



Influence of forest openness on soil organic matter: Case study from beech and fir forests in Dinaric mountain region

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Dinaric beech and fir uneven-aged forests are well known for their preserved stand structure, which is often comparable to old growth sites. As these forest ecosystems are often found on calcareous bedrock and shallow rocky soils, where organic matter plays decisive role in nutrient cycling, water supply and consequently site productivity, lower intensity of applied silvicultural measures during last century definitely benefited to current favourable stand conditions. Formation of forest gaps directly reflects in characteristics of soil organic matter (SOM).

Our study compared relation between SOM and different light availability (openness) as a consequence of different logging intensity on Bosnian (20% of living stock) and Slovenian sites (50-100% of living stock). Openness in experimental gaps on Bosnian sites ranged between 10-15%, while on Slovenian sites up to 50%.

Contents of SOM in beech and fir forest stands with openness below 15 % showed smaller differences, that were distinctive only in upper part of mostly undecomposed organic horizon. The results from Slovenian sites on the other hand showed significant and consistent decrease in both organic carbon and total nitrogen concentrations in each organic horizon and also in the top mineral soil layer. Wider carbon to nitrogen ratio has occurred in canopy gaps. Possible SOM regeneration mechanisms are discussed.