

DYNAMICS OF CHEMICAL TRAITS OF DOWNED DEAD WOOD IN A TEMPERATE OLD-GROWTH FOREST

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Old-growth forests (OGF) are considered paramount for the local biodiversity and are defined by their high quantities of dead wood. Acting like a nutrient reservoir and home for a multitude of different organisms, dead wood is such a paramount factor in the ecosystem that the survivability of hundreds of species is endangered when it is removed or extracted. The interaction between the scavengers and the dead wood relies heavily on its chemical traits, which in turn depends invariably on the original species, diameter of the dead wood piece or the time since its fall. This work aimed to study in detail the chemical composition of the dead wood originated from the two dominant species (Silver fir and European beech) of an old-growth temperate forest in Sinca, Romania, one of the few remaining old-growth forests in Europe. Different diameters (1 to 25 cm) of different ages of dead wood (from 1 to >4 years) were selected to perform a complete ionomics study along with carbon and nitrogen composition. Our results unveiled that while the Carbon/Nitrogen ratio decreases as the dead wood gets older, different cations such as Si, Ca or K significantly differ between species. Moreover, different cations also show multiple changes as the diameter of the piece increases. Our research shows a highly dynamic dead wood, with huge differences not only related to the species, but also to its size and age. These results are a step further in the understanding of the traits of the dead wood, and its importance in the biodiversity and the global nutrient and carbon turnover of an endangered ecosystem such as old-growth forests.

Acknowledgments: This study was funded by Romanian Ministry of Education and Research grant CNCS-UEFISCDI, project number PN-III-P4-ID-PCE-2020-2696, within PNCDI III.

Keywords: *deadwood respiration, CO₂ efflux, virgin forest, Carpathian Mountains.*