Chapter 1: Introduction

Robert O. Curtis, David D. Marshall, and Dean S. DeBell

Silviculturists of the Olympia Forestry Sciences Laboratory, Pacific Northwest Research Station, have joined with foresters of the Washington State Department of Natural Resources and scientists of University of Washington and University of Idaho to establish a long-term comparison of silvicultural regimes for regeneration and management of young-growth Douglas-fir (*Pseudotsuga menziesii* (Mirb.) Franco) forests.

In this report we review the concerns that led to the study, the study design and methodology, and expected expansion over the next few years. We document establishment of the first replicate (Blue Ridge) of the study, and we give some initial results based on the first several years of work at that installation.

The Douglas-fir region of western Washington and northwestern Oregon contains some of the most productive forest land in the Nation and in the world. Fifty-three percent of the unreserved (as of 1987) forest land is capable of growing more than 120 $ft^3 \cdot acre^{-1} \cdot yr^{-1}$ and 80 percent of the land more than 85 $ft^3 \cdot acre^{-1} \cdot yr^{-1}$ (from tables 4 and 5 in Waddel and others 1989). In contrast, the comparable national figures for forest land exclusive of the Douglas-fir region are only 6 percent over 120 $ft^3 \cdot acre^{-1} \cdot yr^{-1}$ and 23 percent over 85 $ft^3 \cdot acre^{-1} \cdot yr^{-1}$. Forest products dominated the region's economy until recently, and they are still very important although now a smaller fraction of the economy.

Beginning with establishment of a large-scale timber industry in the mid-1800s, and through the early 1900s, the prevailing harvest practice was simple liquidation. After unsatisfactory experience with the scattered seed tree method and selective cutting, by the 1940s managers widely adopted a system of dispersed clearcuts with natural regeneration after slash burning. In the 1950s, planting replaced natural regeneration as a quicker and more reliable method. Clearcut, burn, and plant became the standard and almost the only practice. Planting eliminated the need to reserve seed blocks, and many owners adopted large clearcuts to reduce logging, transportation, regeneration, and administration costs. Concurrently, there was a progressive reduction in rotation ages on the part of many owners.

These practices produced landscapes having a considerable part of the area in an unsightly recently harvested condition, and the rest in uniform dense stands that are not particularly attractive visually and that are the least productive habitat for many species of wildlife.

There were associated social changes. Prior to World War II, much of the Northwest population lived in rural and small town settings and had direct contact with practical land management. People in these settings tended to take a utilitarian view of forests. But after the war, there was a huge influx of people from other parts of the country. Most came from urban backgrounds and knew little about Northwest history or Northwest forests. The region was urbanizing, and its economy was changing and becoming less directly dependent on natural resources. Much of the population came to view forests primarily as scenic, wildlife, and recreational areas, with little understanding of the forests' history and dynamic nature, the reasons for the management operations they observed, or the range of possible management options. Some viewed harvest operations as forest destruction.

The combination of these factors has produced increasing polarization and conflict between individuals and institutions concerned with the economic needs for commodity production from forests and those primarily interested in their amenity, environmental, and wildlife values. We believe these conflicts and their consequences for land management policies constitute the most critical problem in Northwestern forestry today. There is a great need for management regimes that can reduce conflicts while providing for integrated production of the many values associated with forests, including the timber harvests that can directly or indirectly finance the provision of other values.

Silviculturists have long recognized a need to develop and evaluate a range of management regimes (silvicultural systems) to meet multiple objectives in managed forests. A wide variety of silvicultural systems has been used elsewhere in the world, but the prevailing system in the Pacific Northwest and the only one for which we have good information on costs, implementation techniques, and consequences is the clearcutting system with either natural or artificial regeneration and with or without intermediate thinning.

Many organizations are now trying different approaches in attempts to satisfy various combinations of owner objectives, societal expectations, and regulatory requirements. But, most such efforts have not been designed in a way that will allow quantitative determination of gains or losses in comparison with conventional clearcutting, or even whether the desired objectives are being attained. Although in recent years a number of experiments have been established that compare effects of alternative harvest practices applied at one point in time, we have as yet no examples in the coastal Douglas-fir region of silvicultural systems other than clearcutting that have been systematically applied over a long period with the design and data collection procedures necessary to make sound quantitative comparisons of their biological, financial, and social consequences.

Reference

Waddell, K.L.; Oswald, D.D.; Powell, D.S. 1989. Forest statistics of the United States, 1987. Resour. Bull. PNW-RB-168. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 106 p.