

Monitoring and Condition of Aspen in the Northern and Southern Mountain Regions (INT-F-06-1)

John C. Guyon II, James T. Hoffman and Leah D. Aquino

Introduction

Forest, range, and wildlife managers in the Intermountain and Northern Rocky Mountain have documented a decline in aspen forest acreage and declining health within aspen forests since the 1970's. The two primary forces most commonly cited as contributing to this decline are changes in fire regimes since European settlement and ungulate browsing, but forest insects and diseases play a largely undefined role in aspen decline. Published data from long-term permanent monitoring plots established by the Forest Inventory and Analysis unit in Ogden, Utah in 2002 documented suspected decline symptoms and conditions throughout the range of aspen forests throughout the entire Rocky Mountain area, from Canada to Mexico. The publication also recommended the establishment of additional off-plot sites to further define the damage, and also to refine extent and severity of the decline in aspen forest health by damage agent.

In our evaluation monitoring project (INT-F-06-1) we proposed to establish monitoring plots in aspen stands in Nevada, Utah, Southern Idaho, Western Wyoming, and Montana to provide additional data on forest damage agents in aspen forests to supplement the established Forest Health Monitoring plot system.

Preliminary Results

Seventy-five permanent plots were established in aspen stands in Utah and Nevada in 2006. In 2007 the project will move into southern Idaho and Wyoming, with northern Idaho and Montana slated for evaluation in 2008. A preliminary summary of the information collected showed substantial amounts of damage in all the forests surveyed. Large tree mortality from all agents on all plots averaged 29% and varied from a low of 20% on the Mant-LaSal National Forest (NF), to over 45% on one District on the Humboldt-Toiyabe NF. Moderate to heavy damage from all agents on the remaining living stems ranged from 23% to 62%. The most common damage agents on the larger trees were stem borers (*Saperda calcarata*, and *Agrius fragilis*); canker diseases (*Cytospora chrysosperma* and *Encyrtella pruinosa* cankers), and various defoliating insects such as the large aspen tortrix (*Choristoneura confertana*), and aspen leaf tiers (*Sciaphila duplar* and *Enargia decolor*). Forest tent caterpillars (*Malacosoma disstria*) have long been thought to be the principle defoliating insect in aspen forests in the Intermountain Region, but they were not recorded on any plot in 2006.

The density of aspen sprouts less than 2" DBH varied greatly across National Forests, with the Mant-LaSal NF averaging over 5500 TPA and less than 500 on the Uinta NF. Ungulate browsing was the most common damage agent, occurring on 23% of all sprouts, but was conspicuously absent in some areas. Defoliating insects also played a significant role in several sites, particularly on the Dixie NF, defoliating and killing many sprouts even in the absence of ungulate damage. Data analysis of the data from 2006 is ongoing, and will examine the role of elevation, slope position, and relative importance of the damage agents.



Methods

In 2006 seventy-five plots were established on National Forest System (NFS) lands in Utah and Nevada. The 1/20 acre plots were randomly located within polygons identified by 2004 and 2005 aerial pest detection surveys as having symptoms of aspen dieback or defoliation. Plot level data included slope, elevation, GPS location, relative clone stability, and successional status. Large tree data taken included: tree species, DBH, percent dieback, tree condition (live, fresh dead, older dead), crown class, and presence and severity of damaging agents. Small trees were sampled on three nested 1/100th acre sub-plots within each plot. Tree species, number per plot and damage agent(s) and severity were recorded on the nested sub-plots.



Declining aspen stands in the Intermountain Region

