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CATHERINE FOREST RESTORATION

Environmental Assessment

and

Review for Consistency with the

Columbia River Gorge National Scenic Area Management Plan

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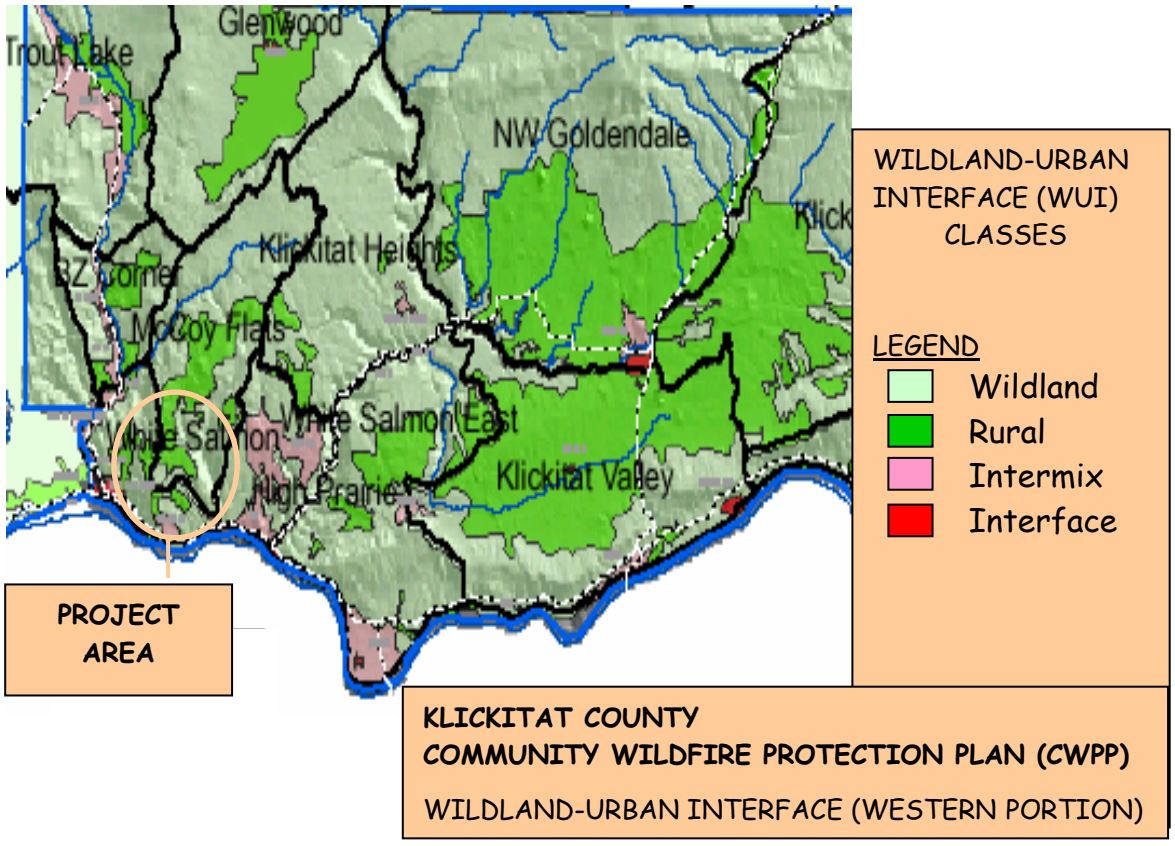


KLICKITAT COUNTY
COMMUNITY WILDFIRE PROTECTION PLAN (CWPP)

WILDLAND-URBAN INTERFACE (WESTERN PORTION)

1.0 – INTRODUCTION

The Catherine Forest Restoration Assessment (EA) is prepared in accordance with the Healthy Forests Restoration Act of 2003 purposes (1) to reduce wildfire risk to communities…through a collaborative process…and (6) to protect, restore, and enhance forest ecosystem components.

This proposal is designed to increase fire resilience and to restore fire-dependent habitats by reducing the unsustainable in-growth of small trees or the encroachment of Douglas-fir caused by decades of fire exclusion. The planning process benefited from an on-going public and collaborative effort that resulted in a proposed action involving a combination of tree thinning and/or prescribed underburning, implementation requirements for affected resources, and requirements for monitoring.

The project is planned in a portion of the Klickitat County Wildland Urban Interface designated by the Klickitat and Skamania County, Washington Community Wildfire Protection Plan.

This chapter includes the following:

- The planning area location and setting,
- Management direction and guidance,
- The existing and desired conditions,
- The purpose and need for the proposed action,
- an overview of the proposed action,
- The decisions to be made by the responsible official about the proposed action,
- A summary of the results of scoping and the collaborative process, and
- Identification of issues and concerns related to the implementation of the proposed action.

1.1 - PLANNING AREA LOCATION AND SETTING

The Catherine Planning Area encompasses approximately 4,100 acres of acquired National Forest Systems lands within the following:

- Township 4 North, Range 12 East Sections 30, 31
- Township 3 North, Range 12 East Section 30
- Township 3 North, Range 11 East Sections 2, 3, 13, 14, 15, 23, 24, 25, 26, 27, 28, 34, 35, 36

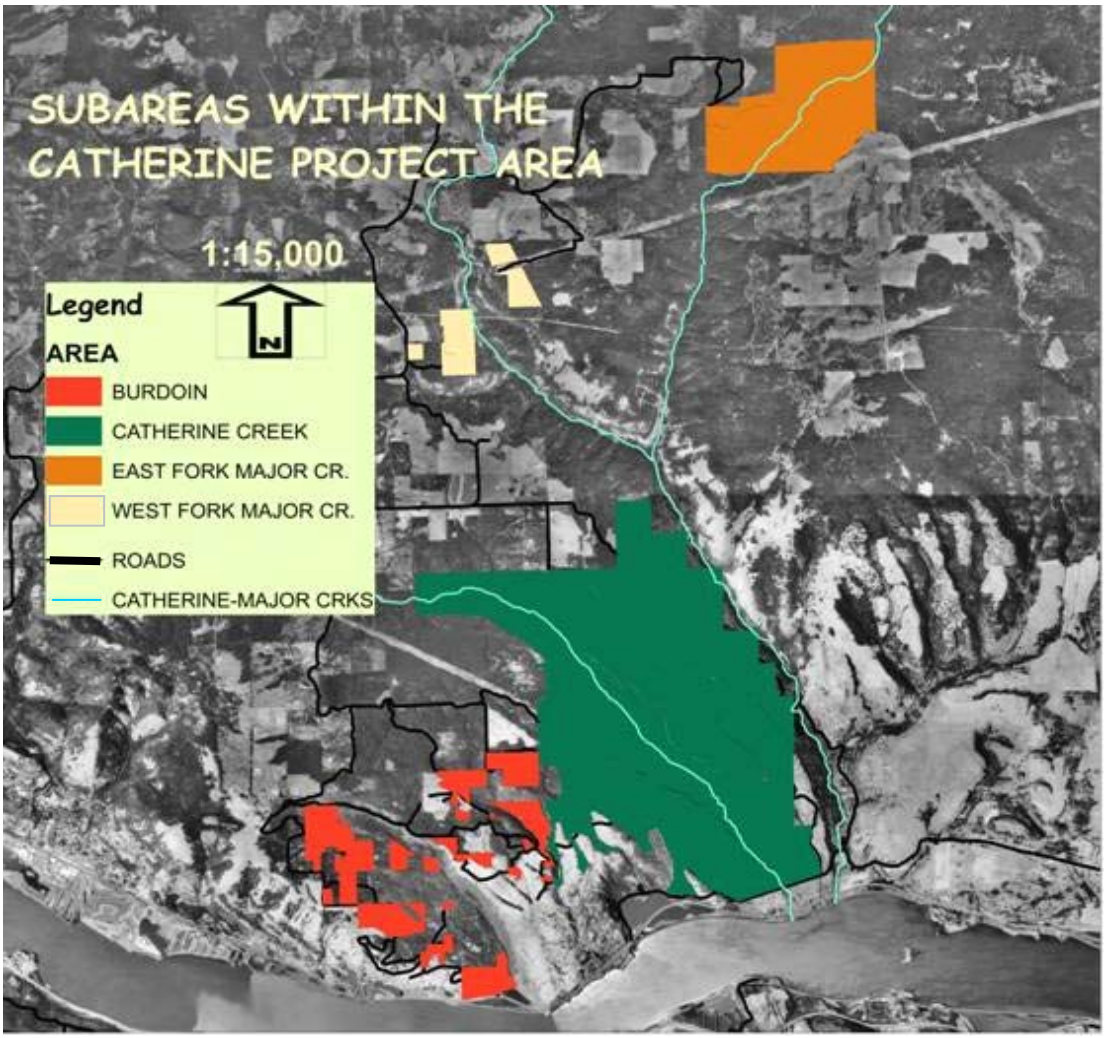
The 4,100-acre planning area is generally bounded on the south by SR-14, on the north by the boundary of the Columbia River Gorge National Scenic Area (NSA), on the east and west by National Forest System land ownership within the Catherine-Major watersheds and Burdoin Mtn. The primary travel routes are SR-14, Courtney Road, Snowden Road, North and South Major Creek Road, Bates Road, and Acme Road.

