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Orchids as indicator species of forest disturbances on limestone quarry in Georgia (South Caucasus)

Summary

Akhalkatsi, M., Arabuli, G. & R. Lorenz (2014): Orchids as indicator species of forest disturbances on limestone quarry in Georgia (South Caucasus).- J. Eur. Orch. 46 (1): 123-160.

Orchids as indicator species are adapted to abiotic factors of habitat and have symbiotic relation with soil mycorrhizal fungi and pollination mechanisms by insects. Sky exposition is lower in degraded forest as high trees are replaced by small trees and shrubs with many twigs covering underground. Intensive cut down changes forest for shibliak containing some short trees and shrubs and having higher sky exposition. Clear cutting and grazing lead to dry secondary steppe.

Sky exposition reveals negative linear correlation ($r = -0.767$) with species density and degraded forest contains more orchid individuals in shaded understory supporting mycorrhizal fungi conservation in soil. Positive linear correlation was found between fertility and sky exposition ($r = 0.412$) and orchids are flowering in primary forest with high vertical structure with old-growing trees. Cutting forest shows negative impact on not flowering orchid populations as pollinator bees activity is depending on the density and height of the surrounding vegetation. Shibliak with open canopy contains few species and individuals of orchids. Orchids are absent in secondary steppes due to change of soil composition by influence of high illumination and grazing. Primary forest contains many rare and endemic species. Thus, conservation of orchids needs correct management of habitats protection.