

Early Changes In Coast Redwood (*Sequoia sempervirens*) Understory  
Vegetation Following Forest Harvest Disturbances

By

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Abstract

Seven 70-90 yr old redwood stands partially harvested since 1971 were sampled for understory vegetation species composition, frequency, and cover. Tractor-logged stands harvested 10 yr ago the had >50% conifer basal area removed now have understory cover four times greater than an adjacent unlogged stand. Cable-logged stands show larger amounts of understory cover, almost 50% greater than adjacent tractor-logged parcels harvested at the same time. Individual understory species were ranked according to Prevalent Species Numbers, with Whipplea modesta and Polystichum munitum being the most important in cover and frequency.

An attempt to relate understory vegetation properties in these stands with stand environmental factors revealed some significant correlations.

Tractor-logged sites with abundant soil disturbance begin to resemble less disturbed cable-logged sites about 7 yr after the disturbance episode in species composition and cover, indicating that overstory canopy removal is the most significant factor associated with timber harvesting in these stands. Measurements of forest soil moisture, evaporation, light, and temperature indicate these factors are sensitive to the amount of overstory canopy cover and effect species composition of the understory. The pattern of understory reformation in these stands will, in great part, be determined by the frequency and intensity of future harvests.

Natural regeneration by seed and stump sprouts of important conifer species (coast redwood, Douglas fir, grand fir, hemlock) was also assessed. Selective removal of grand fir and hemlock overstory trees repressed seedling establishment of these species. Douglas fir readily established from seed, but showed a preference for bare mineral soil such as created by heavily disturbed tractor-logged areas and skid roads. Coast redwood sprout clumps formed on about 100% of the cut trees. Coast redwood seedling establishment was relatively poor and was positively correlated with bare mineral soil. Native herbaceous vegetation and swordfern were not detrimental to Douglas fir seedling growth and may actually improve the site environment for young conifers. Introduced

herbaceous vegetation did hinder coast redwood seedling growth, when compared with open grown seedlings. Douglas fir seedlings grown in an area cleared of surrounding understory vegetation showed probable osmotic adjustment to drought stress.



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