The landscape ranges in elevation from 80 to 2,500 feet above sea level. The average slope is 20-30% and ranges from 0-10% to over 60%. Vegetative cover consists of grasslands, Oregon white oak woodlands with scattered ponderosa pine at the lower elevations and mixed conifer with scattered oak and pine at higher elevations. The vegetation composition

transitions gradually or suddenly depending on the variables of elevation, slope, aspect, or soil conditions and their combined effect on moisture retention. Precipitation arrives principally from November to March, with amounts ranging from 28 to 32 inches annually. Summers are hot and dry, with limited surface water available. Several small unnamed ephemeral channels and two intermittent fish-bearing streams, Major and Catherine creeks, lie within the planning area. During summer, Major Creek contains surface water upstream from approximately river mile 0.5, while all other channels, including Catherine creek and the mouth of Major Creek, become dry. As expected, fish use in these intermittent channels is seasonal in nature.

1.2 - PROJECT SCOPE

This document will analyze the environmental effects within the planning area of thinning selected tree stands and related activities such as road maintenance, invasive plant control, planting native species, snag creation, soil de-compaction, slash pile burning, and prescribed fire.



1.3 – MANAGEMENT DIRECTION AND GUIDANCE

Decision Framework

The CRGNSA Area Manager will decide, on the basis of this document, and considering the results of the collaborative effort and public comments received during scoping whether to:

- Implement the proposed action as described,
- Select and/or modify an alternative, or
- Take no action at this time

Guiding Documents: In addition to the direction given by the National Fire Plan policies and the Healthy Forests Restoration Act, two management plans provide direction for this undertaking within the Open Space and Agriculture zones in the Special Management Area (SMA) of the Columbia River Gorge National Scenic Area:

- Gifford Pinchot Land and Resource Management Plan (GPNF Plan) as amended by the Northwest Forest Plan, and
- Revised Columbia River Gorge National Scenic Area Management Plan (NSA Management Plan, 2004).

All applicable guidelines from each plan apply. The most protective guidelines apply in cases where guidelines conflict. Applicable key guidelines and applicable regulatory requirements such as the Endangered Species Act and the Migratory Bird Treaty Act are cited in this document in Chapter 3-Environmental Consequences for each resource. Biological Evaluations are located in Appendix A.

Guidance is also contained in the Watershed Analysis of the Catherine-Major Creek Area (CRGNSA, 1995, updated 2005), the CRGNSA 5-year Action Plan for Improving Forest Resiliency (2004), and the Klickitat and Skamania County, Washington Community Wildfire Protection Plan (2006).

GPNF Plan Goals

The Forest-wide Management Direction applies to acquired lands in the CRGNSA. The following direction is applicable to the proposed action:

Riparian Reserves-TM-1c)

Apply silvicultural practices for Riparian Reserves to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics needed to attain Aquatic Conservation Strategy objectives.

Riparian Reserves-FM-1

Design fuel treatment and fire suppression strategies, practice, and activities to meet Aquatic Conservation Strategy Objectives, and to minimize disturbance of riparian ground cover and vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuels management activities could be damaging to long-term ecosystem function.

NSA Management Plan Goals and Allowed Uses

Open Space SMA Policy 1/SMA Guidelines, Review Uses

Open Space shall be designated to provide special protection for sensitive scenic, cultural, recreational, and natural resources, and for sensitive and/or representative ecosystems.

- Resource enhancement projects for the purpose of enhancing scenic, cultural, recreation and/or natural resources are allowed subject to review for compliance with the scenic, cultural, natural, and recreation resource guidelines. These projects may include vegetation management and forest practices for the restoration of forest health.

Forest/Agriculture SMA Policy 17/SMA Guidelines, Review Uses

Forest management of National Forest System lands shall be for the purpose of ecosystem management and forest health.

- Forest uses and practices are allowed subject to review for compliance with the scenic, cultural, natural, and recreation resource guidelines.

Catherine-Major Watershed Analysis and Open Space Plan Guidance

The Desired Future Condition

Ecological processes before European settlement created a disturbance pattern of frequent low intensity fires, drought/wet cycles, and contribution of large woody debris (LWD) as trees fell into creeks. Restore presumed pre-European settlement ecological processes and communities. Activities are proposed to enhance native plant communities… add large woody debris to Major Creek, and introduce prescribed fire or thinning to mimic the pre-settlement disturbance regime.

Klickitat County CWPP Guidance

Goal 3

Decrease risk of catastrophic fire in the Wildland-Urban Interface (WUI)

Objective 3.1

Treat vegetation in the Wildland-Urban Interface of CWPP communities to decrease fuel loading and fuel ladders.

Action 3.1.1

Emergency Management shall support treatment of vegetation in the WUI on public lands, Forest Service, Washington Department of Natural Resources, and private lands to create conditions that would decrease the hazard of large wildfires.

1.4 – EXISTING CONDITIONS AND THE NEED FOR RESTORATION

(See section 1.11 on page 23 for definitions of terms)

Fire Resilience

In 2004, the CRGNSA developed a 5-year Action Plan for Improving Forest Resiliency priorities for the treatment of fire dependent landscapes. These treatments were proposed in order to improve fire resilience for the objective of ecosystem health and the protection of adjacent properties. The Catherine area was determined to be a high priority because of its location near development and because past land management activities and fire suppression left these fire dependent plant communities with high stem densities making them

susceptible to wildfires of greater severity than typical of the natural fire regime.
Fire regimes describe the historic frequency and severity of wildland fires. Under the natural fire regime in Catherine, fires occurred at a frequency (0-35 years) repetitive enough to kill younger trees and brush. This repetitive burning reduced the fuel loading (including ladder fuels) for the next fire. Thus, under the natural fire regime, fires tended to burn at the ground surface rather than in the tree crowns. Fire suppression and the resulting exclusion altered this regime by removing an important pattern of disturbance and renewal.

