Forest Ecosystem Service Trade-offs of Salvage Logging Following Wind Disturbance in Vermont Forests

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Abstract

Stand-replacing wind disturbances in the Northern Forest are historically rare. However, climate change in the coming decades is expected to increase the frequency and intensity of storms in this region. When stand-replacing disturbances occur, forest managers frequently perform varying degrees of salvage logging in damaged forests, resulting in a second disturbance. The impacts of windstorm damage followed by salvage logging in the Northern Forest are not well understood. In particular, the effects that these successive disturbances have on ecosystem services such as timber production, recreational opportunities, carbon sequestration, and soil formation, have not been described. In December of 2010, a severe windstorm caused substantial damage in large patches of forests in Chittenden County, Vermont. Our research will treat this windstorm and subsequent salvage logging as an opportunity to explicitly describe how these disturbances have affected ecosystem services. We will also quantify some of the tradeoffs among ecosystem services inherent to salvage logging, with a specific focus on forest recovery, carbon sequestration and biodiversity.