

Population status and natural localities of *Rhodiola rosea* in Rila Mts.

Rhodiola rosea L., a member of Crassulaceae family, is an alpine plant that grows in specific and sensitive high-mountain habitat and is, therefore, a very suitable for studying the effect of climate change.

Boriana Sidjimova¹, Ina Aneva^{1*}, Petar Zhelev², Milena Nikolova¹, Slavcho Savev²

¹*Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, Sofia, Bulgaria*

²*University of Forestry – Sofia, Bulgaria*

This study aimed to evaluate the population size and the conservation status of six natural localities of *R. rosea* in Rila Mts: 1) Seven Rila Lakes; 2) Skakavitsa waterfall; 3) Kalin Dam; 4) Rusaliite; 5) Belmeken; 6) Musala hut.



The objects of the study included six localities of the species in Rila Mts. The field observations took place in the period June-September, 2016 – 2020. Field observations were carried out in sample plots, 100 m² in size. The number of *R. rosea* plants within populations was determined.

Another critical threat is anthropogenic pressure due to the medicinal properties of the species. The species is protected according to the Biodiversity Act of Bulgaria, Appendix 3, which means that it is prohibited for collection from wild habitats. Therefore, collection and trade of this species from natural localities is a violation of the legislation and is a subject to punishment.

The populations of *R. rosea* are represented by a small number of individuals. The main reason can be traced in its ecological requirements to the specific type of habitats. *R. rosea* occurs on stony and rocky, wet places on screes and along with the mountain streams, above the treeline. The species could be found on areas close to the late melting snowdrifts, which provides sufficient soil moisture. Although *R. rosea* has succulent morphology, it is highly dependent on relatively stable water supplies. Therefore, climate change could be disastrous for the species.



Locality	Altitude (m a.s.l.)	Area of the locality (m ²)	Number
Seven Rila Lakes	2400	1200	63
Skakavitsa's waterfall	2050	600	48
Kalin Dam	2400	100	4
Rusaliite	2020	200	12
Belmeken	2200	1800	130
Musala hut	2400	600	28

R. rosea is a species with high conservation value worldwide. Further active protection measures aimed at achieving long-term conservation of the populations of *R. rosea* and the unique nature as a whole must be taken. Regular monitoring needs to be carried out. The including of the species in CITES Appendix II should be done.

R. rosea in its natural locality Belmeken



Acknowledgements. This work has been carried out in the framework of the National Science Program "Environmental Protection and Reduction of Risks of Adverse Events and Natural Disasters", approved by the Resolution of the Council of Ministers № 577/17.08.2018 and supported by the Ministry of Education and Science (MES) of Bulgaria (Agreement № Д01-363/17.12.2020).