Condition class is an expression of the difference between the current condition of vegetation types and the condition during the historic fire regime. It is used as a proxy for the probability of severe fire effects. (e.g., the loss of key ecosystem components - soil, vegetation structure, species; or alteration of key ecosystem processes - nutrient cycles, hydrologic regimes). Condition class is useful as an index of ecosystem risks attributable to an occurrence of wildland fire under the current regime of fire suppression.

Fire regimes and condition classes are listed in the USDA Forest Service General Technical Report RMRS-GTR-87.2002 as cited in the Healthy Forest Restoration Act (HFRA) to describe existing stands in fire-dependent landscapes as to the degree of alteration from the historic fire regime and the relative risk of fire-caused losses of key components of the forest ecosystem:

Condition Class 1-Fire regimes are within an historical range, low risk for losing key ecosystem components, vegetation attributes (species composition and structure) are intact and functioning within an historical range. These areas can be maintained using fire.

Condition Class 2-Moderately altered fire regime, moderate risk for losing key ecosystem components, moderate change to pattern, size, frequency, or severity of fires, vegetation attributes have been moderately altered from their historical range. These areas may need moderate levels of restoration treatments, such as hand or mechanical thinning and prescribed fire.

Condition Class 3-Significantly altered fire regime, high risk for losing key ecosystem components, dramatic change to pattern, size, frequency, or severity of fires, vegetation attributes have been significantly altered from their historical range. These areas may need high levels of restoration treatments, such as hand or mechanical thinning before prescribed fire can be used to restore the historical fire regime.

As stated in the 2002 report, departures from the natural fire regime are caused by fire suppression, timber harvesting, livestock grazing, introduction and establishment of exotic plant species, introduced insects or disease, or other management activities.

Most of the stands in the Catherine area were categorized by the CRGNSA ecologist and fuels specialist as Condition Classes 3—requiring thinning followed by prescribed underburning in order to reduce the severity of wildland fires and the risk of losing ecosystem components that would not have been lost under a more natural frequent fire regime. The Condition Classes 3 assessment was based on 2006 stand exams and the inspection of existing stand conditions coupled with the following information:

OAK-PINE WOODLANDS-Historically, Oregon white oak was subjected to a fire regime of low-severity surface fires occurring every few years. A study in the Oregon white oak woodlands of Humboldt Redwoods State Park, California revealed a history of fire every 7.5 to 13.3 years during the pre-settlement era (Stuart, John D. 1987). The following summarizes key findings related to this vegetation type:

- Fire has been largely excluded from the project area for nearly 80 years.
- In the absence of fire, Oregon white oak sprout clumps form dense, even-aged stands. Most Oregon white oak woodlands of today are of this type due to fire suppression (Habeck, J. R. 1962).
- The vast majority of the Oregon white oak seen within project area has evolved from dense sprout clumps and is even-aged.
- Frequent fire in Oregon white oak habitat resulted in the open savannas typical of pre-settlement times in the Willamette Valley, Oregon, and the bald hills of California (Sugihara, Neil G.; Reed, Lois J.; Lenihan, James M. 1987).
- Due to encroachment by less fire tolerant species and sprout density, there are few remnants of these open savannas within the project area.

PINE-OAK-DOUGLAS FIR FORESTS-Fire is an integral part of the ecology of Pacific ponderosa pine. Studies have shown that prior to 1900, most stands experienced low-severity surface fires at intervals ranging from 1 to 30 years (Arno, Stephen F. 1988; Baumgartner, David M.; Lotan, James E, 1987). The following summarizes key findings related to this vegetation type:

- Fire has been largely excluded from the project area for nearly 80 years.
- Fire also shapes the composition of ponderosa pine stands. In the late 1800's stands exhibited open parklike appearances with well-stocked overstories and relatively few understory trees. Over the last 100 years of fire suppression, seral Pacific ponderosa pine stands have been replaced by shade-tolerant climax stands (Habeck, James R. 1990).
- Within the project area there are few open parklike areas and understory trees tend to be dense enough to make foot travel difficult.
- Douglas-fir is successional to ponderosa pine in the absence of major disturbance. Fire suppression favors increased Douglas-fir because it is less fire resistant and slower growing than ponderosa pine when juvenile.
- Though heavier and more pronounced at the higher elevations, Douglas-fir encroachment is evident within all stand types in the project area.

Existing Condition of Fuels

Surface Fuels

Surface fuels are defined as any materials lying on or immediately above the ground including needles or leaves, duff, grass, small dead wood, downed logs, stumps, large limbs, low brush, and reproduction. Generally speaking, surface fuels within the project area cover just about the full spectrum of fuels typically associated with Pacific Northwest forest types. On one end of this spectrum these fuels are categorized as being “light” or “flashy” and are comprised of a grass understory with some needle cast, leaf litter, and twigs. Fires tend to

spread rapidly though these fuels especially when pushed by the west winds so characteristic of the gorge. The other end of the spectrum finds much "heavier" or larger diameter fuels comprised of a dead-down component in greater quantities of 3-inch or larger limb-wood. Due to the higher intensity generated by these heavier fuels, fires burning here tend torch, spot and crown and have a high resistance to control.

Ladder Fuels

Ladder fuels are defined as fuels that provide vertical continuity between the surface fuels and crown fuels in a forest stand, thus contributing to the ease of torching and crowning. The majority of the project area is dominated by timber stands that are tiered with ladder fuels. Such fuels pose a threat to both fire fighter and public safety in that they can generate extreme fire behavior and promote rapid rates of spread and lead to crown fires.

Crown Fuels

Canopy bulk density, canopy base height and canopy continuity are the key characteristics of crown fuels. Where bulk density, base height, and continuity align the threat of a crown fire exists. Crown fires are generally considered the primary threat to life, property, ecological and human values. They typically move faster than surface fires, are more difficult to suppress and pose the greatest threat to fire fighter and public safety. This threat comes from increased fire-line intensity and long range spotting. Such hazards often mandate an indirect suppression strategy, which increases the acres burned as well as the fire severity over the landscape. This results in higher tree mortality and smoke production. Some 42% of the project area is typed as containing heavy crown loading, 37% is moderate, and the remaining 21% is light.

Expected Fire Behavior and the Need for Action

Fire behavior within the project area is anticipated to be consistent with the existing fuel characteristics described above. Fires burning in light fuels pushed by typical gorge winds will spread rapidly. Recent examples of this include both of the Major Creek Fires (the first in July, 1999; the second in August, 1999) which burned through a portion of the project area and consumed one residence and some 600 acres. The challenge for fire fighters in light fuels is not the fire's resistance to control--but the rate at which the fire spreads.

Under high fire danger conditions, fires burning in heavier fuels can be anticipated to exhibit extreme fire behavior with torching, spotting, and crowning as the expected norm. On July 23, 2002, a lightning strike ignited a fire on Sheldon Ridge—eight miles south of the project area across the Columbia River in Oregon. The typical gorge winds and heavy fuels prompted extreme fire behavior including torching, spotting, and crowning. By July 25 the Sheldon Ridge fire had consumed some 15,000 acres. The fuels, elevation and topography are nearly identical to those found in the project area.

