Biomass of Tree Layer and Regeneration in Xerothermic Oak Ecosystem (SCI "Zapadna Stara Planina i Predbalkan", Bulgaria)

Mariyana Lyubenova[1], Violeta Dimitrova[2], Nadezhda Georgieva[1]

[1] *Sofia University "St. Kliment Ohridski" – Faculty of Biology, Department of Ecology and Enviromental Protection, 8 Dragan Tzankov Blvd. 1164 Sofia, Bulgaria; ryann@abv.bg*

[2] *University of Forestry – Faculty of Forestry, Department of Dendrology, 10 Kliment Okhridsky Blvd. 1756 Sofia, Bulgaria; vilydi@abv.bg*

Keywords: biomass, tree layer, oak forest

The xerothermic oak ecosystems are a part of the autochthonic vegetation of Bulgaria. The xerothermic oak vegetation has significant environmental, economic and social importance in Bulgaria. These facts underlie the announcement of xerothermic oak forests as protected and also as an endangered habitat (Biological Diversity Act, Annex 1; The Red Data Book of the Republic of Bulgaria, vol. 3). The studied forest ecosystem *Quercus frainetto-Quercus cerris* belongs to habitat G1.768 Moesio-Danubian termophilous oak forest (EUNIS) or habitat 91M0 Pannonian-Balkanic turkey oak-sessile oak forests (Natura 2000).

The underground and aboveground biomass of tree layer and young tree samplings and regeneration in representative *Quercus frainetto-Quercus cerris* ecosystem from SCI "Zapadna Stara planina i Predbalkan" was determined. The study was conducted in a semi-stationary sampling plot located in the investigated forest area. The classical methods for studying biomass (Rodin et Bazilevich, 1968; Lyubenova, 2009) were used. The biomass structure of the model trees was determined by the weight ratio of the fractions – leaves, annual branches, perennial branches, wood, bark and roots of different mean diameter. The grade of regeneration of the forest ecosystem was also determined. The data for biomass of each fraction was compared to the others. The data obtained in this study was also compared to the results of previous studies and the values in classical scales. The ecological status of the studied forest ecosystem and its functional efficiency was discussed based on the obtained results, the data for health status of xerothermic oak vegetation in SCI "Zapadna Stara planina i Predbalkan" and the climate data for the region.

The results of the research carried out are important for forest monitoring, for further utilization of oak communities and for preservation of xerothermic oak ecosystems in areas protected by Nature 2000 in Bulgaria. They can also be incorporated into the existing forest ecosystems database.