

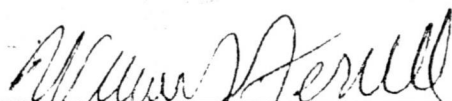
AN ABSTRACT OF THE THESIS OF

MICHAEL JAMES SULLIVAN for the degree of MASTER OF SCIENCE

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Title: STOCKING LEVELS AND SEEDLING HEIGHTS ON CLEARCUTS IN
RELATION TO HABITAT TYPE IN THE WESTERN CASCADES OF OREGON

Abstract approved: _____


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Stocking characteristics and heights attained by tree seedlings at ages five and seven were measured on 45 study units, representing five habitat types, established on clearcuts in the Abies amabilis zone in the Western Cascades of Oregon. The study units ranged from six to 30 acres in size, seven to 15 years in age (time elapsed since harvest), and occupied a variety of slope aspects, inclinations, and topographic positions. A restricted random sampling procedure and circular one-milacre plots were employed to collect data.

Mean post-harvest stocking levels (on a one-milacre basis) ranged from 14.4% in the Abies amabilis-Tsuga mertensiana/Xerophyllum tenax habitat type to 48.3% in the Abies amabilis/Rhododendron macrophyllum-Vaccinium alaskaense/Cor-

nus canadensis habitat type, and mean advance stocking levels ranged from 2.0% in the Abies amabilis/Vaccinium membranaceum/Xerophyllum tenax habitat type to 16.5% in the Abies/Rhododendron-Vaccinium/Cornus habitat type. Differences in mean post-harvest stocking among the habitat types were found to be inversely correlated with differences in mean radiation indices and mean elevations. Differences were also found among the habitat types in the comparative stocking levels of individual tree species. Abies procera (noble fir) stocking was generally less than or equal to that of Pseudotsuga menziesii (Douglas-fir) in habitat types typically positioned on lower-to mid-slopes, but much greater than that of Pseudotsuga menziesii in habitat types which are typically located on or near ridgetops.

Mean heights of tree seedlings were found to vary considerably among tree species and habitat types. Pseudotsuga menziesii seedlings generally grow to roughly equivalent or to greater heights than do Abies procera seedlings in all habitat types. Both Pseudotsuga menziesii and Abies procera seedlings attained greatest heights in the Abies amabilis/Achlys triphylla habitat type, and lowest heights in an undocumented Abies amabilis/Rhododendron macrophyllum-Vaccinium membranaceum habitat type.

The structure and composition of successional plant

communities which developed following clearcutting was also found to vary considerably among habitat types. Clearcuts in habitat types typically located on lower-to mid-slopes were occupied by plant communities often dominated by shrubs, whereas plant communities dominated by herbs usually occupied clearcuts located in habitat types typically positioned on or near ridgetops.

The results of this research imply that each habitat type seems best suited for specific silvicultural practices. Habitat type classification and mapping can be a productive tool for foresters involved with the regeneration management of Abies amabilis zone forests of the Western Cascades of Oregon.