Vegetation Competition and Engelmann Spruce Performance on NSR Backlog in the ESSFm - Project No. 3.32

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Research Memo

About one-third of the backlog NSR land in the B.C. Southern Interior occurs in the ESSF biogeoclimatic zone. Vigorous shrub and herb competition is suspected to contribute to plantation failure in these areas. Caroline Caza, a UBC PhD candidate, and Dr. J.P. Kimmins, UBC Professor of Forest Ecology, are conducting a FRDA project investigating vegetation competition and Engelmann spruce regeneration on ESSF cutblocks in the Clearwater Forest District.

Their objectives are to study patterns of plant community development, to identify the circumstances which lead to vegetation competition problems, and then to suggest effective, efficient, site-specific vegetation management and planting strategies to increase plantation success.

In the summer of 1996, 44 ESSF forest openings in the Clearwater Forest District were surveyed, photographed, and described in terms of plant community structure and composition.

This survey revealed that:

- plant community composition did not vary greatly among the sites, despite large differences in site characteristics and histories;
- most sites were dominated by a shrub community of false azalea and white rhododendron, and a perennial herb complex dominated by Sitka valerian. Natural regeneration and residuals of subalpine fir were more strongly associated with the shrub community and those of Engelmann spruce were more strongly associated with the herb community;
- herbaceous vegetation dominated the more intensely disturbed areas, such as skid trails and blocks logged in the summer, and shrub species dominated the less disturbed areas;
- it was difficult to determine whether microsite variation or vegetation competition had the most influence on seedling distribution, growth and survival.

Based on these findings, experiments have been set up to:

1. determine if the survival and growth of hot-planted and cold-stored Engelmann spruce stock are reduced by either above or below ground competition within the two main non-crop vegetation communities; and
2. study the changes in plant community structure and composition during revegetation following disturbance of both brush communities, as a first step toward predicting potential problems.

In the summer of 1997, pretreatment descriptions, experimental plantings and first season measurements were carried out to test the performance of the two spruce stock types under vegetation that was clipped to various degrees in logged openings, on skid trails and in undisturbed forest. A climate station and a data logger were installed at one of the cutover sites and the growing season phenology of the major brush and herb species was observed.

The project is expected to continue until 1989. Interim results will be presented at the 1988 Pacific Northwest Science Meetings, the B.C. Vegetation Management Committee Meeting, and the 1988 SISCO Winter Workshop. The study sites have provided a demonstration of high-elevation cold site rehabilitation research for visiting UBC, BCFS, CFS researchers, FRDA administrators, and BCFS district personnel.

For further information on this project, contact:

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Information on related FRDA projects (3.27, 3.31, 3.35-2, 3.40 and 3.41) is available from:

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