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POSTER ABSTRACT

Aspen Mortality in the Rocky Mountain Region: Extent, Severity, and Causal Factors (INT-EM-07-01 (Base EM))

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Aspen decline and mortality has been reported from aerial detection surveys (ADS), forest health surveys, forest managers, and the public over the past years throughout the Rocky Mountain Region. The main objective of this study is to obtain a region-wide perspective on the extent, severity, and causes of aspen mortality in the region. The specific objectives are to: 1) evaluate tree and regeneration health; 2) quantify frequencies of damage causal agents; 3) generate hazard maps and descriptions of the spatial distribution (extent and severity) of aspen mortality in the region; and 4) analyze hazard maps in relation to ADS results, climate, and other data (including drought). A series of plots were established systematically in aspen stands in the Black Hills and Shoshone National Forests in 2008. Three circular plots were established in each stand (1/50 acre for trees and 1/500 acre for regeneration). At each plot center, site information including coordinates, elevation, stand age, slope position, slope, and aspect were recorded. Variables recorded for aspen trees include tree species; tree diameter; host condition (living, recent dead, old dead); crown health; and associated stress/mortality agents (diseases, insects, damage). Three hundred and thirty permanent plots were established in the Black Hills and Shoshone National forests in 2008. Damage agents that were observed on more than 2% of the trees were Cytospora canker (*C. chrysosperma*; 38%), Encoelia canker (*E. pruinosa*; 24%), Phellinus stem decay (*P. tremulae*; 13%), bronze poplar borer (*Agrilus liragus*; 13%), Ceratocystis canker (*C. fimbriata*; 6%), poplar borer (*Saperda calcarata*; 4%), and Cryptosphaeria canker (*C. lignyota*; 4%). Damage agents that were observed on more than 2% of the aspen regeneration were animal browsing (17%) and cankers (7%). *Armillaria* spp. were found in 53% of the plots and were confirmed to be causing root disease in 14% of the plots. Ganoderma root disease (*G. applanatum*) was found in 13% of the plots. A few stands have significant mortality. However, most of the stands in the Black Hills and Shoshone National Forests are healthy with an average crown health of 88% and a mortality rate estimated between 3.1% and 4.4% per year. Additional surveys will be conducted in Wyoming and Colorado National Forests in 2009 and 2010.