on the Mt. Ostrozub are marked with the dot (•) in **Tab. 1**.

Herbarium collection has been deposited at the University of Belgrade – Faculty of Biology Herbarium (BEOU).

Results and discussion

In this paper, we report new data on the bryoflora of the Mt. Ostrozub obtained during the revision of the material collected in the Mt. Ostrozub in 1950 and 1953, as well as available literature data (**Tab. 1**). In total, 132 taxa of mosses were recorded, which makes this small area bryologically very important for Serbia. Twenty-three taxa were recorded from the Marchantiophyta: two from classis Marchantiopsida and twenty-one from classis Jungermanniopsida. Six of this species were recorded for the first time on the Mt. Ostrozub: *Calypogeia mulleriana*, *Frullania dilatata*, *Jungermannia leiantha*, *Pedinophyllum inerruptum*, *Plagiochila porelloides* and *Porella cordaeana*. Bryophyta (class Bryopsida and Sphagnopsida) is represented with 109 taxa. The class Bryopsida includes 99 taxa of which 25 species are recorded for the first time for the bryoflora of the Mt. Ostrozub: *Amblistegium serpens*, *Brachythecium albicans*, *B. rivulare*, *Bryum pallescens*, *B. pseudotriquetrum*, *Cratoneuron filicinum*, *Ditrichum pallidum*, *Eurhynchium angustirete*, *Grimmia hartmanii*, *G. pulvinata*, *Herzogiella seligeri*, *Homalothecium philippeanum*, *Hymenoloma crispulum*, *Kindbergia praelonga*, *Leskea polycarpa*, *Ortotrichum speciosum*, *Oxyrrhynchium schleicheri*, *Pseudoleskeella nervosa*, *Rhytidiadelphus squarrosus*, *Sanionia uncinata*, *Sciuro-hypnum populeum*, *S. reflexum*, *Thamnobryum alopecurum*, *Thuidium recognitum*, *Tortula subulata*. Ten peat moss (class Sphagnopsida) species were recorded, out of which seven were recorded for the first time on the Mt. Ostrozub (*S. angustifolium*, *S. capillifolium*, *S. fallax*, *S. inundatum*, *S. flexuosum*, *S. squarrosum*, *S. teres*).

The genera with the highest number of species for mosses this study were *Sphagnum* (10 taxa), *Bryum* (7 taxa) and *Barbula*, *Brachythecium*, *Grimmia*, *Polytrichum*, *Rhytidiadelphus*, *Syntrichia*, *Tortula* (3 taxa each).

The most diverse bryoflora (54 taxa) is recorded in the Reserve area, which includes Zeleničje locality (36). In locality number 7 (Stream

Table 2. Endangered species in the Mt. Ostrozub bryoflora

Category	Taxon
Critically endangered	*Calypogeia muelleriana*
Endangered	*Bazzania trilobata, Trichocolea tomentella*
Vulnerable	*Barbula bicolor, Dicranum viride, Tetraphis pellucid, Sphagnum capillifolium, S. cuspidatum, S. fallax, S. flexuosum, S. palustre, S. squarrosum, S. subsecundum* and *S. teres*
Low risk	*Diphyscium foliosum, Ditrichum pallidum, Fontinalis antipyretica, Orthotrichum pulchellum*
Data deficient	*Sciuro-hypnum reflexum*

Golema Dolina), great number of taxa (30) was also recorded, making this locality a bryologycally rich area. Significantly lower diversity was recorded in all other localities, possibly due to the less intense research in these localities by the researchers.

It is remarkable that on the Mt. Ostrozub peatlands, ten *Sphagnum* species were recorded. It is also one of the localities with the greatest diversity of this group.

On the Mt. Ostrozub, nineteen recorded taxa are classified in the Red Book of Europe (IUCN, 1994) and Serbia (S a b o v l j e v i ć et al., 2004) at different levels of vulnerability (**Tab. 2**).

Bern Convention - Annex 1 (Council of Europe, 1979) declares the species *Dicranum viride* as a strictly protected species. According to the Ordinance on the proclamation and protection of the wild species of plants, animals and fungi, *Sphagnum* species are strictly protected by local legislation (Sl. Glasnik RS, 2009). *Calypogeia muelleriana* and *Bazzania trilobata* are also protected according to this document.

A great number of species on the red lists justifies preserving maximum protection of habitats on the Mt. Ostrozub. It is also necessary to put the special emphasis on the protection of the peatlands outside the Reserve in order to maintain the diversity of the genus *Sphagnum*.

Acknowledgements. This research was supported by a grant from the Ministry of Education, Science and Development of Serbia (Project No. 173029).

References

Avramović, D., Zlatković, B., Ranđelović, N., 2005: Zaštićena prirodna dobra jugoistone Srbije. VIII Symposium on Flora of Southeasteren Serbia and Neighbouring Regions, Niš. Proceding, 223-227.

