Progress Report

Progress Report Year 2
Impacts to Aspen Communities in Northern Arizona

LOCATION: Northern Arizona

DURATION: Year 2 of 3-year project **FUNDING SOURCE:** Base

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PROJECT OBJECTIVES:

1. Quantify the extent and severity of decline and mortality of aspen at the stand level through an extensive plot network on a portion of Arizona's northern National Forests.
2. Describe the forest conditions in areas that have experienced low to high levels of dieback and mortality induced by drought, disease and insect factors.
3. Look for correlations between stand and site conditions and aspen mortality.

JUSTIFICATION: Aerial and ground detection surveys have determined a decline in aspen clones across northern Arizona over the past few years. Affected areas have a combination of symptoms including reduced canopy, branch dieback and mortality. Forest managers have recognized aspen communities as a critical element within the forests of Region 3, which have been in a gradual state of decline over the past 50 years. However, the accelerated decline occurring over the past 3 years is alarming. It appears that many affected areas are associated with poor site quality, shallow soils, and defoliation by a severe frost that occurred in early June of 1999. Compounding the decline is ungulate browsing of suckers, which has prevented successful regeneration of aspen across the region where both elk and aspen occur. The proposed monitoring project will help quantify aspen decline and mortality levels and describe site-specific stand and site variables that are influencing these levels.

DESCRIPTION:

a. Background: Region 3 forest managers have discussed a decline in aspen communities for decades, after it was reported that the acreage of aspen dominated forests declined from nearly 500,000 acres to 263,000 acres between 1962 and 1986. Arizona is believed to have just twenty-five percent of those acres. This decline has been associated with two main factors: the absence of fire in southwestern ecosystems since European settlement, and extreme browsing pressure from large ungulates. A more accelerated rate of decline in some aspen communities has been witnessed across the northern half of Arizona over the past 3 years, following a severe frost event, which occurred in June, 1999, and several years of drought including this year. Although aerial detection survey results report on the change in defoliation of aspen at a broad level, what is not known is the extent and severity of the decline and mortality at the local

and stand level.

b. Revised Methods: This project represents an intensification of the Forest Health Monitoring program permanent plots by providing finer resolution into specific aspen forest types and how growth and structure has been impacted by the drought and other related mortality factors. Areas with aspen decline and mortality are randomly selected using the off-plot aerial detection survey data. A grid of permanent plots is established across an affected area.

1. Plots are 1/20th acre fixed radius (26.33 feet radius). Plot center is marked with a piece of painted rebar and recorded with a GPS unit. Individual live trees are tagged. Logger tapes are used to determine "in" trees greater than 5 inches dbh.
2. Mensurational information is recorded on all trees, including: tree species, diameter at breast height (except juniper) or root collar (juniper), crown class, tree condition and damaging agent and severity (which included % expected crown foliage).
3. Year death is recorded as 2003, 2002, 2001, or greater than 2 years.
4. Site characteristics are recorded for each plot, including: aspect, slope, and elevation.
5. The species, number and type of regeneration, including saplings, is collected on a sub-plot of 1/100th of an acre located at plot center.

c. Products: Evaluation monitoring and technical reports will be sent to forest managers and planners on the extent and severity of current and potential impacts in the aspen forests of Northern Arizona. This information will also be useful for agencies outside the Forest Service, i.e. State Lands Department, AZ Fish and Game, Bureau of Indian Affairs, National Park Service, Bureau of Land Management as well as the numerous mountain communities that are concerned with aspen forests.

d. Schedule of Activities:

Year 2. Establish permanent plots on an additional Forest/Reservation in eastern Arizona. Revisit and collect additional impact data on year 1 plots. Complete progress report with initial findings and any trend information.

Year 3. Revisit all plots and transects to collect subsequent impact data. Complete final report.

e. Progress Statement:

Eighty permanent plots were established in 9 randomly located sites on the Coconino National Forest in 2003. Well over 1,000 trees were surveyed. It became readily apparent that only one National forest could be surveyed this year given both the diversity of aspen communities to be represented in this decline, and the amount of money requested and personnel hired for the job. Plots are laid out on a grid dispersed throughout an affected area, so line transects were deemed unnecessary.

Data entry and analysis of all plots will occur this winter and will be presented at this years Forest Health Monitoring Working Group meeting in Sedona, AZ.

COSTS:

	Item	Requested FHM EM Funding	Other-Source Funding	Source
YEAR 2				
Administration	Salary	10,000	5,000	FHP Base
	Overhead			
	Travel	4,000	1,000	FHP Base
Procurements	Contracting			
	Equipment	2,000		
	Supplies			
Total, Year 2		16,000	6,000	

COSTS:

	Item	Requested FHM EM Funding	Other-Source Funding	Source
YEAR 3				
Administration	Salary	6,000	5,000	FHP Base
	Overhead			
	Travel	4,000	1,000	FHP Base
Procurements	Contracting			
	Equipment	2,000		
	Supplies			
Total, Year 3		12,000	11,000	