

NEW LOCALITY OF DISTRIBUTION OF *Sambucus deborensis* Košanin, LOCAL ENDEMIC IN THE REPUBLIC OF NORTH MACEDONIA

Agim HAZIRI*, Ema OLLOMANI*

*University of Tetova, Faculty of Sciences, Department of Biology, Tetovo, Republic of North Macedonia

*Correspondence author: Agim Haziri, University of Tetova, Faculty of Science, Department of Biology, Rr. Ilindenit, 1200 Tetovo, Republic of North Macedonia, e-mail: agim.haziri@unite.edu.mk

Abstract. *Sambucus deborensis* Košanin, is a threatened species that grows in a restricted area near Debar. From the national CORINE list, 19 local endemic species are present in North Macedonia, where one of them is also this species. From the current knowledge of flora in North Macedonia, *Sambucus deborensis* Košanin is presented only in a locality around the road south of Debar (676 m, 41°31'28"N, 20°31'36"E, 40-50 m²). In the case of widening the road, it could be seriously endangered or even disappeared. During the floristic researches in this territory near Debar, another new locality, was recognized which represents a new record of distribution of this species in the flora of North Macedonia. The new location (671 m, 41°31'24"N, 20°31'38"E, July 28, 2019) is about 1.5 km from the old locality. It has a significantly smaller surface area, and is constantly being damaged by urban construction. The discovery of this new locality is very important for this endangered species, but the relevant state institutions must urgently commit to protecting this species from illegal construction in this locality.

Keywords: *Sambucus deborensis* Košanin; Debar; new locality; Republic of North Macedonia.

INTRODUCTION

The Red Data List of threatened plant species within the Republic of North Macedonia has not yet been prepared, although there is sufficient data to do so [1-3, 5-6, 10-22]. Great numbers of higher plant species exist within North Macedonia, representing a portion of the globally threatened species included in relevant international documents – international Red Data Lists, conventions and directives (IUCN Global Red Data List, Bern Convention, European Union [EU] CORINE [Coordination of Information on the Environment] Biotopes Programme species), lists of endangered species and, unfortunately, a certain number within the list of extinct species. The IUCN Global Red Data List [33, 35, 39] contains 70 taxa from the Republic of North Macedonia (of which 19 are local endemics). From the European CORINE list, nine species are present in North Macedonia, whereas from the national CORINE list, 19 are present where one of them being *Sambucus deborensis* Košanin [29-32, 34, 35, 37], which at first it was considered only as a variety for the common species *Sambucus ebulus* L. var. *deborensis* Košanin [38].

MATERIAL AND METHODS

For the realization of this study we applied standard methods of floristic research. Such studies involve the identification of individual species and also the assessment of abundance of species. The techniques applied are known as floristic methods of description [4, 6-8]. Specimens of these species are deposited in the Department of Biology, University of Tetova.

RESULTS

Sambucus deborensis Košanin (*Caprifoliaceae*) is a perennial plant, with an creeping rhizome up to 3 m long. Stems grow in large groups near each other to a height of 1 to 1.7 m. The leaves have 5 to 9 leaflets,

13–21 × 10–20 cm, almost triangular in outline, imparipinnate, pale green, with fetid smell and opposite to each other. The stems end in a dens corymb with 5 main rays, 5-8 (10) cm in diameter, with white (occasionally pink) flat-topped flowers. Stipules leaf-like, bipinnate, persistent. Corolla snow-white, stamens almost equal to petals, erect, anther stalks snow-white, anthers purple. Its fruit is 4–5 mm long, glossy black and with 3 seeds. Flowering in July - August. They are pollinated by insect. Reproduction is made by seeds and vegetative means. [4, 7-9]. It is a threatened species from infrastructural development and construction activities. Conservation status, critically endangered [12-24, 25-28, 38].

During the floristic researches in the surroundings of Debar town, we have found this taxon in a new place (671 m, 41°31'24"N, 20°31'38"E, July 28, 2019), which represents a new record of distribution of this species in the flora of North Macedonia. The new location is about 1.5 km away from previous known place. It has a significantly smaller surface area, and is constantly being damaged by urban construction. The discovery of this new locality is very important for this endangered species, but the relevant state institutions must urgently commit to protecting this species from illegal construction in this locality.

DISCUSSION

Sambucus deborensis Košanin, is an local endemic in the Republic of North Macedonia. It was discovered in 1930 by Košanin, near Debar [4], (Fig. 3). This locality (676 m, 41°31'28"N, 20°31'36"E) [4, 26, 27] is located around the road south of Debar (Fig. 1). It is a threatened species that grows in a restricted area, 40-50 m². In the case of widening the road, it could be seriously endangered or even disappeared. From the European CORINE list, nine species are present in North Macedonia, whereas from the national CORINE list, 19 are present where one of them is also *Sambucus deborensis* Košanin [29-32, 34, 35, 37], which at first it

was considered only as a variety for the common species *Sambucus ebulus* L. var. *deborensis* Košanin [38].

