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GENETIC DIVERSITY OF THE *QUERCUS ROBUR* L. POPULATION FROM THE PROTECTED AREA „KOŠUTNJAK FOREST” (BELGRADE, SERBIA) ASSESSED BY NUCLEAR MICROSATELLITES

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Pedunculate oak (*Quercus robur* L.) is one of the economically and ecologically most important deciduous forest tree species in Europe. In recent decades, there has been an evident decline of pedunculate oak forests, caused by various factors, such as climate change, site conditions, over-exploitation, or insufficient and inadequate regeneration. In Serbia, this species usually occurs in the valleys of major rivers (Danube, Sava, and Morava), and the most valuable pedunculate oak forests grow along the river Sava in the area of Srem, where there are individual specimens aged hundreds of years. The protected area „Košutnjak Forest” (Belgrade, Serbia), occupies 267 ha, with numerous forest tree species, among which are five native oak species, including the pedunculate oak. Oaks can be categorized as „at-risk” species in „Kosutnjak Forest”, since their populations are mostly represented by very old trees, with a poor possibility of natural rejuvenation. This research aimed to determine the genetic variability of the pedunculate oak population in the „Košutnjak Forest” using nuclear microsatellites. DNA extraction was performed from young leaves, collected from 56 adult trees, using a commercial peqGOLD Plant DNA Mini Kit (PEQLAB). In total 13 nuclear microsatellites were used, and values of standard genetic diversity parameters were calculated using *GenAlEx* 6.5 software. The number of alleles per locus ranged from 8 (MSQ13 and PIE239) to 39 (QrZAG90), with an average of 17.538. The number of effective alleles per locus was in the range from 2,498 (QrZAG108) to 23.668 (QrZAG90), with an average of 8.360. The average value of the observed heterozygosity (H_o) was 0.705, and the average unbiased expected heterozygosity (uH_e) was 0.818. A statistically significant deviation of the expected heterozygosity from the observed heterozygosity occurs at 5 loci (MAQ4, PIE239, QpZAG104, QrZAG108, and MSQ13). The average values of the fixation index were positive and statistically significant, indicating an excess of homozygotes. According to the assessment of the genetic status, determining the level of genetic variability of pedunculate oak served as a basis for defining *in situ* conservation measures for the available gene pool in „Kosutnjak Forest”.

Keywords: pedunculate oak; conservation; forest genetic resources; molecular markers

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