Klickitat County Community Wildfire Protection Plan (CWPP)

The Klickitat County CWPP identifies the need to decrease the risk of catastrophic fire in the Wildland-Urban Interface (WUI) by treating vegetation to reduce fuel loading and fuel ladders as its third objective. The CWPP further states that county emergency management shall support such treatments on public lands administered by the USDA Forest Service and Washington Department of Natural Resources and private lands as well to "create conditions that would decrease the hazard of large wildfires."

Forest Ecosystem Components

Forest ecosystem components include the structure, species composition, and landscape pattern of the forested system as well as the diversity of the wildlife and flora that use the forested system as their habitat.

Fire Dependent Transition Zone Ecosystem

The Catherine project area and the Columbia River Gorge, in general, are ecologically diverse. The Catherine area occupies a part of a larger transition zone between the wetter western forests and the drier eastern grasslands. As discussed above, the forest structure and pattern on the landscape in this zone was developed by and is highly dependent on the effect of regular fires (Agee, 1993).

The dominant conifer (fir) forests of the higher elevation Cascades rapidly transition, as elevation and rainfall decreases, to forests with co-dominant pine and fir, to forests with dominant pine, then to open oak-pine forests and oak woodlands, ending at the edge of the shrub-steppe of the Columbia basin. This transition is predominantly correlated to decreasing soil moisture or rainfall. Oregon oak and ponderosa pine are capable of growing on a wide variety of sites, but on sites with higher moisture and/or infrequent fire occurrence, they are eventually choked out and replaced by faster growing and less fire tolerant conifer species (USDA, 1990).

Significance of Oregon Oak-Pine Woodlands and Pine-oak forests

The present distribution of Oregon white oak extends from the Willamette Valley north to Puget Sound along the western side of the Cascade Range with a projection through the Gorge. Pine-oak forests fan out along the eastern flanks of the Cascades. The acreage of oak woodlands and the diversity of oak species both increase towards southern Oregon and California. The center of oak diversity is thought to be in Central America. Oaks were likely more widely distributed in Oregon and Washington during inter-glacial periods when climates were more moderate. Many species, such as the California mountain kingsnake, have followed the changing oak woodland distribution.

The key factors defining this area as wildlife habitat are the historically open forests or woodlands with large pines and oaks producing mast crops of acorns and pine nuts that are important to many wildlife species. Pine-oak and oak woodlands provide habitat for over approximately 200 species of terrestrial wildlife, including species that are on the Washington state endangered, threatened and sensitive list (Larsen and Morgan, 1998).

Acorns and pine nuts from Oregon white oak and ponderosa pine are important fall and early winter food for many species of wildlife including woodpeckers, western gray squirrels, and deer. Acorns are also an important food source for many invertebrates which in turn provide food for insectivorous birds, such as warblers and flycatchers. Many other birds, such as woodpeckers, eat insects and insect eggs found in the wood, fissured bark, and cavities of living and dead oaks. Oak leaves are likewise food for insect larvae and a fair–to-good quality deer browse.

The level of wildlife use of oak woodland is dependent on the stand structure and spatial pattern of the stand. Open canopy stands will generally have a more complex under-story than closed-canopy stands, and therefore support more wildlife species and diversity. Acorn and pine cone production is most abundant in older and larger trees. Small and competitive oaks and pines tend to produce very little mast, if any at all. Mast production, both acorn and pine cone, is cyclical, with very abundant years often followed by several poor years. The average interval between good cone crops for ponderosa pine in the Pacific Northwest is every 4 to 5 years (USDA, 1990). As an example, the Lewis' woodpecker remains throughout the year in Washington when there is a good acorn crop; however, in poor years the majority of the population migrates south during the winter to California (and southern Oregon where the diversity of oak species with differing cycles produce a more stable acorn crop) (Wahl et. al, 2005). Because of the cyclical nature of mast production, it is critical for wildlife species dependent on mast, such as the western gray squirrel, that a large population of mast-producing trees be maintained to help offset these cycles. The presence of a diversity of other seeds and fruits, such as maples, hazelnuts, Oregon ash, serviceberry, and Indian plum, also help to provide a more stable food supply over time (Linder and Stinson, 2006 *in Draft*).

Many wildlife species nest in oak cavities or use them to avoid inclement weather or predators. Open–form (savannah) oak tends to provide more cavities than closed–form (woodland) oak. Good habitat for most species would be composed of diverse woodlands with both dense areas for cover, as well as open meadows with savannah oaks. Similarly, pine trees interspersed within the oak woodlands provide important diversity for foraging and nesting. The larger oak and pines offer the most suitable habitat and produce the most mast. Their presence, or lack thereof, are perhaps the most telling as to the quality of the oak-pine habitat.

Existing Conditions

Large pines and oaks in the transition zone have disappeared over time for many reasons. Large pines were cut down for wood to build homes and the large oaks for fire wood. Local knowledge indicates that oak was a prime wood for the steam boats that ran up the Columbia during the late 1800s consuming 1 cord per hour. The advent of active fire suppression programs near the turn of the century has allowed for uncontrolled Douglas-fir and grand fir seedling establishment to encroach on the once inhospitable fire-prone communities. Thickets of young trees have established that are now competing with the older (legacy) trees for moisture, nutrients and sunlight. Over the last 80 years many of the pine-oak forests have succumbed to the expanding firs. As the firs slowly encroach further into the oak-pine woodlands, more of these communities begin to decline. This decline directly impacts habitats and food availability for locally-adapted wildlife species.

Encroachment by Douglas-fir has been most notable at higher elevation or on east slopes where the soil moisture is more conducive for their growth. Close inspection of the current conditions indicate that there are scattered old, large oaks and pines dying or dead throughout areas where Douglas-fir have now become the dominant species (see pictures in this document).

In other areas one can find the remnant stumps of large pines. Thickets of young oaks, pines, and firs have grown without fire to provide thinning. They have grown spindly with little mast production.

In other areas, where intense fires are believed to have burned in the late 1800s or early 1900s without subsequent fires, the trees have grown back into thickets of even-aged, non-mast-producing woodlands. While all these stand types provide habitats for wildlife, none provide the habitats previously existing under which the local species evolved.

