

# WILDERNESS EVALUATION

## LONG SWAMP - 608024

63,526 acres

### OVERVIEW

#### History

The area was originally inventoried as seven separate roadless areas totaling approximately 105,800 acres during RARE I. The areas were Disaster Creek (6,900 acres), Falls Creek (7,300 acres), Farewell Creek (5,600 acres), Long Swamp (20,500 acres), 30-Mile (21,600 acres), 20-Mile (40,600 acres), and Lake Creek (3,300 acres). Between 1972 and 1979, timber sales and roads, along with new roadless area inventory criteria, reduced the total size of these areas by approximately 3,500 acres. The RARE II process combined the seven areas and designated approximately 10,200 acres of the Long Swamp portion for further planning for possible wilderness designation and the remaining portions were allocated for non-wilderness management. The Washington State Wilderness Act of 1984 added approximately 21,600 acres of the Long Swamp and Lake Creek portions to the Pasayten Wilderness. Between 1979 and 1984, approximately 10,600 acres were impacted by roads and timber harvest.

Approximately 991 acres were removed from previous inventory due to nonconforming uses such as road construction and logging; 11,747 acres were added to the previous inventory as they met the criteria for a potential wilderness area (PWA) as described in Forest Service Handbook (FSH) 1909.12, Chapter 70. The following chart depicts the 1989 Okanogan National Forest Land and Resource Management Plan direction for the 2006 inventory.

**Table 1--Management area percentages (rounded)**

Okanogan National Forest			
MA05	MA08	MA12	MA25
Recreation / Scenery	Research Natural Area	Lynx Habitat / Timber	Timber / Range
12%	13%	72%	3%

#### Location and Access

The entire area is located in the north central portion of the Okanogan-Wenatchee National Forest and all lands are in Okanogan County. From Tonasket, access to the area is provided over U.S. Highway 97, County road 9425, and county and national forest roads in the Toats Coulee and Twentymile and Thirtymile Meadow areas. From Winthrop, access is provided over county and national forest roads in the Chewuch River and Eightmile Creek drainages.

## **Geography and Topography**

Topography within the area varies greatly. The western portion of the area is characterized by deep canyons with moderately steep slopes topped by rounded or benched ridgetops. Falls Creek flows through a gentle U-shaped valley. North of the Toats Coulee road, broad ridges occur in the east portion and the west portion plunges down to the steep-walled Chewuch River. The Twentymile and Thirtymile Meadow areas are characterized by high gentle ridges, but a number of streams have cut deep canyons. Elevations range from 2,000 feet to approximately 7,450 on North Twentymile Peak.

## **Current Uses**

Numerous trails provide access through the area which are managed for hikers, horseback riders, and mountain bikes. Several of these trails are considered major access routes to the Pasayten Wilderness and are used by hikers and horseback riders. Recreation use is low except on the Andrews, Lake Creek, Irongate, and Chewuch trails which pass through the area and leading to the Pasayten Wilderness where use is moderate to high.

The meadows in the area are popular snowmobile destinations and receive a moderate amount of use during winter months.

Small portions of the Cub and East Chewuch Cattle Allotments, and most of the Toats Coulee Cattle Allotment are in this area.

## **Appearance and Surroundings**

Most of the area provides vegetation and topographic diversity, primarily in the Twentymile and Thirtymile meadows systems, not found in surrounding areas. The majority of the area east of the Chewuch River was burned in the Thirtymile Fire in 2001 or in the Tripod Fire in 2006. The area west of the Chewuch River is common forested area with a portion burned in the Farewell Fire in 2003. Helispots and handlines are visible from all three fires. The northern boundary of the area is adjacent to the Pasayten Wilderness.

## **Key Attractions**

A string of large meadows are a key attraction year around; however, they are visited most frequently in the winter by snowmobilers. Trails are also a key attraction, particularly those that access the Pasayten Wilderness.

## **CABABILITY FOR WILDERNESS**

### **Level of Natural and Undeveloped Environment**

The area is predominately natural appearing. The network of meadows is unusual on the Tonasket and Methow Valley Ranger Districts, providing a concentration of habitat for meadow-dwelling wildlife and plants. The major impact on the natural integrity and appearance of the area are the evidence of fire handlines and helispots, and a short drift fence. There are eleven trails within the area.

Eastern brook trout have been introduced into the PWA.

Water quality data is not available for most of the PWA, however due to the relatively low level disturbance water quality is assumed to be high. There may be localized disturbances due to grazing activities.

There are several known noxious weed species present within the PWA.

The Long Swamp PWA is minimally impaired by light pollution from the Okanogan Valley area. The entire PWA rates as Class 2 on the Bortle scale. A Class 2 Typical Truly Dark Sky represents the darkest skies viewed in the continental United States. The summer Milky Way is highly structured to the unaided eye. Any clouds in the sky are visible only as dark holes or voids in the starry background. No light domes from population centers are visible.

### **Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation**

The opportunities for solitude range from low around the exterior of the area to moderate in the interior of the Twentymile and Thirtymile Meadow portions of the area. Opportunities for primitive recreation include hiking, stock travel, and winter snow travel.

