



Sphagnum fimbriatum, a species new for the flora of Serbia

Milan VELJIĆ*, Danka BUKVIČKI and Petar D. MARIN

Faculty of Biology, University of Belgrade, Institute of Botany and Botanical Garden "Jevremovac", Takovska 43, 11 000 Belgrade, Serbia

ABSTRACT: Twenty-four species from the genus *Sphagnum* have been known up to now in the flora of Serbia. Based on a detailed analysis of herbarium material collected on Mt. Ostrozub, we identified *S. fimbriatum* Wilson, a species new to the bryoflora of Serbia.

KEYWORDS: *Sphagnum fimbriatum*, Mt. Ostrozub, Serbia

Received: 08 May 2015

Revision accepted: 18 January 2016

UDC: 582.323(497.11)
DOI: 10.5281/zenodo.48867

Species of the genus *Sphagnum* and their habitats in Serbia have not been sufficiently investigated, and any new data on members of this group are valuable in view of their increasing endangerment. Most of the data on species from the given genus can be found within the framework of general bryological or floristic investigation. The first data originate from surveys of mud of the Vlasina peatlands, today Lake Vlasina (JURIŠIĆ 1899; SIMIĆ 1899; KATIĆ 1906, 1907, 1907a, 1909, 1910; KOŠANIN 1910a, 1910b); Željina, Mt. Kopaonik (KATIĆ 1906, 1907, 1907a); and Mt. Golija (KOŠANIN 1908, 1909). After these data, species from the genus *Sphagnum* were mentioned sporadically in geobotanic investigation of the lake Blačko Jezero and Vlasina peatlands (ČERNJAVSKI 1932, 1938), as well as in phytocoenological studies of the Stara Planina Mts. (GREBENŠČIKOV 1950, ČOLIĆ *et al.* 1963). Extensive studies of the bryoflora in protected areas of Serbia also include peat mosses (POPOVIĆ 1966). Several taxa of the genus *Sphagnum* were found during investigation of the Serbian part of the Šar Planina Mts. (MARTINČIĆ 1980; SABOVLJEVIĆ 1998; SABOVLJEVIĆ & STEVANOVIĆ 2000). Floristic studies of Mt. Tara (GAJIĆ 1988), Mts. Golija and Javor (GAJIĆ 1989) and peaty soils include several species of this genus. The bryoflora of Mts. Tara (PAPP & SABOVLJEVIĆ 2002), Kopaonik (PAPP *et al.* 2004) and Golija (PAPP & ERZBERGER 2005) has been thoroughly investigated from 2000 until now. The

latest study of flora and vegetation on the Vlasina Plateau (RANĐELOVIĆ & ZLATKOVIĆ 2010) reports 13 species of this genus. In addition, occasional lists summarising the results obtained so far have been published by various authors (PAVLETIĆ 1955; MARTINČIĆ 1968; GAJIĆ *et al.* 1991; LAKUŠIĆ 1996; SABOVLJEVIĆ & STEVANOVIĆ 1998, 1999; ROS *et al.* 2013). A review of the above-mentioned literature data indicates that 24 *Sphagnum* species have been identified in Serbia to date.

This study represents a contribution to knowledge of diversity of the genus *Sphagnum* in Serbia. The data presented here derive from literature sources obtained by an unknown researcher who investigated the bryophyte flora of Mt. Ostrozub in 1953. The material was determined using relevant bryological literature and nomenclature according to ROS *et al.* (2013). The collection has been deposited in the herbarium of the Department of Plant Morphology and Systematics, Institute of Botany and Botanical Garden "Jevremovac", University of Belgrade (BEOU).

According to the above-mentioned studies, 24 species of the genus *Sphagnum* are present in the flora of Serbia, namely: *S. angustifolium* (C.E.O.Jensen *ex* Russow) C.E.O.Jensen, *S. auriculatum* Schimp., *S. capillifolium* (Ehrh.) Hedw., *S. central* C.E.O.Jensen., *S. contortum* Schultz., *S. cuspidatum* Ehrh. *ex* Hoffm., *S. fallax* (H.Klinggr.) H. Klinggr., *S. flexuosum* Dozy & Molk., *S.*

*correspondence: veljicm@bio.bg.ac.rs



Figure 1. Location of *S. fimbriatum* on Mt. Ostrozub and its position in Serbia.

fuscum (Schimp.) H. Klinggr., *S. girgensohnii* Russow, *S. inundatum* Russow, *S. magellanicum* Brid., *S. molle* Sull., *S. obtusum* Warnst., *S. palustre* L., *S. papillosum* Lindb., *S. platyphyllum* (Lindb. ex Braithw.) Warnst., *S. rubellum* Wilson, *S. russowii* Warnst., *S. squarrosus* Crome, *S. subnitens* Russow & Warnst., *S. subsecundum* Nees, *S. teres* (Schimp.) Lngstr., and *S. warnstorffii* Russow.

