

**PATTERNS IN UNDERSTORY VEGETATION DISTRIBUTIONS ACROSS GAP OPENINGS IN VARIABLE DENSITY THINNED FOREST STANDS IN WESTERN OREGON.**

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Canopy gap formation may be an important tool in creation of understory habitat heterogeneity in thinned second-growth (40-50 year old) forest stands in western Oregon. This study is part of the Density Management Study (DMS) and focuses on the OM Hubbard site located on Bureau of Land Management lands near Roseburg, Oregon. This site was treated with a variable density thinning regime, including gap openings, aimed at accelerating development of late-successional habitat. This study investigates the role of gap openings in creation of understory heterogeneity in vegetation communities seven years post-treatment. Understory vegetation distributions and light conditions were characterized along north-south transects through these gaps and into the surrounding forest matrix in the summer of 2004. Findings were related to the gap-partitioning hypothesis, which states that variation in resource levels across gaps may result in formation of distinct areas of vegetation composition in different positions relative to gap openings. Understory vegetation composition along transects differed among positions along transects. Species richness and diversity measures also differed with respect to transect positions. Open-site associated and invasive species occupied gap interior positions, while forest understory and late-successional associated species were more strongly associated with gap edge and forest matrix positions. These results indicate that there is a strong division between the plant communities present in gap interior positions and those in edge and forest matrix locations in this thinned Coast Range forest seven years post-treatment, and that gap-partitioning may be occurring in these communities.

Keywords: understory vegetation, thinning, canopy gaps, gap-partitioning