### **Special Features**

Together, the Long Swamp, Granite Mountain, and Tiffany PWAs are part of a larger expanse of continuous lynx habitat that has the highest reported concentration of lynx in the lower 48 states. A string of large meadows in the area are set within a boreal forest and provide unique habitats for lynx, snowshoe hare, boreal owl, bog lemming, great gray owl, and other species. The area is within the North Cascades Grizzly Bear recovery area and the core recovery area for the Canada lynx, and provides source habitat for wolverine. These species have very limited distribution in the region.

The *Cultural Resource Overview of the Twisp-Winthrop-Conconully Planning Unit* (Bennett, 1979) identified evidence of several cabins and several lookouts in the area.

### **Manageability of Boundaries**

It would be difficult to manage much of the area as an addition to the Pasayten Wilderness. Adding this area to wilderness would create long protrusions from the existing boundaries along features not readily defined, such as contour lines. The lack of readily defined features along most of the boundary also reduces the capability of managing the area as a separate wilderness even though a large area is involved.

## **AVAILABILITY FOR WILDERNESS**

### **Recreation**

A block of land in the Twentymile and Thirtymile Meadow portions of the area provides semi-primitive non-motorized, and semi-primitive motorized recreation opportunities. A large portion of the area has been influenced by adjacent roads and provides roaded natural recreation opportunities. The most significant recreation features are the meadows themselves.

Numerous trails provide access through the area. Several of these trails are considered major access routes to the Pasayten Wilderness. Recreation use is low throughout the area except on trails passing through the area and leading to the Pasayten Wilderness where use is moderate to high. Other trails provide access to North Twentymile and South Twentymile Peaks. The meadows in the area are popular snowmobile destination spots, and receive a moderate amount of use during the winter. Thirty-nine miles of trails are maintained for non-motorized use however, because there is not a closure order some motorized use occurs.

**Table 3--Miles of recreation trails**

Motorized Trails	Non-motorized Trails	Snowmobile Trails
0	39	19

The Chewuch River is eligible for inclusion into the National Wild and Scenic Rivers System. The potential classification above Thirtymile Campground is *wild*. The potential classification between Thirtymile Campground and the Okanogan National Forest boundary is *scenic*.

**Wildlife**

The area provides suitable habitat for the gray wolf (federally listed as endangered), the grizzly bear and lynx (federally listed as threatened), and the wolverine and great gray owl (listed by the Forest Service as sensitive). Lynx are known to occur in the area. Gray wolf, grizzly bear, wolverine, and great gray owl are suspected to occur. The Long Swamp area is part of a series of potential wilderness areas in the Upper Chewuch River and Salmon Creek drainages that connect to the Pasayten Wilderness and provide important habitat for wide-ranging species that require large areas with minimal human disturbances, such as grizzly bear, gray wolf, and wolverine. Together, the Long Swamp, Granite Mountain, and Tiffany PWAs connect to the Pasayten Wilderness resulting in a large, continuous block of remote, undeveloped habitat for these species. In addition, these same three potential wilderness areas are part of a larger expanse of continuous lynx habitat that has the highest reported concentration of lynx in the lower 48 states. A string of large meadows in the area are set within a boreal forest and provide unique habitats for lynx, snowshoe hare, boreal owl, bog lemming, great gray owl, and other species. Mixed conifer old growth in the area provides productive habitat for several species of wildlife. Snag habitat for cavity dwellers is abundant due to recent insect and disease outbreaks and large wildfires.

The PWAs provide varying levels of habitat for focal wildlife species. To help evaluate the habitat these areas provide, the following information was provided: the focal species emphasized in the area, the amount of habitat for each focal species, the priority ranking for the habitat (based on conservation assessments and recovery plans), and the proportion of the total habitat available on the forest that is within this particular PWA.

**Table 4--Availability of habitat for federally listed Threatened and Endangered wildlife species, and R6 focal species**

Wildlife Species	Acres of Habitat	Habitat Priority Ranking (1=high, 2=mod., 3=low)	%Total Forest Habitat in Evaluation Area
Grizzly bear	55,900	1	2
Canada lynx	11,077	1	1
Wolverine	52,978	1	1
American marten	357	3	<1

## Water and Fish

The Long Swamp PWA is located entirely in the Methow Subbasin (4th HUC). Within the Methow Subbasin, PWA lands are mostly within Chewuch River watershed (5th HUC). Most of the Chewuch River Basin is designated as a key watershed under the Northwest Forest Plan, and Interim Strategies for Managing Anadromous Fish-Producing Watersheds on Federal Lands in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH) management strategy. The Chewuch watershed is further divided into seven subwatersheds (6th HUC) including Windy Creek, Twentymile Creek, Mainstem Upper Chewuch, and North Fork Boulder Creek. These subwatersheds each contain several thousand acres in the PWA. Windy Creek and Twentymile Creek have vegetation conditions within the historic range of variability, and analyzed road effects are low. When vegetation conditions and road-related effects are considered cumulatively, these subwatersheds were rated good. Mainstem Upper Chewuch and North Fork Boulder subwatershed have some changes in expected vegetation conditions and some road effects. When vegetation conditions and road-related effects are considered cumulatively, these two subwatersheds were rated fair.