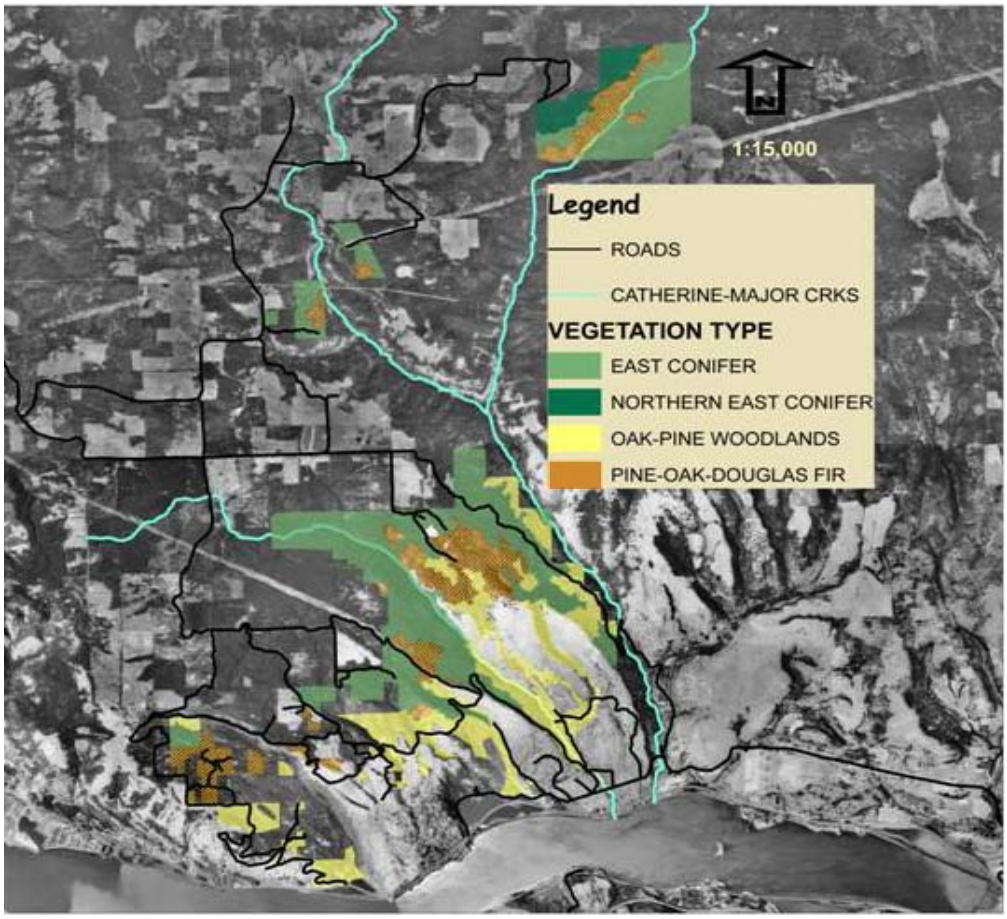
Douglas-fir was the naturally dominant species in stands in the most northern areas of the East Fork of Major Creek and at the highest elevations throughout the project area (referred to as Northern East Conifer by the collaborative group). As fire becomes less frequent and moisture increases, the conditions favoring pine-oak habitat decrease in favor of Douglas-fir habitat. Historically, trees (as evidenced by stumps noted by the working group) grew extremely large and appeared to be spaced at distances from 40-50 feet apart. This spacing was encouraged by the still relatively frequent fire disturbance that regularly removed seedlings and allowed the existing trees the moisture, light and space to grow very large.

At the lowest elevations and along the natural edges of the forested communities, the open savannah oak is to a degree still present. This community intermixes with the open grasslands that were dominant at the lowest elevations where all top soil was washed away during the Bretz floods 10,000 years ago. Although the large pines have largely been cut down, the savannah oaks are today some of the largest and most productive oaks, providing a unique habitat for many edge dependent species. This community is pressured by some fir encroachment and the continued in-growth of younger oaks.

Need for Action

The Cascades transition zone is an ecosystem that has been heavily impacted, declining in quality and quantity, due to human activities such as agriculture, land and housing development, fire suppression, and forest harvest practices (Partners-In-Flight, 2001). Human activities and development continue to fragment and alter natural processes. The pine-oak forests are recognized as a priority habitat by the state of Washington because their distribution is limited and their diversity is very unique (Larsen and Morgan, 1998). Many listed and important game species are dependent on these habitats.

The information summarized above shows that it is critical and timely to take action to move the pine-oak and east conifer communities closer to their historic conditions in order to continue to provide the habitat components that will sustain locally adapted species.



Existing Conditions by Each Vegetation Type:

Existing Conditions for Northern East Conifer in 2006:

- Generally, Douglas-fir stands with few pine or oak.
- Overstory: Stands mostly consist of younger Douglas-fir with scattered older legacy Douglas-fir where not harvested.
- Understory: Understory is heavy in-growth of young Grand fir or Douglas-fir.
- Openings: Large openings in the area appear to be human-made. Natural openings are few and small.
- Shrub and Herbacious Layer: Ground relatively bare—except where harvested.

Existing Conditions for East Conifer in 2006:

- Generally, Three story stand of old oaks, younger Douglas-fir and few pine.
- Overstory: Stands mostly consist of younger Douglas-fir with scattered older Douglas-fir and Ponderosa Pine. Much more Douglas-fir than natural fire regime would have produced.
- Understory: Understory where present is Oregon Oak with heavy in-growth of young Grand fir or Douglas-fir. Large oaks are dying from being overtopped by Douglas-fir. Some small Douglas-fir were removed in 2005. Grand fir seedlings and saplings common with occasional large Grand-fir trees.
- Openings: Small openings that are relatively scarce. Increase somewhat to the southwest into Catherine Creek.
- Shrub and Herbacious Layer: Ground relatively bare--where cover present: ocean-spray, snowberry, hazel, vinemaple, oregon grape, ceanothus, allium, yarrow, and lupine.

Existing Conditions of Pine-Oak-Douglas Fir in 2006:

- Overstory: Large pine much more common than in East Conifer but less than 50%
- Understory: Grand fir less prevalent. No longer over 2% of stand as in East Conifer.
- Oaks are becoming over-topped by fir. Oak regeneration is prevalent.
- Openings: Typically serpentine around oaks and pines.
- Shrub and Herbacious Layer: Cover present: ocean-spray, snowberry, hazel, vinemaple, oregon grape, ceanothus, allium, yarrow, and lupine

Existing Conditions of Oak-Pine Woodlands in 2006:

- Overstory: Scattered Ponderosa Pine and sparse Douglas-fir
- Some areas pine and DF so sparse that Oregon oak is overstory.
- Understory: Understory where oak and pine is present is largely Oregon Oak that is either Oak Savanna or growing in even-age thickets. Some areas have a mixture of both.
- Openings: Disturbance-caused openings are rapidly re-growing with tree species. Some openings appear to be permanent based on soils or moisture content of soils.
- Shrub and Herbacious Layer: Poison Oak very prevalent, some area of other shrub species, native and non-native grasses and wildflowers.

1.5 – DESIRED CONDITIONS

Based on the identified need and the above management direction and guidance, the Columbia River Gorge National Scenic Area Manger sent a letter on March 22, 2006 to interested parties requesting participation in a collaborative effort to design a vegetation management project in the Wildland-Urban Interface including the Catherine Creek area. A collaborative process created the following objectives:

- Fire Resilience: Wildfires will, as far as can be predicted, be surface fires that stay close to the ground under the majority of conditions. Maintenance underburns will be possible.
- Ecosystem Restoration: Restore, as much as possible, the natural fire regime and associated habitats while protecting threatened, endangered or sensitive species and species such as the western gray squirrel.

Fire Resilience

For all stand types, the desired condition is that hazardous fuels would decrease to the point that the potential for uncharacteristic high intensity wildfires is reduced. Fuel management techniques would decrease surface fuel loading, lower branches on larger trees, and reduce the density of understory trees, thereby reducing ladder fuels. Increased spacing between overstory tree crowns would reduce the risk of fire spread between crowns. Herbaceous understories would result in lower intensity fires as native bunchgrasses remain green well into mid-summer.

Forest Ecosytem Components

The desired condition is to move the vegetation structure closer to that of the historic condition when fire was the dominant disturbance regime. This condition can be described in general terms as a more open forest with larger trees and a diverse native herbaceous understory. The forest stand structure would be somewhat less diverse than the existing structure but would have more large trees and snags associated with it.