Being an important species, it has consistently been part of every Biodiversity Monitoring Report of Ministry of Environment and Physical Planning and Biodiversity Strategy and Action Plan for the Republic of North Macedonia [12-17]. Thanks to institutional commitment, this important species has survived to this day. The discovery of this plant in a new locality, although only 1.5 km away from the previous known place, is of great importance to this rare and endangered species. This also could indicate an increased vitality that guarantees a secure future for this



Figure 1. Locality around the road south of Debar (foto by Ollomani, 2019)



Figure 2. New locality is constantly being damaged by urban construction (foto by Ollomani, 2019)



Figure 3. Distribution of *Sambucus deborensis* Košanin in North Macedonia, near Debar (●).

species. However, in the new locality, the plant population cover a significantly smaller area, and is constantly being damaged by urban construction (Fig. 2.), therefore the relevant state institutions must urgently commit to protecting this species from illegal construction in this locality.

Acknowledgements. Special thanks to Ministry of Environment and Physical Planning in Skopje, and to my colleagues of University of Pristina and University of Tetova, for professional cooperation.

REFERENCES

- [1] Brajanoska, R., Melovski, Lj., Hristovski, S., Sarov, A., Avukatov, V., (2011): Report of the project „Development of national ecological network in the Republic of Macedonia (MAK-NEN)”. Macedonian Ecological Society, Skopje, 114 p.
- [2] ECNC/REC project, (2009-2013): Biodiversity and ecosystem services in local sustainable development in the Western Balkans, (first phase 2009-2011, second phase 2012-2013), <https://www.rec.org/project-detail.php?id=52>, accessed on December, 2019.
- [3] GEF/UNDP/MEPP project, (2008-2011): Strengthening the environmental, institutional and financial sustainability of the system of protected areas in Macedonia, <https://www.cbd.int/doc/world/mk/mk-nr-05-en.pdf>, accessed on December, 2019.
- [4] Košanin, N., (1930): *Sambucus ebulus* L. var. *deborensis* n. var. Bulletin de Institute du Jardin Botaniques de Université de Belgrade, 1(3): 241-246.
- [5] Macedonian Ecological Society, (2011): Representative national protected area network, final report (GEF/UNDP/MEPP project ”Strengthening the environmental, institutional and financial sustainability of the system of protected areas in Macedonia”), Skopje, <http://mes.org.mk/nov-sajt/?lang=en>, accessed on December, 2019.
- [6] Matevski, V., Teofilovski, A., (2011): New species in the Flora of the Republic of Macedonia. Biologica macedonica, 62: 49-54.
- [7] Matevski, V., (2010): Flora of the Republic of Macedonia. Macedonian Academy of Sciences and Arts, Vol. II, Book 1, pp. 190.
- [8] Matevski, V., Čarni, A., Kostadinovski, M., (2005): New data regarding the Flora in the Republic of Macedonia. 8th Symposium of Flora in Southeastern Serbia and neighbouring Regions. Nis, Serbia and Montenegro, pp. 62-64.
- [9] Matevski, V., Čarni, A., Kostadinovski, M., Kosir, P., Silc, U., Zelnik, I., (2008): Flora and vegetation of the Macedonian steppe. Založba ZRC, ZRC SAZU, Ljubljana, pp. 96.
- [10] Matevski, V., Čarni, A., Avramovski, O., Juvan, N., Kostadinovski, M., Košir, P., Marinšek, A., Paušič, A., Šilc, U., (2011): Forest vegetation of the Galičica mountain range in Macedonia. 34th Symposium of the EADSVE. Camerino, Italia, pp. 48-53.
- [11] Matevski, V., Petkovski, S., Andonov, S., Melovski, Lj., Krstić, S., (2003): Country study for biodiversity of the Republic of Macedonia. MEPP, Skopje, pp. 47-54.
- [12] MEPP, (2010): Assessment and Evaluation of Biodiversity on National Level. Report and National Catalogue (Check List) of Species. Ministry of Environment and Physical Planning. Skopje, pp. 79-99.