Council of Europe, 1979: Convention on the conservation of European wildlife and natural habitats. Bern.

Grolle, R., & Long, D. G., 2000: An annotatated check-list of the Hepaticae and Anthocerotae of Europe and Macronesia. *Journal of Bryoogy*, (22), 103-140.

Hill, M. O., Bell, N., Bruggeman-Nannenga, M. A., Brugues, M., Cano, M. J., Enroth, J., Flatberg, K. I., Frahm, J. P., Gallego, M. T., Garilleti, R., Guerra, J., Hedenäs, L., Holyoak, D. T., Hyvönen, J., Ignatov, M. S., Lara, F., Mazimpaka, V., Muñoz, J., and L. Söderström., 2006: An annotated checklist of the mosses of Europe and Macronesia. *Journal of Bryoogy*, (28), 198-267.

Ilić, E., 1951: Prilog poznavanju ekologije *Prunus laurocerasus* L. na Ostrozubu u Srbiji. Srpska akademija nauka, *Zbornik radova* 11, Institut za ekologiju i biogeografiju (2): 253-258.

Ilić, E. 1952/53: Edafski uslovi u bukovim šumama u rezervatu na Ostrozubu. Srpska akademija nauka, *Zbornik radova* 29, Institut za ekologiju i biogeografiju (3): 113-128.

IUCN, 1994: IUCN Red List Categories. IUCN, Gland, Switzerland.

Jonathan, S., & Karen, R., 2004: Phylogeny and diversification of Bryophytes. *American Journal of Botany*, 91(10): 1557–1581.

Jovanović, B., 1952/53: O dvema fitocenozama istočne Srbije. *Quercetum montanum* i *Fagetum muscetum*, *Zbornik radova* 29, Institut za ekologiju i biogeografiju (3): 1-44.

Jovanović, B., 1967: Fitocenoza sa zeleničetom na Ostrozubu (*Lauroceraso-Fagetum*). - In: Josifović, M (ed.), Pančićev zbornik u spomen 150. godišnjice njegovog rođenja, 127-137, Srpska Akademija Nauka i Umetnosti, Odeljenje Prirodno-Matematičkih nauka, Beograd.

Jovanović, B., 1973: Prilog poznavanju fitocenoze bukve na Ostrozubu. *Glasnik Prirodnjačkog Muzeja*, C (7), 5-27.

Jovanović, B., Mišić, V., Dinić, A., Diklić, N., Vukićević, E., 1997: Zajednica planinske bukve na neutralnim ili slabo kiselim zemljištima. In: Sarić, M (ed.), Vegetacija Srbije II1, 190-198, Srpska Akademija Nauka i Umetnosti, Odeljenje Prirodno-Matematičkih nauka, Beograd.

Košanin, N., 1913: Život zeleničeta na Ostrozubu. *Glasnik Srpske Kraljevske Akademije*, 89. Prirodno-Matematičke nauke, 37: 228-278.

Landwehr, J., Barkman, J. J., 1966: Atlas Van de Nederlandse Bladmossen. Koninklijke Nederlandse Natuurhistorische Vereniging, Amsterdam.

Landwehr, J., Gradstein R.S., 1980: Atlas Van de Nederlandse Levermossen. Koninklijke Nederlandse Natuurhistorische Vereniging, Amsterdam.

Mišić, V., Popović, M., Čolić, D., 1984: Varijabilitet i ekologija zeleničeta (*Prunus laurocerasus* L.) na Ostrozubu (Istočna Srbija). *Zaštita prirode*, (37): 49-79.

Pančić, J., 1887: Der Kirschlorbeer im Süd-Osten von Serbien.

Petrov, S. (1975): Bryophyta Bulgarica Clavis Diagnostica, 536 pp. Academia Scientiarum Bulgarica. Sofia.

Popović, M., 1966: Prilog poznavanj mahovina u rezervatima i zaštićenim područjima u Srbiji. *Zaštita prirode*, (33): 219-228.

Ranđelović, N., Martinović, Z., Sotirov, S., Jovanović, V., Ružić, M., Stamenković, V., Hill, D. A., Krivošej, Z., Ranđelović, V., 1983: *Prunus laurocerasus* L. na Ostrozubu cveta. *Glasnik prirodnjačkog muzeja*, B (38): 73-80.

Sabovljević, M., Cvetić, T., Stevanović, V., 2004: Bryophyte Red List of Serbia and Montenegro. *Biodiversity and Conservation*, (13): 1781-1790.

Službeni Glasnik RS, 2009: Pravilnik o proglašenju i zaštiti strogo zaštićenih i zaštićenih divljih vrsta biljaka, životinja i gljiva. Br. 5/2010 i 47/2011.

Smith, A. J. E., 1990: The Liverworts of Britain and Ireland. University Press, Cambridge.

Smith, A. J. E., 2006: The Moss flora of Britain and Ireland. University press. Cambridge.