The desired forest species composition would be similar to what it is today except in the pine-oak-Douglas fir vegetation type. This particular community would have fewer young Douglas and grand fir trees, with a stronger and more dominant pine and oak component. This composition would vary with aspect and moisture conditions--more firs would be expected in areas of higher moisture such as in the East Conifer and Northern East Conifer vegetation types.

Desired Conditions by Each Vegetation Type:

Desired Conditions for Northern East Conifer in 2106:

- Generally, single-story stands of extremely large (50+) Douglas-fir with a vibrant herbaceous understory.
- Overstory: Overstory canopy is large diameter Douglas-fir widely spaced from 30-70'. Pine is protected where present--over the years pine increases from current canopy cover if more open canopy and prescribed underburning encourages it. Otherwise, no pine is present.
- Understory: Regeneration is discouraged by prescribed underburning. New oaks may take advantage of more open canopy. The understory is sparser than in East Conifer so the total canopy is lower. However, Big Leaf Maple is present to increase the total canopy cover between burns.
- Openings: Fire creates openings when prescribed underburning occurs.
- Shrub and Herbacious Layer: Herbacious layer is encouraged. Bare ground is rare, shrub and wildflower cover is common.

Desired Conditions of East Conifer in 2106:

- Overstory: Variable—where oak and pine are present, the canopy is more open, in swales or other places where Douglas-fir is dominant, the canopy is more closed. Pine is present in the more open areas, Douglas-fir is more dominant than pine.
- Understory: Large diameter oak is favored in more open areas.
- Openings: Fire creates openings when prescribed underburning occurs.
- Shrub and Herbacious Layer: Bare ground is rare, shrub and wildflower cover is common.

Desired Conditions of Ponderosa Pine-Oak-Douglas fir in 2106:

- Overstory: Small clumps of Douglas-fir and Ponderosa pine where oak not present-in some places oaks dominate enough to be called the overstory.
- Understory: Oaks are dominant with few seedlings and saplings.
- Openings: New openings and opening maintenance is created by prescribed fire.
- Shrub and Herbacious Layer: Same as existing except more native bunchgrass and other native grasses.

Desired Conditions of Oak-Pine Woodlands in 2106:

- Overstory: Douglas-fir is less than 1% of stand. Pines predominate. In most places, oaks dominate enough to be called the overstory.
- Understory: Foraging area for western gray squirrel. Large oaks are plentiful.
- Openings: New openings and opening maintenance is created by prescribed fire.
- Shrub and Herbacious Layer: Same as existing except more native bunchgrass and other native grasses.

1.6 - PURPOSE AND NEED FOR ACTION

The difference presented between the existing and desired conditions represents a need for management action. The purpose of the proposed action in the Catherine Planning Area is to:

- Take measured management action that will further the long-term objectives created by the collaborative group:
  - Fire Resilience: Wildfires will, as far as can be predicted, be surface fires that stay close to the ground under the majority of conditions. Maintenance underburns will be possible.
  - Ecosystem Restoration: Restore, as much as possible, the natural fire regime and associated habitats while protecting threatened, endangered or sensitive species and species.
- Reduce the immediate risk of high intensity wildfires that have the potential to result in loss of life, property, and important forest ecosystem components by removing the small trees that create fuel ladders into the crowns of larger trees and by increasing the spacing between trees.
- Release overtopped oak trees to forestall their rapid decline.
- Improve the growing conditions for large legacy ponderosa pine trees by removing the understory trees competing with them for moisture and light.
- Reduce the risk of bark beetle tree mortality by reducing the number of trees per acre.

Measurements

- Acres in the planning area that would be treated by removing fuel ladders and increased spacing between trees.
- Acres of planning area where prescribed fire would be possible.
- Acres of oak woodland communities with Douglas-fir encroachment.
- Acres of pine-oak Douglas-fir communities with improved growing conditions for ponderosa pine legacy trees and trees per acre reduction.

1.7 - PROPOSED ACTION OVERVIEW

Catherine Collaborative Group:

The collaborative process for this proposal continued an already active group process begun on March 22, 2006. The deliberations for this proposal began on June 15 with a public meeting in Hood River, Oregon and included 7 meetings and 4 field trips spanning June 15 through September 21, 2006. The collaborative group recommended the following:

The Columbia River Gorge National Scenic Area (CRGNSA) proposes to thin and underburn approximately 2800 acres of Fire Regime I, condition class 2 and 3 tree stands in the Wildland-Urban Interface in the Catherine Creek area and to underburn approximately 1300 acres:

- The proposed action calls for thinning approximately 1800 acres in the Catherine Creek planning area followed by underburning. Thinning will include trees <21" dbh (diameter at breast height) and will require some road maintenance and landing creation, mechanical tree yarding, piling of slash, and pile burning.
- The proposed action calls for no ground-based mechanical thinning on steep slopes (>30%), riparian buffers, and in the oak-pine woodlands (which do not require it). Therefore, approximately 1000 acres will be thinned followed by hand-piling of slash and pile burning.
- The proposal includes the release of overtopped oak and of large, legacy ponderosa pine trees by removing trees around them on approximately 500 acres in the Catherine Creek planning area.
- The proposal would create a prescribed underburning schedule for thinned tree stands and areas where fire can be reintroduced without thinning in the Catherine Creek planning area, and on Burdoin Mtn. Approximately 1300 acres are proposed for underburning only.
- Creation of snags where they are below requirements of the CRGNSA Management Plan.
- Thinning will be "from below" meaning that the smallest--mostly understory trees in the stands will be removed first to achieve the prescribed canopy closure, species preference and size classes after treatment. Large legacy trees will remain. Lower branches on conifers >12" dbh will be considered for being pruned up to 6 ft. to reduce ladder fuels-->21" dbh at a minimum.
- Slash will be grapple or hand piled and burned. Stands will require a 2.5-3ft. fire-line dug before burning where no other fuel break exists.
- All stands will be monitored post-activity for invasive plants.
- Haul routes will be on existing roads or tracks.
- All decommissioned temporary access and other disturbed areas such as fire-line will be seeded with native grasses and wildflowers.
- The treatment for fish bearing and perennial riparian areas (Catherine and Major Creeks):
    - No entry buffer for 50 feet on either side
    - From 50-100 feet, no mechanical thinning (i.e. cut to the prescription for the stand type with sequential entries if necessary leaving the larger cut wood on the ground, hand piling and underburning).
    - Beyond 100' but within the buffer, use mechanical means to achieve the prescriptions per stand type such as helicopter or cable yarding if

necessary and feasible. Where the use of mechanical methods is not advantageous, (such as in oak-pine woodlands), use non-mechanical methods. Where mechanical methods are indicated but not feasible, use the method described in the above bullet for no mechanical thinning.

Some details of the recommended proposal have changed since the NEPA analysis began but the proposal's prescriptions and main components remain. Detail has been added as new information became available (such as the number of acres in riparian buffers, acres of feasible helicopter tree removal areas, fire-line locations, additional implementation requirements, etc.) See Chapter 2, page 25 for the detailed proposed action.

