

Monitoring the Condition of Aspen in the Northern and Intermountain Regions (INT-F-06-01)

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Introduction

Since 2004, aerial detection surveys (ADS) have identified an average of 78,000 acres of aspen stands exhibiting overstory dieback symptoms in the Intermountain Region, with additional acres noted in the Northern Region. Consequently, in 2006 we initiated a 3-year aspen study with the establishment of permanent Evaluation Monitoring (EM) plots to determine the cause of what is now known in most Rocky Mountain states as Sudden Aspen Decline.



Aspen die-back symptoms from the ground.



Severely browsed aspen stand.

Preliminary Results – 2007 Data in Southern Idaho

Decline Highlights

- 77 different damage agents were recorded in 2007
- 24% trees >5-inches dbh in S. Idaho plots were dead (Figure 3)
- 69% of all dead trees died between 2005 and 2007 (Figures 3, 4)
- 98% of all surveyed trees had at least one damage agent present

Regeneration Highlights

- 86% of all declining aspen stands had aspen sprouts
- Sprout density ranged from 100- to 12,000-stems/acre
- The average sprout density was nearly 2,000-stems/acre
- Herbivores caused the most damage to aspen sprouts (15.4%)

Methods

- One-twentieth acre plots were randomly located within polygons identified as having aspen dieback on ADS maps (Figure 1).
- In 2006, 75-plots were established in Utah and Nevada (Figure 2).
- In 2007, 51-plots were established in southern Idaho (Figure 2).
- Site, stand, tree, and damage data were collected on each plot.
- Regeneration data was collected as a subset in three nested 1/300th-acre sub-plots within each plot.
- Regeneration data included tree species, and, if aspen the number of sprouts, along with damage agents and severity data.

Figure 3. Aspen Tree Condition by Size Class

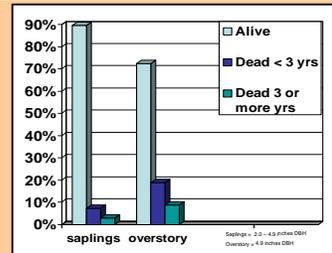
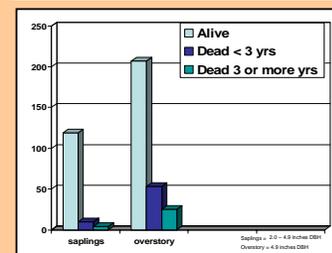


Figure 4. Aspen Trees per Acre by Size Class



Oblique view of damaged aspen stands in southern Utah 2004.

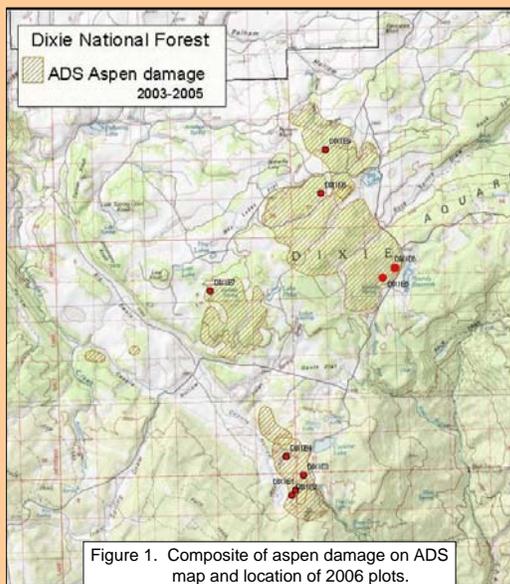


Figure 1. Composite of aspen damage on ADS map and location of 2006 plots.

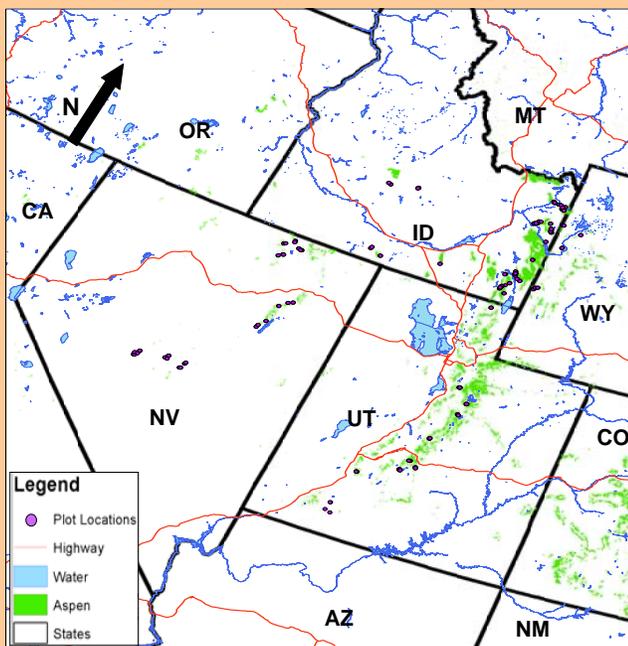


Figure 2. Aspen and plot locations relevant to States.

Principle Aspen Damage Agents Found in 2007 FHM Survey of Southern Idaho



Sooty bark canker, *Encelia pruinosa* 21.8% overall incidence



Bronze poplar borer, *Agrilus liragus* 20.8% overall incidence



Cytospora canker, *Cytospora chrysosperma* 10.4% overall incidence



Poplar borer, *Saperda calcarata* 7.2% overall incidence



Two-Leaf Tier *Pseudosciaphila duplex* 6.9% overall incidence

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