

OVERVIEW OF NATURAL RESOURCE SITUATION AND CONDITION: FRITZ DEMONSTRATION AND SOUTH DEEP WATERSHED

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ABSTRACT

An inventory conducted by the Colville National Forest in the early 1990s identified 110,000 acres of these small diameter, stagnated stands which were labeled as CROP stands. The Fritz Demonstration Project in Sherman Creek and South Deep are watersheds that have been selected to conduct CROP research studies. Both watersheds have been burned over and have significant acreages of overstocked, stagnated stands that meet the CROP definition. The Fritz Demo project was selected within Sherman Creek because an EIS was completed, and a demonstration project could be implemented quickly as directed by the CROP legislation. The Deep Creek watershed was selected because it was within a subregion that had adequate data to perform analysis to determine historic forest structures and patch sizes that would direct management within the watershed. The studies within Fritz Demo have been completed and will be reported in this symposium. South Deep is in the environmental assessment completion and research design phase. Studies will be implemented within the watershed in the next year or two. The history and resource condition of these watersheds will be reported in this presentation.

INTRODUCTION

With this presentation, I would like to set the context for the study presentations that follow. The CROP, or CReating OPportunities, study areas lie in the center of the Colville National Forest in northeastern Washington State in the Sherman Creek and Deep Creek watersheds. The Colville Forest lies in the northeastern corner of Washington State, bordered on the north by Canada, and on the east by the state of Idaho. Precipitation ranges from less than 10 inches per year in the far western valleys to over 50 inches in the north eastern mountains. Vegetation ranges from shrub steppe communities in the west to near rainforest of western redcedar/devil's club communities in the east. Climate is characterized as a moist near-maritime with warm moist air masses flowing across the Forest from the southwest.

The Fritz Demonstration (Fritz Demo) and South Deep study sites are similar in elevation, climate and geology. The watersheds range from under 2,000 to 7,000 feet in elevation. The study sites range from 3,000 to 5,000 feet. Precipitation ranges from 25 to 30 inches per year, roughly evenly divided between rain and snow. Both study sites lay within glaciated mountains with gentle to steep rolling topography.

CROP stands on the Colville National Forest originated after catastrophic, landscape level fires in the 1920s and 30s. Roughly half of the forest, over 500,000 acres, burned during that period.

HISTORY

The Deep Creek watershed was settled in the early 1900s, and much of the area was logged for western white pine and western redcedar. Several sawmills and many logging camps occupied the watershed. The area was partial cut harvested, and slash was left on the ground. By mid to late 1920s the economy was severely depressed and many homesteads were being sold to lumber companies or the federal government. In 1926, a devastating fire burned in Deep Creek and areas to the west and north (Fig. 1). The secretary of the Stevens County Timber Protective Association was quoted as saying "within a radius of one mile from the top of Rogers Mountain (in the southwest corner of the watershed) a dozen fires were discovered. In some places the matches used to set them were found." (Bohm and Holstine 1983) There was speculation that these fires were deliberately set as a means to provide employment for men as firefighters during hard economic times. It was estimated that 125,000 acres burned in the western portion of the Deep Creek watershed during these fires. In 1929, another 160,000 acres burned, including most in the southeastern portion of the Deep Creek watershed (Fig. 1). Approximately 67% of the South Deep watershed burned over within a period of three years (Bohm and Holstine 1983).

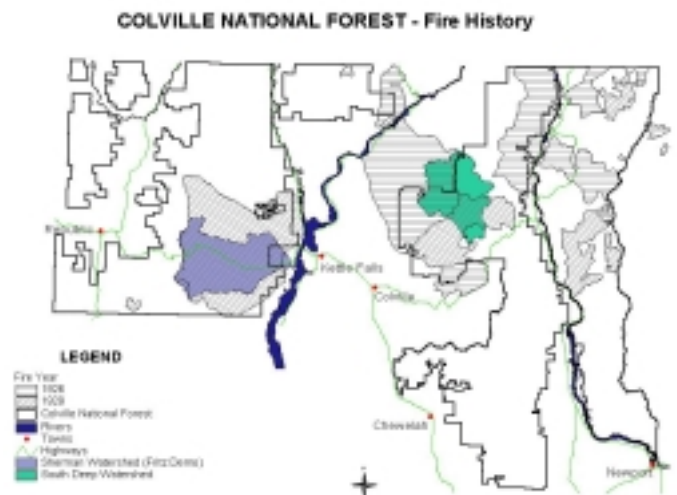


Figure 1.—Fire history map of the Colville National Forest for fire years 1926 and 1929.