1.8 – PUBLIC INVOLVEMENT AND CONSULTATION

Public Scoping and Coordination with the Tribes and other Agencies:

Public notification regarding the need to restore fire-dependent forest landscapes began in the Burdoin Mountain Planning Area in the winter 2001. In April of 2005, a collaborative and on-going public involvement process was developed and incrementally improved over the years. On March 22, 2006, the Columbia River Gorge National Scenic Area Manger sent a letter to known interested parties including the Indian tribal and local governments, state and federal agencies, and adjacent landowners requesting participation in a collaborative effort to design a forest restoration project in the Wildland-Urban Interface in the Rowena and Catherine Creek areas. All the meetings were announced and open to the general public with the meeting notes placed on the CRGNSA website. Discussions on the Catherine area began on June 15, 2006 with an independent facilitator. The proposed action was the result of the collaborative effort among the following interested individuals, organizations, and agencies:

- 3 private landowners or interested parties
- Washington Department of Fish and Wildlife
- Friends of the Columbia Gorge
- Gifford Pinchot Task Force
- Oregon Natural Resources Council
- USDA, Forest Service

A brief history of the meetings follows:

June 15

The Forest Service introduced the Catherine area, including the objectives developed by the Rowena collaborative group for both projects.

AGREEMENTS

- Forest Service will get background information on the internet and we would use our time on June 22 for the field trip
- The group agreed to a schedule:
    - Office work days every other Thursday when we make final decisions on our field trip tentative decisions.
    - The following field trips:
        - "Allen" property stands (no public access on road)
        - Stands along Major Creek Road

    - Stands along Atwood Road
    - Upper Major Creek stands
- The Forest Service committed to taking photos to use during the office conversations and for those not able to attend a particular field trip.
- The group will have a quiet 5 minutes for considering stands after reaching them.
- For each stand visited the group will note existing condition of each layer including the herbaceous (ground cover) layer. The group will then discuss desired condition and a tentative decision on a treatment prescription.
- The group will discuss the effect of implementation on social issues such as recreation.
- The group described what each would consider a successful process.

June 22-FIELD TRIP-BURDOIN MTN. and CATHERINE SUB-AREA

The group stopped at a Burdoin Mtn. Oak Woodland stand that had been thinned in 2003:

DISCUSSION:

- Question if the thinning was too light. FS replied that monitoring in general indicated that the thinning was too light.
- The monitoring report states for this stand: The Desired Future Condition (DFC) was to maintain average canopy of 70% and a range of 15-75%. The treatment was within that range --with canopy average of 56%. We also decided that the DFC 70% average did not meet the purpose and need of the project which led to the Burdoin II project. The Burdoin II collaborative team changed Oak Woodlands to a 25-60% canopy range.
- The group discussed how maintenance using underburning is necessary to produce the full desired conditions over time in these kinds of stands.

Catherine Stop #1-East Conifer

DISCUSSION:

- The natural fire regime kept Douglas-fir from benefitting from the moisture it can get in this area. Fire kept succession from proceeding to Grand fir.
- Nature needs help—but will take 100 years to reach a desired condition.
- Too thick, needs thinning
- 90-95% of remnant oak woodlands are in Klickitat County.
- Treatments should be a mosaic—similar to a pattern that fire would have produced—more oak on ridges and more fir in drainages.

- Single species or indicator species management not favored by FS specialists.
- Important for Washington Department of Natural Resources to manage for Western gray squirrel. Need clumps of conifer, not single trees.

Catherine Stop #2-Oak-Pine-Douglas fir

Catherine Stop #3 Oak-Pine

The group developed tentative existing conditions for each stand type and some desired conditions for each stand type.

June 29-July 20-FIELD TRIP to ATWOOD ROAD and office follow-up meeting

The group visited more representative stands along Atwood Road in the Catherine sub-area and then met at the FS office to develop prescriptions for the oak-pine woodlands and pine-oak-Douglas fir stand types and continued the discussion on the desired condition and prescription for East Conifer.

DISCUSSION:

- No significant fire in the area since the late 1800s-- Grazing stopped in 1987.
- Some small fires happened, the largest 400 acres of arson
- The oak-pine component of Catherine is roughly estimated at 40% of the project area.
- The group is concerned about clearing radius around large pine--whether it's 30' for large pine (>20") or all sizes.
- There is concern about fir composition. One person would like it represented as 100% in some places in the Desired Conditions.
- Need more Western Gray Squirrel info. FS to invite a specialist speaker.
- FS entomologist Bruce Hostetler is coming on July 27th to discuss ponderosa pine.

- The group planned the last meeting to discuss general prescription things such as how to treat riparian areas, steep slopes, invasives, snags, etc.
- Will plants sensitive to fall prescribed underburning?
- Need a good monitoring plan.
- Some of the group suggested that we should discuss these items with the Tribes.
- Contractors should be very carefully trained to implement the prescriptions.
- The group would like a sample area marked by the FS.
- FS volunteered to see what prescription works in East Conifer with regard to the fire model.

July 27-FIELD TRIP EAST FORK MAJOR CREEK
The group introduced a new stand type, Northern East Conifer, as a result of this trip. They developed a tentative existing and desired condition as well as a prescription.

DISCUSSION:
- Natural fire frequency was probably about 35 years. Major Creek will draw wildfire up like a chimney.
- Area on top where stopped has been logged at least twice.
- Legacy 30-60" dbh Douglas-fir stumps are at anywhere from 30-70 feet spacing. Canopy varies due to clumpiness but is at about 50%.
- No ponderosa pine or Oregon oak in the vicinity but is likely present in small amounts.
- Co-dominant in-growth of Douglas-fir about 40-60 years old and not spaced at the distance of the legacy stumps.
- Not squirrel habitat, some sign of possible goshawk use.
- The stand to the east down towards Major Creek is much more closed, the canopy at 100% or more, no ground cover. Fewer large legacy trees.
- Concerns with sensitive soils, access, steep slopes.

August 3
The meeting was spent verifying the on-going notes on the existing and desired conditions as well as prescriptions for the four stand types.

August 10-FIELD TRIP WEST FORK MAJOR CREEK
Stop #1-Snowden and Bates Rd.

- The group walked down the road to the Forest Service parcel. The group was delighted by large legacy pines with some remnant oak. Growing in a cohort much younger than the pine and oak was Douglas-fir.
- The group discussed the pine and oak prescription for releasing large trees. This sparked a discussion about the degree of open-ness that would create.
- There was also a discussion about spotted owl habitat.
- The group concluded that the stand was in transition between East Conifer and Pine-oak Douglas-fir but thought the prevalence of grand fir indicated that it was East Conifer.

There was lively discussion about the need to thin. Looking down the west slope into the West Fork Major Creek, the stand had been "cherry-picked" by previous private forest practices. Lots of grand fir left—large and small.

Stop #2-Dorsey Road and BPA Line

- The group walked to the south from the end of the road and found a remnant of almost-DFC. It had huge old firs bigger (50+) than any of our DFC descriptions. There were pine trees growing at the edge of the BPA line but this particular stand was fir-dominated. It got much less DFC-like the further east the group walked.
- The group discussed the East Conifer existing and desired condition but did not discuss the prescription.

August 17

The group finished the East Conifer prescription thus finished the proposed action recommendation as it was to appear in the September 2 scoping letter pending approval of the proposed action by CRGNSA Area Manager Dan Harkenrider.

Scoping

The scoping letter and project description, dated September 2 with an extension on September 18, was mailed or e-mailed to approximately 263 individuals, organizations and agencies interested or affected by the proposal recommended through the collaborative process. The letter requested comments on the detailed project description. The collaborative group met with the Forest Service on September 21 to offer comments and to recommend the riparian prescription. (For a listing of agencies and organizations contacted the reader is referred to section 4.4 of this environmental document). On March 13, the Forest Service sent out a consistency review application to interested parties, adjacent landowners, the CRGNSA tribes, and the collaborative group for a 30-day comment period with comments due on April 16. This notice was also added to the CRGNSA website.

