State of California
Pete Wilson, Governor

The Resources Agency
Douglas P. Wheeler
Secretary for Resources

Department of Forestry
and Fire Protection
Harold Walt, Director

ABSTRACT

Soil compaction and displacement resulting from log skidding with ground-based vehicles was studied on two areas of Jackson Demonstration State Forest, located in western Mendocino County. Soils are clayey at depth and support stands of second-growth coast redwood and Douglas- fir. Bulk density was found to be increased about 20 % in the surface six-inch zone on primary skid trails, but excavation had removed the surface horizon in many of the sample locations. Compacted densities of approximately 1.40 g/cm^3 were found. Primary and secondary skid trails generally occupied about 12 % of the land base. Final densities on heavily used skid trails created during dry summer and moist fall months on the Hare Creek site were nearly identical, and the soils were considered moisture insensitive. Tillage experiments showed that rock rippers were ineffective on steep, rocky primary trails at the James Creek sites. Winged subsoilers were able to effectively till dense soils at the flatter, less rocky Hare Creek site. Measurements of planted seedling heights show that statistical differences do not exist in tilled and untilled soils at both sites. Several factors besides soil compaction complicated the height growth analyses.

Keywords: soil compaction, tillage, site productivity, tractor yarding