- [13] MEPP, (2003): Biodiversity Strategy and Action Plan for the Republic of Macedonia. Ministry of Environment and Physical Planning. Skopje, pp. 85.
- [14] MEPP, (2004): Стратегија и Акционен План на Република Македонија. Министерство за животна средина и просторно планирање. Библиографија. ISBN: 9989 – 110 – 16 – 6. Skopje, pp. 134.
- [15] MEPP, (2003): Студија за состојбата со биолошката разновидност во Република Македонија. Министерство за животна средина и просторно планирање, Skopje, pp. 224.
- [16] MEPP, (2014): Fifth National Report to the Convention on Biological Diversity of the Republic of Macedonia Ministry of Environment and Physical Planning. Skopje, pp. 118.
- [17] MEPP, (2014): CDDA - Common database on designated areas, EEA-European Environmental Agency. <https://www.eea.europa.eu/data-and-maps/data/external/common-database-on-designated-areas>, accessed on December, 2019.
- [18] MEPP, (2014): Third National Communication on Climate Change. Ministry of Environment and Physical Planning. Skopje, pp. 275.
- [19] MEPP, (2015): Environmental statistics. Republic of Macedonia State Statistical office. MAKSTAT, Skopje, pp. 40.
- [20] MEPP, (2017): Environmental statistics. Republic of Macedonia State Statistical office. MAKSTAT, Skopje, pp. 40-41.
- [21] MEPP, (2019): Environmental Performance Reviews Series No. 51. North Macedonia. Third Review. United Nations. Geneva, 2019, pp. 245-272.
- [22] MEPP, (2011): Environmental indicators in the Republic of Macedonia (2010). Skopje, pp. 222.
- [23] Melovski, Lj., Matevski, V., Kostadinovski, M., Karadelev, M., Angelova, N., Radford, E., (2010): Important plant areas in Macedonia. Macedonian Ecological Society, pp. 128.
- [24] Melovski, D., Ivanov, G., Stojanov, A., Avukatov, V., Trajce, A., Hoxha, B., Von Arx, M., Breitenmoser-Wursten, C., Hristovski, S., Shumka, S., Breitenmoser, U., (2013): Proceedings of the 4th Congress of Ecologists of Macedonia with International Participation. Ohrid, 12-15 October 2012. Macedonian Ecological Society. Special issue, Skopje, pp. 226.
- [25] Micevski, K., Matevski, V., (2005): Flora of the Republic of Macedonia, Vol. I, Book 6. Macedonian Academy of Sciences and Arts. Skopje, pp. 1437-1716.
- [26] Micevski, K., Matevski, V., (1987): Teritorijalna podela endema u SR Makedoniji i problem njihove ugroženosti. Akademija Nauka i Umjetnosti Bosne i Hercegovine, ANUBiH. Posebna izdanja. Odd. prir. nauka. Sarajevo, BiH, 14:199-207.
- [27] Micevski, K., (1978): Reliktnost i endemizam vo florata i vegetacijata na Makedonija. Makedonska Akademija na Naukite i Umetnostite, pristapni predavanja, Skopje, pp. 79-93.
- [28] Nikolov, N., (2014): Vulnerability assessment and adaptation sectoral reports – Forestry, <http://www.unfccc.org.mk/>, accessed on 02.04.2014.
- [29] IUCN, (1966): International Red Data book of species threatened with extinction. IUCN, Gland, Switzerland and Cambridge, UK, pp. 217.
- [30] IUCN, (1994): IUCN Red List categories. Version 2.3. Gland, Switzerland (IUCN Species Survival Commission, IUCN), pp. 38.
- [31] IUCN, (2003): Guidelines for Using the IUCN Red List categories and criteria. Prepared by the Standards and Petitions Subcommittee of the IUCN SSC Red List Programme Committee. IUCN, Gland, Switzerland, Cambridge, UK, pp. 113.
- [32] IUCN, (2012): Guidelines for application of IUCN Red List criteria at regional and national levels. Version 4.0. <https://portals.iucn.org/library/node/10336>, accessed on December, 2019.
- [33] IUCN, (2012): IUCN Red List categories and criteria. Version 3.1. IUCN Species Survival Commission. IUCN, Gland, Switzerland, Cambridge, UK. <https://portals.iucn.org/library/node/10315>, accessed on December, 2019.
- [34] IUCN, (2013): IUCN Red List of threatened species. Version 2013.2, <https://www.iucnredlist.org/>, accessed on 01.04.2014.
- [35] IUCN, (2016): Guidelines for appropriate uses of IUCN red list data. Version 3.0. IUCN Species Survival Commission. IUCN, Gland, Switzerland & Cambridge, UK. <https://www.iucnredlist.org/resources/guidelines-for-appropriate-uses-of-red-list-data>, accessed on December, 2019.
- [36] Teofilovski, A., (2017): Contribution to knowledge of the flora of the Republic of Macedonia. *Botanica Serbica*, 41(1): 99-103.
- [37] Teofilovski, A., (2011): Contribution to the flora of the Republic of Macedonia. Private edition of the author. PAN Computers & Print – Tetovo, Skopje, pp. 142.
- [38] Tutin, T. G., Heywood, V. H., & al. (1976): *Flora Europaea*, Vol. 4. Cambridge University Press, Cambridge, pp. 44.
- [39] Walter, K.S., Gillet, H.J., (1998): 1997 IUCN Red List of Threatened Plants. Compiled by the World Conservation Monitoring Centre. IUCN. The World Conservation Union, Gland, Switzerland & Cambridge, pp. 862. <https://www.biodiversitylibrary.org/page/31085360#page/5/mode/1up>, accessed on December, 2019.

Received: 11 November 2019

Accepted: 2 May 2020

Published Online: 4 May 2020

Analele Universității din Oradea, Fascicula Biologie

<http://www.bioresearch.ro/revistaen.html>

Print-ISSN: 1224-5119

e-ISSN: 1844-7589

CD-ISSN: 1842-6433

University of Oradea Publishing House