The Sherman Creek watershed was just being entered in the early 1920s. A log flume was constructed in the lower portion of Sherman Creek to float logs down to mills located near the Columbia River. A narrow gauge railroad was also built about mid-way up Sherman Creek in 1926-1927. Some logging of ponderosa pine occurred in the watershed prior to the fire of 1929, but this was confined to the lower elevation southerly aspects. This watershed was entirely

burned over in 1929. The Dollar Mountain fire consumed 142,000 acres and literally all of the Sherman Creek watershed (Fig. 1).

Rainfall records indicate that 1929 was an extreme drought year with just .02 inches of rainfall for the July through September period—normal is just under 3 inches. The annual rainfall for that year was 42% of the average.

Two results of these fires were hundreds of thousands of acres of evenaged, densely stocked regeneration, and a determination on the part of local governments and land management agencies that fire suppression was a paramount priority. The landscape magnitude, and uniformity of these fires resulted in an increase in the proportion of lodgepole pine than was found historically (Kovalchik 1996). Areas that reburned during this period are almost exclusively stocked with lodgepole pine. Because of this fire history, neither watershed has much late/old forest structure.

Much of Arno's research on fire ecology in the Northern Rockies indicate that low intensity ground fires were common in moist upland plant communities (Arno 1980). These fires tended to reduce stand density and provide for differentiation of forest structure. They were also easy to extinguish and were the focus of fire suppression efforts.

Several efforts to manage these overstocked stands were undertaken prior to the CROP program. In 1981, 230,000 acres of immature, overstocked stands were identified as a treatment needed on the forest. Dozer-thinning, chemical thinning, and stand destruction treatments were undertaken on roughly 70,000 acres.

When the Colville Land and Resource Management Plan (L&RMP) was prepared in 1989, 58,000 of small diameter, overstocked stands were deferred from management due to economic infeasibility. These early studies and the Forest Plan results led to the CROP program. The CROP mapping effort, undertaken in 1993 and 1994, identified roughly 110,000 acres of lands (Fig. 2). About half of those were on slopes treatable by ground based equipment and within 1/4 mile of existing roads. CROP stands are defined as stands with a trees predominantly in the 4 to 7 inches

dbh range, and stand volumes less than 10.5 mbf/acre. Several small studies were undertaken immediately after this report was prepared (Willits et al. 1996).

The CROP legislative earmark, initiated by Congressman George Nethercutt in 1996, set aside money for both research and project implementation. This funding led to the two CROP studies on the Colville National Forest.

FRITZ DEMONSTRATION (FRITZ DEMO) SITE Location

The Fritz Demo study site is located in the 65,000 acre Sherman Creek watershed. There are 16,000 acres of CROP stands in this watershed. CROP legislation recommended that the Forest Service "begin one or more initial demonstration projects based on a preliminary draft of the research plan as soon as practicable in an area of approximately 10,000 acres." The site was selected because there was a completed impact statement for the project. This allowed a study to be put into place relatively quickly. However, the depth of analysis was restricted to stay in line with the impact statement decision.

Site Information

South slopes are in the Douglas-fir series, ranging from dry to moist (Williams et al. 1995). Ponderosa pine, Douglas-fir, and lodgepole pine are predominant species under normal disturbance regimes. Douglas-fir and lodgepole pine have thrived and now dominate most stands.

North aspects and bottoms are western redcedar series (Williams et al. 1995). Lodgepole pine has responded rapidly after the Dollar Mountain fire. Many stands contain 150 sq. ft. of basal area in trees 5 to 7 inches dbh. Species are primarily lodgepole pine, with associated western larch and Douglas-fir.

Forest Health Risks

South slopes are prone to Douglas-fir beetle (*Dendroctonus pseudotsugae*) and root disease. North slopes and bottoms are prone to mountain pine beetle (*Dendroctonus brevifolia*) in the lodgepole pine.