Scoping and Consistency Review Comments

The comments received are on file in the project record. A summary of the comments and how they were addressed are located in Appendix B.

1.9 – ISSUES AND CONCERNS

During the development of the proposed action by the collaborative group there were concerns about how the proposal would be implemented and what effects the proposed activities would have on the issues described below. These issues raised during scoping and the collaborative process were addressed by modifying the proposed action or developing additional implementation requirements and are discussed throughout this document.

Air Quality

Levels of smoke from slash and prescribed underburning may have a local, transitory effect on air quality and visibility. Limited visibility along roadways may cause short duration public safety issues. Sensitive members of the public may experience eye, throat, or lung irritation from these exposures. There is some risk that chronic, low-level exposure of workers or the public to smoke may lead to adverse health effects.

Measurement: Tons of emissions with high concentrations of particulate matter.

Access and Third Party Rights
Access issues associated with the project area are complex as a result of the lands being combined together from many different acquisitions. A distinction is made between legal access and physical access. It is not uncommon to have physical access (an existing road), but no legal right of use to the road. Likewise, there are areas with legally defined access for which a road was never constructed. Lastly, there are areas with neither legal nor physical access.

Measurements: Evaluation of types of legal and physical access.
Solution found to access issue (yes or no).

Steep Slopes and Soil Stability
Sections of the treatment area are very steep (>50%), with thin soils. Construction of temporary roads and landings to facilitate thinning can increase the chance of landsliding, surface erosion and delivery of sediment to adjacent stream systems.

Measurement: Miles of temporary road construction on very steep slopes (>50%).

Effects to Soils such as Disturbance and Compaction
Log yarding equipment (tractors, skidders, cable yarding) and burning has the potential to damage soil through compaction, displacement and sterilization. This in turn may increase erosion and decrease site productivity.

Measurements: Intensity of acres burned (high-low)
% acres intensive prescribed burn.
Acres of ground based treatment-% Compacted.

Effects to the Habitats of Plants and Wildlife
Public comment indicated that there would be long term benefits to wildlife and plant habitats as a result of this project, but there were concerns that the short-term impacts would not off-set the long-term benefits. Would the short-term impacts be restored over time?

Measurements: Activity scheduled to avoid sensitive breeding seasons or life cycles.
(Yes or No).
Analysis of Effects in Biological Evaluations (BE).

There were concerns that invasive plants would become established in areas with soil disturbance and infestations would occur within fairly pristine oak-pine-Douglas fir habitats.

Measurement: Monitoring, eradication, and prevention requirements established.
(Yes or No).

There was a concern that converting current Douglas-fir habitats (including those with remnant old oaks and pines) into oak-pine habitats, as were likely present when fire regimes were at a more natural frequency and intensity, may not be desirable in all areas.

Measurement: Acres converted of sustainable Douglas-fir habitat
(East Conifer and Northern East Conifer).

Measurement: Dominant species before treatment is Douglas-fir, other species dominant after treatment.

Effects on Riparian Reserves and Buffers
Tree removal adjacent to streams and wetlands has the potential of increasing stream temperature and increasing sediment due to loss of stream shading and soil disturbance next to the water. This in turn may reduce water quality and degrade aquatic habitat.

Measurement: Miles of fire-line in Riparian reserves, acres treated in Riparian reserves

Effects on Scenic Resources
There may be short term visible disturbance factors such as visible slash, stumps, boundary marking, etc. that will require mitigation to realize the benefits of the long term effect of larger trees in the viewsheds.

Measurements: Acres treated in Foreground, middleground, background distance zones.
Degree of deviation: "form, line, color, or texture common to the natural landscape"--pertaining to meeting scenic standards.

Communication
Residents and others who may be affected need to be informed. Bicycles use Courtney and Atwood roads to access areas inside and outside of the proposed project area. Most hiking by non-locals occurs during the spring flowering season in the open meadows of the lower Catherine Creek drainage.

Measurement: Notice required in alternative? (Yes or No).

Prevention of escaped fire during underburning near private property
There are potential risks to adjacent private property from escaped prescribed fires.

Measurement: Expected Fuel loads and
Miles of fire-line planned at adjacent property boundaries.

Cultural Resources
There are potential risks to cultural resource sites that will require mitigations in order to realize the benefit of reducing fire risk by reducing excess fuels with prescribed fire.

Measurement: Number of sites adversely affected.

1.10 – PROJECT RECORD

This EA hereby incorporates by reference the Project Record. The project record contains specialist reports and other technical documentation used to support the analysis and conclusions in this EA and are included in separate files in order to reduce the size of the EA. The Project Record is available for review at the CRGNSA at 902 Wasco Avenue in Hood River, Oregon.

Portions of the project record such as the Environmental Analysis, Appendices, and notes and background information from the proceedings of the Catherine collaborative group can be found on the CRGNSA website http://www.fs.fed.us/r6/columbia/forest/projects/

1.11 –HELPFUL DEFINITIONS

Canopy closure: The percentage of forest cover formed by the branches and foliage of tree crowns. Looking up, the canopy closure percent is judged by the amount of sky visible as opposed to the amount of sky covered by trees. Looking down, it's the percent of ground shaded by tree crowns directly overhead.

Crown: The portion of a tree composed of branches and stem above the lowest live limb.

Desired Future Condition (DFC)- As used in this document, a description of an ideal stand structure that can be used as a model for designing actions to take in the present that would create the ideal stand in the future. It is based on an historic sustainable stand condition before changes such as fire suppression, timber harvest, or livestock grazing occurred.

Diameter at Breast Height (DBH): The diameter of a tree stem measured 4.5 feet from the ground.

Forest stand structure: The number, types and spacing of tree species, tree sizes, and canopy layers contained in a stand of trees.

Openings: Spaces in the forest where trees are not growing. These may be permanent due to soil and moisture conditions, or they may be temporary—often caused by disturbances such as fire, a wind storm, harvest, or landslide.

Overstory: The highest vertical stratum of individual plants within a community. In a forest or woodland, the overstory is composed of dominant and co-dominant trees. These are the tall or mature trees that rise above the shorter or immature understory trees.

Reference Condition- An historic sustainable condition of forest stand structures before significant alteration from factors such as fire suppression, timber harvest, or livestock grazing occurred at landscape levels.

Remnant overstory or legacy trees: The oldest and largest trees in the overstory, usually the left over "remnants" of a previous stand that was almost completely removed by fire, harvest, or other disturbance. The size differences between these trees and the overstory co-dominants are usually marked. For example, legacy tree diameter at breast height (dbh) may be over 50 inches, while the rest of the stand may contain overstory trees from 20-30 inches.

Savanna: A plant community or vegetation type dominated by grasses with scattered, drought-resistant trees.

Shrub and Herbacious Layer: The layer of vegetation near or on the ground that is typically composed of grass, shrubs, flowers, tree seedlings, and saplings.

Size Composition: The mix of the different sizes of trees in the forest.

Species Composition: The mix of different types of trees and other vegetation in the forest.

Total canopy closure: The percentage measuring the degree to which all layers of the tree canopy combine together to block sunlight or obscure the sky as measured from below.

Understory: The layer of vegetation between the overstory canopy and the shrub and herbaceous layer. These are the shorter or immature trees that are below the tall or mature overstory trees.