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Impacts of Harvesting Forest Residues for Bioenergy on Herptofauna and Herbaceous Plant Community Assemblages in Northern Hardwood Forests

The most readily available source of woody biomass is through whole-tree harvesting that removes what has been traditionally left as slash [i.e., fine woody debris (FWD)]. While FWD has the potential to be used as energy feedstock, a critical element of managing for biodiversity is maintaining woody debris on the forest floor. Woody biomass is important for providing seed beds, and creating habitat structure for wildlife. Loss of FWD may result in a change in species that may have cascading effects across trophic levels; and cause shifts in the size, distribution, and vertical zonation of vegetation over large areas. Land managers are concerned with removing FWD in northern hardwood systems because of the existing lack of large woody debris and structural diversity (e.g., understory shrubs). We examined the impact of FWD removal on herpetofauna and herbaceous plants on rich soils under regenerating northern hardwood stands in Wisconsin. During winter 2010, we manipulated the amount of fine woody debris removed after timber harvest (e.g., 0, 65 and 100%) at 9 sites within the Chequamegon-Nicolet National Forest to compare community change (i.e., the abundance and diversity of plant and herpetofauna) across treatments. Preliminary analysis showed changes in the herpetofauna community. The abundance of Wood Frog and Red-backed salamander declined in all treatments after FWD removal compared to pretreatment data. American Toad and Spring Peeper declined except in 100% tipwood removal where the number of individuals increased. In contrast, the community of herbaceous plant species remained consistent across years; Viola spp., Pennsylvania sedge, sweet cicely, wild lily-of-the-valley, and big-leaf aster were the most common summer plants. Post-treatment sampling will be conducted summer 2011 to determine if these short-term patterns continue.

Challenges of Managing for Early Successional Forests and Associated Species

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