Status of Research

Most of the studies pertaining to the CROP stands on the Colville National Forest presented in this symposium were done in the Fritz Demo area. Four sites were selected on gentle slopes, less than 20%, and four sites on steep slopes, greater than 20% (Fig. 3). Both silvicultural and logging-systems/cost studies were performed on these site and will be presented during this symposium.

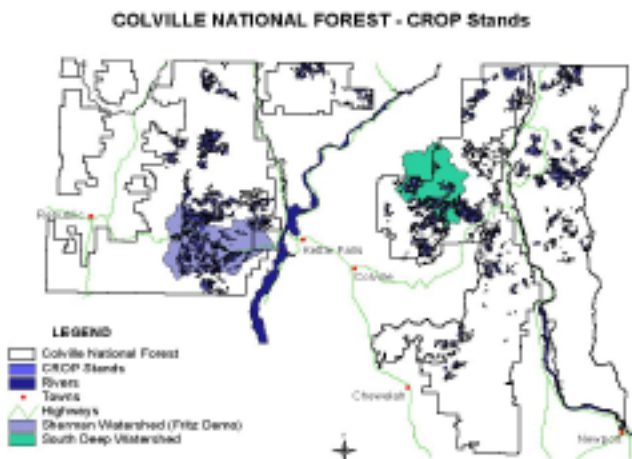


Figure 2.—CROP stands resulting from historical fires on the Colville National Forest.

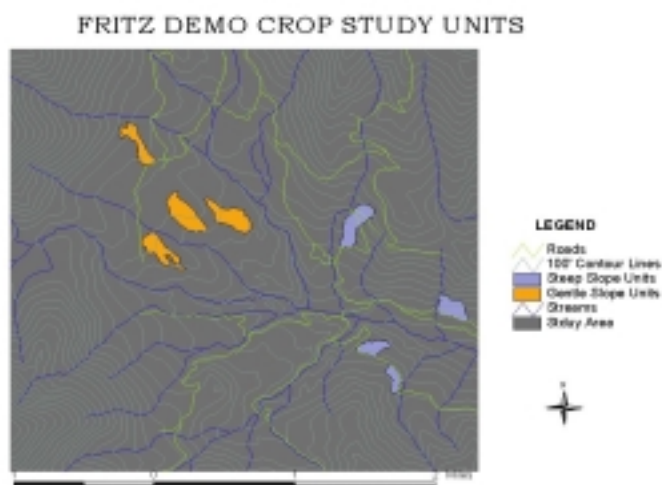


Figure 3.—Study sites in the Fritz Demo Study Area.

SOUTH DEEP STUDY SITE

The research plan directed that “the selection of the second site would be based on criteria such as which landscape areas have a high proportion of CROP and CROP-like stands; are large enough to test a variety of silvicultural prescriptions; cover a range of conditions for wildlife and social uses; have a variety of biophysical attributes such as road networks and riparian areas; and have a range of risks for disturbance agents such as fire, wind, insects, and disease. In addition, the selection would be based on the results from the social assessment and the regionalization process.” (Quigley et al. undated)

It was decided to look at watersheds where environmental analysis was not started so that the research study objectives could be incorporated into the proposed action.

Due to limitations in the data it was recommended that the second site be mapped as a ‘warm/cold dry-forest’ ecological subregion. This subregion has a sufficient data set to allow the subregionalization analysis to take place without further data collection (Hessburg 1998). This analysis would take place within the watershed analysis, prior to developing a proposed action.

Site Information

The South Deep watershed is just over 50,000 acres in size. CROP stands in South Deep amount to 8,400 acres.

Species composition is similar to Sherman Creek. Deep Creek has a little higher moisture level, with somewhat lower amounts of ponderosa pine on the south slopes, and generally more Douglas-fir, and some inclusions of grand fir. North slopes are very similar to the Sherman Creek watershed.

Forest Health Risks

Forest health risks are similar to Sherman Creek with Douglas-fir beetle and root disease on the southerly aspects, and mountain pine beetle in lodgepole pine on the northerly aspects.

Status of Research

Research in the South Deep watershed is in the study design and initial installation phase. The Colville National Forest is preparing the NEPA document covering the research study and general entry and management of the watershed.

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