Ponderosa Pine Stocking Control Demonstration Project: Preliminary Results

Project Objectives: 1**)** to demonstrate individual tree-based treatments for reducing the level of competing vegetation around ponderosa pines at risk of attack by bark beetles, 2) to measure the cost of treatment and the products generated, 3) to develop methods and contract specifications, 4) to monitor the growth and mortality of the pines, and the regrowth of competing vegetation.

Background: Ponderosa pines are an important component of late successional stands in low to mid-elevation, fire-dominated ecosystems in Southwestern Oregon. In the past, frequent, low intensity fires probably kept the stocking in many of these stands at lower levels than exist today. Over the last ten years large numbers of the pines in these stands have been killed by bark beetles. A major factor contributing to this mortality is competition from the dense vegetation now surrounding the pines. Thinning has long been recognized as the primary silvicultural tool available to prevent bark beetle mortality in second growth pine stands on the Eastside. However, pre-commercial thinning in SW Oregon has generally been limited to plantations because of the high cost and problems associated with slash disposal. Natural stands have been allowed to develop until merchantable trees could be harvested. By the time the trees in many stands reach commercial size many of the pines will probably have died.

This project used information about density reduction as a means of preventing bark beetle mortality derived from the work in young pine stands and applied it to mature pines. Individual tree-based treatments were chosen because in many stands in SW Oregon the pines are often scattered, many of the trees surrounding them are too small to be merchantable, the other tree species can often tolerate higher densities than the pines, and selecting individual pines for treatment provides the option to leave the rest of the stand undisturbed.

Methods: At each of two sites, twenty-one pines were selected for treatment. Then, one of three treatments were chosen at random to apply to each of the pines.

Site I (Hanley): Treatment 1) all vegetation **from 6" tall up to 12" dbh** removed from underneath the crown and within 10' of the dripline of the selected pines, 2) the same vegetation removed from underneath the crown and within **25'** of the dripline, or 3) no treatment (control). The vegetation was cut and piled using a service contract.

Site 2 (Armstrong): Treatment 1) all vegetation **from 6"** tall **up to 18" dbh** removed from underneath the crown and within 10' of the dripline of the selected pines, 2) the same vegetation removed from underneath the crown and within **25'** of the dripline, or 3) no treatment (control). The logs from conifers and hardwoods 6-1 S" dbh were sold and removed from the site using horses. The slash and remaining vegetation between 6" tall and 6" dbh were cut and piled using the same service contract as the Hanley unit.

Preliminary Results:

Average basal area (sq. ft./acre) before and after treatment:

	Hanley control	Hanley 10'	Hanley 25'	Armstrong control	Armstrong 10’	Armstrong 25'
Before treatment	129	147	91	143	123	154
After treatment	129	83	69	143	49	49

Cover of trees and shrubs <5" dbh:
Hanley averaged 22% before treatment. Range from 6-36%.
Armstrong averaged 21% before treatment. Range from 9-63%.

Gross merchantable volume removed:
Hanley: no merchantable material was removed.
Armstrong IO' treatments average: 189 board feet/pine. Range: 20-760 bf/pine.
Armstrong 25' treatments average: 484 board feet/pine. Range: 0-850 bf/pine.

Slash created:
Hanley 10' treatments averaged 0.8 tons of slash/pine Hanley 25' treatments averaged 2.1 tons of slash/pine
Armstrong 10' treatments averaged 0.8 tons of slash/pine Armstrong 25' treatments averaged 1.6 tons of slash/pine

Costs: (includes 10' and 25' treatments and cost of burning slash piles at both sites)
Hanley average: $125/pine
Armstrong average: $65/pine (includes selling value and labor of removing merchantable material).

Questions for future monitoring:
Will the treated pines show increased radial growth rates?
Will survival be the same for the treated and untreated pines? How fast will vegetation grow back in the cleared areas?
How long will it take the basal area around the treated pines to return to pre-treatment levels?

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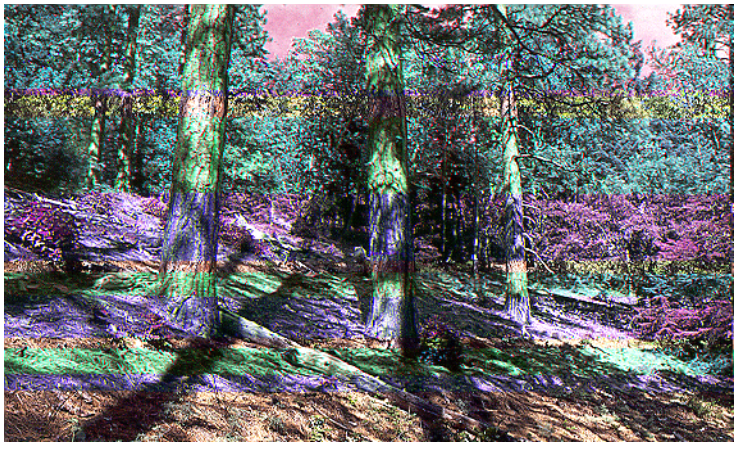
10/96

Hanley Site:
Control

Hanley Site:
10 Foot Clearing



Hanley Site:
25 Foot Clearing