

Summary:

This thesis is focused on collecting information on the importance of dead wood on biogeochemical cycles of chemical elements in the mountain forest ecosystems of central Europe. The goal of this thesis was to determine the concentration of various elements (C, N, P, Ca, Mg, K, Na, Mn, Al, Fe) in the coarse woody debris of spruce samples of different age, stage of decomposition which were collected in different localities in the national park Šumava. Another goal was to determine the speed of which these elements are released from the dead wood. The information on the quantity of different elements and the speed of their release is currently lacking and could lead to better understanding of various biogeochemical cycles of elements in the mountain forest. During the decomposition the concentration of the elements N, P, Al and Fe increased whereas the Kalium concentration decreased. The other elements' (C, N, Ca, Mg, Mn) concentrations varied. Carbon constituted approximately 50% of weight in all of the samples analyzed. We carried out a laboratory experiment based on decomposition of dead wood samples in various stage of decay during a period of six months. The released concentration of CO₂ was measured at two to four weeks intervals. The release of CO₂ continually decreased during the experiment.. The density of samples studied coincided with previously published results. In general the density of dead wood decreases with ongoing decomposition. The ions washed out of the wood were the least concentrated in early stages of wood decomposition whereas in later stages their concentrations considerably increased. Keeping deadwood on site in ecosystems has a very positive impact on the development of the acidified and disturbed ecosystem, is a significant source of nutrients and environments that increase the biodiversity organisms. The possible harvesting of dead wood from the forest can further disrupt the ecosystem's balance.

Key words: Acidification, Biogeochemical cycles, Dead wood, Decompositon, Disturbance, National park Bohemian Forest, Nutrient budgets, Nutrient pools