Base-cation Cycling by Individual Tree Species in Old-growth Hardwood-hemlock Forests of Sylvania Recreation Area, Upper Michigan. (S07-fujinuma104839-Poster)

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Abstract:

The influence of individual tree species on base-cation (Ca, Mg, K, Na) distribution and cycling was examined beneath sugar maple (Acer saccharum Marsh.), basswood (Tilia americana L.), and hemlock (Tsuga canadensis L.) in mixed hardwood - hemlock forests in northwestern Michigan. Base cation pools (biomass, forest floor, mineral soil) and fluxes (bulk precipitation, throughfall, stemflow, litterfall, forest floor leachate, mineralization, and soil leachate) were estimated for five replicated trees on a sandy, mixed, frigid, Typic Haplorthod during the 2000 and 2001 growing seasons. Sugar maple distributed more base cations in biomass whereas basswood and hemlock distributed them in the mineral soil. Base-cation fluxes generally are ranked: basswood > sugar maple > hemlock. Although the differences in inputs among tree species during the growing season are small compared to the size of pools, they produce significant differences in base-cation pools over a single life cycle (ca. 250 years). These differences in base-cation pools and fluxes are important with regards to the sustainability of mixed hardwood-hemlock ecosystems in the upper Great Lakes region.

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