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Old-growth Broad-Leaved Forest in the Center of Moscow City: Structure and Dynamics over 20 Years of Observations

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Natural old-growth Querco-Fagetea broad-leaved forest with typical flora and canopy structure was discovered and characterized in the central part of the Moscow City on the slope of the Moscow River. The stand includes old-age oaks (Quercus robur) and large trees of Norway maple (Acer platanoides), linden (Tilia cordata) and ash (Fraxinus excelsior). The field layer is dominated by typical species of nemoral flora: Aegopodium podagraria, Carex pilosa and Ranunculus cassubicus with presence of some rare species from the "Red Book of Moscow". The stand dynamics was studied on permanent sample plot over 20 years from 1998 to 2018. It is shown that under conditions of recreation and close proximity to the highway not only the composition and structure, but also the stand dynamics correspond to those in natural communities of the broad-leaved forest zone. Oak, in the absence of regeneration, remains one of the dominant tree species, and no evidence of old oak trees dieback was recorded. The basal area, calculated as cross-sectional area of trees at breast height, for 20 years has increased in all broad-leaved species. Thus, there are no signs of stand decline that is typical for many other oak stands in the Moscow region. The ratio of tree species has changed in favor of maple. It was recommended to designate this forest area within the "Vorobyovy Gory" Reserve as a valuable natural complex, not to plant introduced species, stop cutting down the young growth, and to use area for educational purposes.