Sphagnum fimbriatum Wilson (Section *Acutifolia* Wilson), unknown in the Serbian bryophyte flora to date, was found and identified from material collected on the Selište peatlands on Mt. Ostrozub in 1953 (Figure 1). The species was found together with *S. palustre*, which was known earlier on this mountain (POPOVIĆ 1966). Also recorded on the same peatlands were *S. inundatum*, *S. angustifolium*, *S. fallax* and *S. flexuosum*.

Sphagnum fimbriatum grows as slender, elongated stems, forming loose carpets or soft sods. Individual plants are about 10 cm high. Small capitula, head-shaped groups of short branches, are situated at the top of the main stem, while the branches on the stem are thin and long. In some capitula at the top of the plants, several capsules can be found. The main differential characteristic of this species is the possession of fimbriate stem leaves. They are fan-shaped, often wider than long, narrowest at or near the base, fringed around the whole upper margin and slightly down the sides.

This species is a circumpolar-boreal floral element and grows at up to 1000 m a.s.l. in *Betulo-Salicetum* communities (SMITH 2004; SZURDOKI & ODOR 2004).

Sphagnum fimbriatum has been recorded in Bosnia and Herzegovina, Croatia and Bulgaria (Ros *et al.* 2013); in Romania (SABOVLJEVIĆ *et al.* 2008); and in Hungary (SZURDOKI & ODOR 2004).

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

REFERENCES

- ČERNJAVSKI P. 1932. Beitrag zur postglazialen Geschichte des Blace – “Sees” in Serbien. Bulletin de l’Institut et du Jardin botaniques de l’Universite de Belgrade 2(1-2): 80-90.
- ČERNJAVSKI P. 1938. Postglacijalna istorija Vlasinskih šuma. Izdavačko i književno preduzeće “Geca Kon”, Beograd, 78 pp.
- ČOLIĆ D, MIŠIĆ V & POPOVIĆ M. 1963. Fitocenološka analiza visokoplaninske zajednice Šleske vrbe i planinske jove (*Saliceto- Alnetum viride* ass. nova) na Staroj Planini. Zbornik radova, Biološki institut NR Srbije, Beograd 6(5): 1-43.
- GAJIĆ M. 1988. Flora nacionalnog parka Tara. Šumarski fakultet, Beograd.
- GAJIĆ M. 1989. Flora i vegetacija Golije i Javora. Šumarski fakultet, Beograd. OOUR Šumarstvo Golija - Ivanjica, 592 pp.

