

VERY YOUNG STAND MANAGEMENT

AN ADAPTIVE MANAGEMENT CASE STUDY



CASCADE CENTER *for* ECOSYSTEM MANAGEMENT

background

Many thousands of acres of federal lands in the western Cascades are densely stocked, conifer plantations which were established with the original objective of timber production. As forest management objectives have evolved over the last decade, increasing importance has been placed on the maintenance and improvement of biological diversity. In the interest of both timber production and biodiversity, it is crucial that we develop and test silvicultural options for their ability to achieve both ecological and economic objectives.

This project will demonstrate options and improve our understanding of alternative approaches to thinning stands at an early stage - what is normally considered precommercial thinning. Differing approaches to thinning, gap creation, and interplanting will be installed to test the effects of spatial variation and species composition on creating stands of different structures, plant and animal communities, and forest products. The options used in this project are identical to silvicultural treatments installed in a similar project near Mt. St. Helens where a large-scale study has been implemented in plantations established after the eruption.

The alternative silvicultural treatments are only replicated once on the Blue River Ranger District; thus this project could be viewed as a management case study. When combined with the larger study in Washington, however, this project will help determine if treatment effects differ at other sites. Results from this project should help answer operational and research questions about management of very young plantations.

the project

The basic objectives of the project are to:

- produce forest stands which differ in species composition and structural components,
- monitor short- and long-term responses of plant populations to the treatment regimes and resulting stand conditions,
- accelerate development of late-successional characteristics in some treatments,
- determine the effects on forest growth and yield under each treatment.

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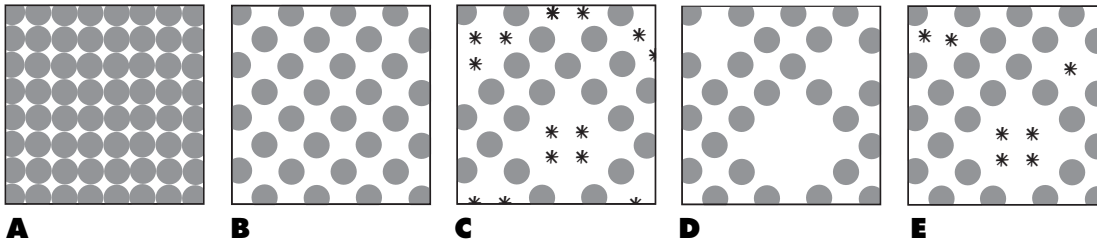
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The treatments include:

● = saplings * = seedlings

- A** an untreated control (8 x 8 ft. spacing),
- B** a treatment aimed at maintaining high timber production (thinning to a 12 foot spacing),
- C** a treatment to increase species diversity (thinning to a 12 foot spacing, plus 8 uniformly distributed 0.05 acre gaps per acre, and interplanting with tolerant conifer and hardwood tree species),
- D** a treatment designed to increase stand structure heterogeneity (thinning to a 12 foot spacing, plus variable-sized gaps of 0.02, 0.04, and 0.05 acre in size), and
- E** a treatment intended to increase both species and structural diversity (thinning to a 12 foot spacing, plus variable-sized gaps of 0.02, 0.04, and 0.05 acre in size, and interplanting with tolerant conifer and hardwood tree species).

Five plots have been established representing one replication of each treatment. Plots are at least 15 acres in size to allow future sampling of small mammals, amphibians, and birds.

monitoring

Monitored response variables include ecological and economic measures such as stand structure, plant composition, and tree growth. The costs and values of alternative treatments will also be tabulated and compared. If funding becomes available, wildlife responses of both terrestrial and avian vertebrates will be assessed.

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