FOREST MANAGEMENT ISSUES AND SMALL DIAMETER TIMBER: A FOREST SUPERVISOR'S PERSPECTIVE

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Abstract

The one million-acre Colville National Forest is located in northeastern Washington. Between 1910 and 1936, stand replacement fires burned 526,000 acres (48%) of the forest. Many of these stands are now 60 to 90 years old, densely stocked with small diameter trees, and susceptible to disease, insects, and stand replacement fires. Several studies have been conducted to identify and evaluate these stands, and to develop and implement management strategies. Congress has provided funding for the Colville National Forest and Forest Service Research to conduct research and demonstration projects.

The Colville National Forest is over one million acres, and is located in the northeast corner of Washington, about 60 miles north of Spokane. It is bordered by Canada on the north and Idaho on the east. It is intermingled with or adjacent to several reservations, other national forests, and other state and private lands.

The Colville forest falls within three counties: Ferry, Stevens, and Pend Oreille. These counties are sparsely settled, rural areas with traditionally high unemployment. Lumber and wood products industries, farming, ranching, and other assorted light industry and government dominate the economics of the three-county area.

Between 1910 and 1936, stand replacement fires burned 526,000 acres, or approximately 48% of the Colville National Forest. Natural regeneration following the fires was prolific, creating dense, young forests. Over the years self-thinning or differentiation of these stands has been limited. In some areas, the fires have created entire landscapes characterized by densely stocked, small diameter stands. Most stands contain a large percentage of lodgepole pine. Other associated species include western larch, Douglas-fir and grand fir. Many of these stands are now 60 to 90 years old and are so dense that they have become stagnated and have low vigor. As these stands age, they become increasingly at risk to outbreaks of insects. The species compositions and high fuel loads associated with these stands create conditions in which cyclic repetition of stand-replacing fires is probable.

For over 25 years, the Colville National Forest has recognized the condition of these stands and their long-term importance to the forest environment and to the people of northeastern Washington. Several studies have been conducted through time to identify and evaluate these stands, and to develop and implement management strategies. The first formal Colville National Forest study was IMOS (immature and overstocked stands). It was initiated in 1973 and completed in 1982. In 1985, the "Thickets" program was initiated to complete a current condition assessment, identify treatment needs and project priorities, and develop a programmatic plan. This program was discontinued when forest planning was begun. The Forest Plan, which was completed in 1988, also recognized the magnitude of the challenges with these stands. In 1989, the Colville National Forest resurrected past studies and initiated the CROP study. This study was completed in 1994. In 1994, the Colville Study, led by personnel from the Pacific Northwest Station, was developed to identify and evaluate a series of management options for achieving ecosystem objectives in dense stands of small diameter trees while also providing wood products.

In the early 1990's, policy within the National Forest system shifted from managing individual resources to managing ecosystems. The shifting emphasis toward developing and maintaining healthy, vigorous ecosystems, and communities that depend on them, gave managers on the Colville National Forest the opportunity to consider how we might improve the structural and compositional diversity of some of the Forest's densely stocked stands of small-diameter trees. The CROP program, an acronym for creating opportunities, was developed to investigate treatments that would improve the health and vigor of dense forests while producing economic benefits to rural communities in northeastern Washington. The CROP study identified 110,000 acres of stands within forest plan management areas that permit timber harvest. From 1989 to 1999 the Colville National Forest initiated 25 sales encompassing 14,000 acres that had a significant CROP or CROP-like component. Management of CROP stands is very challenging due to the high cost of marking/designating and cruising thousands of trees in large sale areas. Roads are essential to allow access for thinning and harvesting. And CROP stands are low in value, which presents additional problems.

In 1996, recognizing an opportunity for stimulating local rural economies while addressing forest health issues, the U.S. Congress provided the National Forest system funding and legislative language for "implementation and evaluation of controlled silvicultural treatment in designated fire-generated, overstocked, small diameter, stagnated forest "CROP" stands or other stands having CROP characteristics on the Colville National Forest.

Forest Service research was asked to provide research support for adaptive management activities within these stands, including development of a research plan.

In addition, we were to utilize demonstration projects to further research and management efforts.

In September 1997, the "Research Plan for Evaluating Silvicultural Treatments in Fire-Created, Overstocked, Small Diameter Forest Stands on the Colville National Forest" was completed.