- GAJIĆ M, KORAĆ M & OBRATOV D. 1991. Pregled mahovina u Srbiji- Zbornik radova sa simpozijuma "Nedeljko Košanin i Botaničke nauke". 400-407. Ivanjica.
- GREBENŠČIKOV O. 1950. O vegetaciji centralnog dela Stare planine. Zbornik radova, Srpska Akademija Nauka, 1-36.
- JURIŠIĆ Ž. 1899. Prilog poznavanju mahovina u Srbiji. Spomenik Srpske akademije nauka **35**: 47-60.
- KATIĆ D. 1906. Beitrag zur Moosflora von Serbien. Hedwigia **45**: 92-99.
- KATIĆ D. 1907. Sitniji prilozi flore Srbije. Nastavnik **18**(5-6): 184-191.
- KATIĆ D. 1907a. Prilog građi za floru briofita u Srbiji. Prosvetni glasnik 369-380.
- KATIĆ D. 1909. Priložak mahovinskoj flori Srbije. Nastavnik **20**(7-8): 285-286.
- KATIĆ D. 1910. Vlasinska tresava i njezina prošlost. Spomenik Srpske Kraljevske Akademije, Beograd **50**(8), 14-56.
- KOŠANIN N. 1908. Mahovine sa Golije i njenih ogranaka. *Nastavnik*, juli-avgust, 1-3.
- KOŠANIN N. 1909. Moose aus dem Gebiete des Golia-Gebirges in Sudwest-Serbien. Hedwigia **48**: 207-209.
- KOŠANIN N. 1910a. Vlasina, biljno-geografska studija. Glas Srpske Kraljevske Akademije **81**: 86-186.
- KOŠANIN N. 1910b. Elementi Vlasinske flore. Muzej Srpske zemlje, **10**: 1-42.
- LAKUŠIĆ D. 1996. Pregled flore Kopaonika. Ekologija **31**(2): 1-35.
- MARTINČIĆ A. 1968. Catalogus Flore Jugoslaviae. Ljubljana.
- MARTINČIĆ A. 1980. Prispevek k poznavanju mahovne flore Jugoslavije II. Šar planina, Biološki vestnik **28**(2): 87-102.
- PAPP B, ERZBERGER P & SABOVLJEVIĆ M. 2004. Contributions to the Bryophyte flora of Kopaonik Mts (Serbia, Serbia-Montenegro). *Studia Botanica Hungarica* **35**: 67-79.
- PAPP B & ERZBERGER P. 2005. The Bryophyte flora of Golija-Studenica biosphere reserve and some adjacent sites (SW Serbia, Serbia-Montenegro). *Studia Botanica Hungarica* **36**: 101-116.
- PAPP B & SABOVLJEVIĆ M. 2002. The Bryophyte flora of Tara national park (W Serbia, Yugoslavia). *Studia Botanica Hungarica* **33**: 25-39.
- PAVLETIĆ Z. 1955. Prodrromus Flore Briofita Jugoslavije. JAZU, Zagreb.
- POPOVIĆ M. 1966. Prilog poznavanju mahovina u rezervatima i zaštićenim područjima u Srbiji. *Zaštita prirode* **33**: 219-228.
- RANĐELOVIĆ V & ZLATKOVIĆ B. 2010. Flora i vegetacija Vlasinske visoravni. Prirodno- matematički fakultet Niš, 448 pp.
- ROS RM, MAZIMPAKA V, ABOU-SALAMA U, ALEFFI M, BLOCKEEL TL, BRUGUES M, CROS RM, DIA MG, DIRKSE GM, DRAPER I, EL-SAADAWI W, ERDAG A, GANEVA A, GABRIEL R, GONZALEZ-MANCEBO JM, GRANGER C, HERRNSTADT I, HUGONNOT V, KHALIL K, KURSCHNER H, LOSADA-LIMA A, LUIS L, MIFSUD S, PRIVITERA M, PUGLISI M, SABOVLJEVIĆ M, SERGIO C, SHABBARA HM, SIM-SIM M, SOTIAUX A, TACCHI R, VANDERPOORTEN A & WERNER O. 2013. Mosses of the Mediterranean, an annotated check list. *Cryptogam. Bryologie* **34**: 99-283.
- SABOVLJEVIĆ M. 1998. The Rare Bryophytes of Sara Mountain, Yugoslavia. *Planta Europa* 159-161.
- SABOVLJEVIĆ M, NATCHEVA R, DIHORU G, TSAKIRI E, DRAGIĆEVIĆ S, ERDAG A & PAPP B. 2008. Check-list of the mosses of SE Europe. *Phytol. Balc.* **14**: 207-244.
- SABOVLJEVIĆ M & STEVANOVIĆ V. 1998. Pregled flore Bryopsida Srbije sa sinonimima. *Zaštita prirode* **50**: 147-168.
- SABOVLJEVIĆ M & STEVANOVIĆ V. 1999. Moss Conspectus of the Federal Republic of Yugoslavia. *Flora Mediterranea* **9**: 65-95.
- SABOVLJEVIĆ M & STEVANOVIĆ V. 2000. *Sphagnum denticulatum* Brid., new for the flora of Serbia (Yugoslavia). *Botanica Complutensis* **24**: 61-63.
- SIMIĆ M. 1899. Prilog flori mahovina u Srbiji. Spomenik Srpske akademije nauka **35**: 33-46.
- SMITH AJE. 2004. The moss flora of Britain and Ireland, 2nd ed. Cambridge: Cambridge University Press.
- SZURDOKI E & ODOR P. 2004. Distribution and expansion of *Sphagnum fimbriatum* in Hungary. *Lindbergia* **29**: 136-142.

REZIME

Sphagnum fimbriatum, nova vrsta u flori Srbije

Milan VELJIĆ, Danka BUKVIČKI i Petar D. MARIN

U flori mahovina Srbije do sada je poznato 24 vrste roda *Sphagnum*. Na osnovu detaljne analize herbarskog materijala sakupljenog na planini Ostrožub identifikovali smo vrstu - *Sphagnum fimbriatum* Wilson, do sada nepoznatu u brioflori Srbije.

KLJUČNE REČI: *Sphagnum fimbriatum*, Ostrožub, Srbija

