

POPULATION GENETIC STRUCTURE OF THE DOUGLAS-FIR SHELTERWOOD
REGENERATION SYSTEM IN SOUTHWEST OREGON

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Knowledge of the population genetic structure of natural populations of forest trees is important for the efficient domestication and management of these populations. Shelterwood is used widely in southwest Oregon and is a good experimental system for population genetic studies. There were three objectives in this study to elucidate the determinants of population genetic structure of these Douglas-fir shelterwoods: 1) Access the levels of genic diversity in the life cycle of shelterwood stands; 2) Quantify the mating system; and 3) Investigate mechanisms for family structure in shelterwood regeneration. Genic diversity is fairly constant throughout the life cycle of these shelterwoods, although there is evidence for some inbreeding in the natural regeneration of one stand. The outcrossing rate is high (.90-1.00) in both shelterwoods and uncut stands, but there is evidence that selfing increases with lower plant density. Seed and pollen are dispersed an average of 50m and 70m, respectively, within shelterwood stands. The effective population size was estimated to be approximately 35 trees. Large within stand variability, outcrossing, and seed and pollen dispersal maintain genetic diversity in regenerated shelterwoods and prevent significant population subdivision within individual stands.