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Research collaborators included the Forest Service Pacific Northwest Research Station and Forest Science Labs, the Colville National Forest, Washington State University, and the University of Idaho. The research plan was not designed to be a detailed study plan. Its purpose was to provide a framework for an adaptive management approach

1. to determine how densely stocked stands of small-diameter trees might be managed to ensure predictable outputs of fiber;
2. to determine how to reduce risk to and effects of catastrophic, landscape-scale insect and fire disturbances; and
3. to increase our knowledge of the ecological functions of these stands and resource effects of management activities.

The research consists of an ongoing, long-term series of research projects focusing on priority needs and opportunities for field trials. Within the adaptive management framework, a consistent supply of quality results that can be used to learn and test new ideas is more important than a large program of all-encompassing research.

Monitoring is a critical part of the adaptive management framework and field studies will be designed with long-term monitoring components.

Land managers need information at different levels in order to develop sustainable flows of fiber and amenity values from CROP stands. At the landscape level we need to know how CROP stands fit into landscape-level planning for ecosystem management.

Several questions that illustrate issues important at this scale include:

1. What are the patterns and functions, and ecological role of CROP stands within the northeastern Washington landscape?
2. How do amounts and spatial patterns of CROP stands affect fire behavior, effects and risk?
3. What are the effects on disturbance regimes of treating CROP stands and how do changes in disturbance regimes affect wildlife, fish and vegetation?
4. How does treating CROP stands affect societal expectations and uses of the landscape? What are the social effects or levels of public acceptability of CROP stand treatments?

Under ecosystem management, links between scales are very important. Actions proposed at the stand level influence and affect relations across landscapes and within regions. Little is currently known about how stand-level treatments are manifested in space and time as landscape-level effects.

Questions that are important for providing information about the links between different spatial and temporal scales include:

1. Where on the landscape should stand-level treatments be implemented to provide reduced risk associated with windthrow, insect outbreaks and catastrophic fires?
2. What are the costs and benefits of concentrating treatments along roads to maximize road usage and reduce new road construction versus dispersing treatments throughout the landscape?
3. What does concentrating treatments along roads do to other resources?
4. How much area can be treated before resource effects at the stand level are manifested at the landscape level?

Treating CROP stands within an ecosystem management framework provides opportunities for evaluating and implementing new technologies, using existing technologies in new ways, and assessing the effects of various silvicultural treatments on future forest productivity, and on nontimber resources critical to sustaining ecosystem processes and functions.

Questions that need to be addressed at the stand level include:

1. Can CROP stands be treated economically?
2. What is the damage to residual trees from different harvesting systems?
3. Which silvicultural prescriptions will achieve desired conditions for forest health, wildlife habitat, and visual concerns?
4. What are the social expectations for and acceptability of vegetation management treatments in CROP stands?

The Sherman Project Planning Area on the Colville National Forest was selected as the initial site for implementing a case study for adaptively managing CROP stands. The area contains thousands of acres of CROP stands that originated after the 1929 Dollar Mountain fire. These stands are typical of CROP stands throughout the forest in elevation range, timber size, and distance from roads. The NEPA documentation for this area was completed so timber sales could be offered, and study of resource and economic affects of harvesting could begin in 1997. This project is known as the Fritz Demonstration Project. Researchers have been working closely with Colville National Forest personnel to study the effects of a variety of harvesting systems on stand conditions such as fuel levels, soil conditions, residual and projected future tree conditions, insect and disease risks, and economics. Future work will capitalize on information generated from the Fritz Demonstration Project and begin to address landscape-level and linkage questions along with additional stand-level questions. The development of the research plan and the current, ongoing research has already provided an opportunity to bring together the talents and strengths of the management and research branches of the U.S. Forest Service, and that working relationship is another benefit of the adaptive management approach.

The second research site identified is the South Deep Ecosystem Management project, where preliminary research results will be adapted to the project planning and design, and additional research will be conducted in conjunction with ongoing forest work. The Forest has issued the Notice of Intent to prepare an environmental impact statement.

Researchers and forest personnel will be meeting to further review activities and plan upcoming projects.

Solutions to all the issues will happen over the long term, and because of the nature of adaptive management—learning as we go—even the issues will change over time. The goal is to provide timely information and technology that assists land managers in managing landscapes to ensure ecological integrity and societal benefits.

The partnerships of cooperating scientists, researchers, managers, and stakeholders have been formed, research has been initiated to help with the management and utilization of these and similar forests throughout the west, and projects are underway.

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