Bulgaria

Monitoring and assessment of ground vegetation

In implementation of the planned activities in 2020, the intensive monitoring program was conducted in four sample plots – SP0001 Vitinia, SP0004 St. Oriahovo, SP0003 Yundola and Complex Background Monitoring Station (CBMS) Rojen (SP0005). CBMS Rojen was included in the level II surveys in 2016.

In accordance with the adopted methodological approach, the size of the studied subplots was increased from 1.00 to 40 m^2, with total survey area of 400 m^2.

Floristic composition and phytocoenotic structure

The phytocenotical survey in SP0001 Vitinia was carried out in the last decade of August 2020.

The observed changes in the coverage and occurrence of the species during the observed period of 2020 vary around the average values for these indicators over the last 10 years, which gives grounds to assess these changes as ecotopic and phytocyclic fluctuations of the natural habitat type 9130 - Beech forests of the type Asperulo-Fagetum - subtype Mesophytic beech forests on relatively poor soils, which is associated with the association Festuco drymejae - Fagetum.

The analysis of the results of the regeneration study confirms the established regularity regarding the influence of the ground grass and shrub cover on the regeneration process, which is more pronounced at a total coverage of over 50%, with the most negative impact of Festuca drymeja and Luzula luzuloides when they form high-density groups.

SP0001 Vitinia

In the vertical structure of phytocenosis are distinguished most often 3 layers. The comparison with the established in 2005, 2015 and 2017 a vertical structure shows, that the vertical segmentation of phytocenosis is more stable compared with horizontal.

The analysis of the results of the study confirmed established in other studies patterns, concerning the impact of grass cover on the regeneration process, which is more pronounced for total coverage over 50%. Negative impacts have species *Festuca drymeja* and *Luzula luzuloides* when forming groups with greater density.

The phytocenotical survey in SP0003 Yundola was carried out in the end of August 2020.

The observed changes in the quantitative ratios of the species in the shrub-grass synusiae during the observed period of 2020 compared to the average indicators in the last 10 years are assessed as natural ecotopic and phytocyclic fluctuations, modified with different forms of anthropogenic impact on natural habitat type 9410 - Acidophilic forests from Picea in the

mountain to the alpine zone (*Vaccinio-Piceetea*) - subtype Mid-mountain coniferous forests (*Abieto-Piceenion*).

The analysis of the regeneration process gives grounds to confirm the conclusions that the influence of the grass cover on the regeneration process is more pronounced at coverage over 50%, as the most significant obstacle to the regeneration is the dense moss cover. The densely tufted grasses also have a negative effect on the regeneration.

Based on the ecological amplitudes of the species in the thermoclimatic regime, 6 ecogroups of species have been formed: boreal - 1 species; subboreal - 3 species; cold-resistant - 10 species; Central European - 3 species; sub-Central European - 18 species; South Central European - 6 species.

The phytocenotical survey in SP0004 Staro Oriahovo was conducted in the last decade of July 2020.

The decreasing coverage of species of grass synusia may be associated with anthropogenic impact of planned felling held in unfenced parts of the stationary test area. Some of the changes in the coverage and the occurrence of the species due to natural ecotopic and phytocyclic fluctuations, and anthropogenic impact, including the impact of passing wild boars.
The analysis of the horizontal and vertical structure shows that the studied plant community is characterized by horizontal and vertical continuum, which are expressed in the lack of clearly defined boundaries between the microgroups and the floors.
The results of the study of the regeneration process confirm already established regularities regarding the influence of the bush and grass sinuses on the regeneration process, which is more pronounced at coverage over 40%. The growth of the undergrowth in the area of the bush sinus also has a negative impact on the regeneration.
Based on the ecological amplitudes of the species under the thermoclimatic regime, 6 ecogroups of species have been formed, as the predominant ecogroup of the plant species gives reason to define the thermoclimatic regime of the habitat as sub- Central European, low-mountainous with transition to Southern-European.

Lysimachia nummularia L., Staro Oriahovo

The phytocenotical survey in SP0005 CBMS Rojen was conducted in the second decade of July 2020.

The observed significant changes in the cover and the occurrence of the species and the changes in the horizontal and vertical structure of the restoring community in comparison with the indicators in 2017 are mainly related to wind and snow break of part of the stand in the last year.

The unsatisfactory outcome of the evaluation of the regeneration process, apart from the influence of wind and snow on part of the stand, is also associated with the competition of dense tufted wheat and sour grasses with the seedlings of the common spruce.

Based on the ecological amplitudes of the species under the thermoclimatic regime, 6 ecogroups of species have been formed: - 2 species; subboreal - 3 species; cold-resistant - 7 species; Central European - 1 species; sub-Central European - 10 species; South Central European - 6 species.