The Chewuch supports federally listed threatened Columbia River bull trout and UCR summer steelhead and endangered UCR spring Chinook salmon. Bull trout, summer steelhead, spring Chinook, and lamprey use the upper Chewuch River for spawning and rearing. Summer steelhead use the lower section of Boulder Creek for rearing and the lower section of Twentymile Creek for spawning and rearing below natural falls. Westslope cutthroat trout and eastern brook trout are also present in the potential wilderness area boundary.

The Long Swamp PWA contains functioning ecological processes. Many wetlands and wet meadows exist within the Long Swamp that release cold and clean water during the summer months, supplementing base flows during low flow periods. The water quality and storage capability of the Long Swamp PWA is critical for the viability and survival of bull trout, summer steelhead, and spring Chinook in the Chewuch River basin. Recent fires have burned much of the Long Swamp PWA that over time, add gravels and large wood to the stream system. Fish habitat and water quality in the area, on the whole, is functioning appropriately to contribute to maintaining listed fish populations.

From an aquatic viewpoint, the Long Swamp PWA contains properly functioning ecological processes that are essential to the recovery of listed fish species located within the basin. Wilderness designation would protect these ecological functions. However, that

objective could be accomplished without wilderness designation so long as the Liberty Bell PWA remained unroaded.

## Range

Grazing in this area is on small portions of the Cub, East Chewuch, and most of the Toats Coulee Cattle Allotments. Of the 53,600 acres in the Toats Coulee Allotment, approximately 43,000 acres are unsuitable for grazing. The 10,600 acres classified as suitable are scattered and require much movement of cattle to utilize. Management is under a four pasture deferred rotation system. Total estimated use is 655 animal unit months.

**Table 5--Percentage of grazing suitability areas and current allotments**

Percent Area Suitable for Cattle Grazing	Percent Area Currently in Cattle Allotments	Percent Area Suitable for Sheep Grazing	Percent Area Currently in Sheep Allotments
29	67	48	0

## Vegetation and Ecology

Most of the area north of the Toats Coulee road is covered with trees at lower elevations. Non-forested areas include the steep rocky parts of the Chewuch River canyon and south-facing slopes between the Toats Coulee and Irongate roads. In the Twentymile and Thirtymile Meadow areas dense lodgepole pine, indicating past fire history, covers the higher elevations. Stringers of Engelmann spruce and Douglas-fir growing along drainages and open south slopes occasionally break up the dense canopy. The North Twentymile Peak area varies from tundra like ground cover on the top of the peak to mixed conifer on the southeast slopes and mature ponderosa pine at lower elevations. Many stands in these areas were burned in the Tripod Fire 2006 ranging from a severity of low to high. Scattered Douglas-fir and ponderosa pine occur at lower elevations and in the Chewuch River Canyon. Most of the area near Farewell Peak lies in the Mountain Forest Zone. Upper elevation ridge tops exhibit subalpine characteristics. The majority of the lands suitable for timber harvest support mature lodgepole pine stands. Mixed conifer stands are found at mid-and lower elevations.

Approximately 10,000 acres of the area was prepared as the Chewuch River Research Natural Area in 1986. The riparian ecosystem associated with the Chewuch River was identified as an ecological cell difficult to locate. Other ecological cells identified include Engelmann spruce/subalpine fir forest on lower slopes, an upwelling spring, typical lodgepole pine forest, and subalpine meadows.

Options to utilize mechanical treatments to manage vegetation would be precluded if designated wilderness. Generally the priority for restoration treatments occurs within the wildland urban interface (WUI) or within the dry and mesic forest groups. Because WUI represents about 22 percent of the PWA, the prohibition on restorative treatments is a concern. The concern is mostly concentrated on the dry and mesic forest which occupies about 35 percent of the total WUI acreage. The Healthy Forest Restoration Act authorizes direction to implement fuel reductions in the WUI. The HFRA prohibits authorized projects in wilderness areas.

**Timber Harvest Suitability**

The underlying criteria for determining timber harvest suitability are found in the Forest and Rangeland Renewable Resources Planning Act of 1974, 36CFR219.12, and Forest Service Handbook 1909.12, Chapter 60.

For the Colville and Okanogan-Wenatchee National Forests, the general criteria for timber suitability that will be used for timber harvest suitability are:

- Is it forest land (10 percent crown cover minimum, productivity >20 ft<sup>3</sup>/ac/yr).
- The area has not been withdrawn from timber harvest or production.
- Soil, slope, or other watershed conditions will not be irreversibly damaged (based on soil attributes for erosion, instability, or compaction potential, slopes >65 percent, and certain land types)
- Reforestation can be assured within five years (lack of shallow soils, low frost heave potential, low surface rock, plant community type, certain land types, and elevation <5,500 feet)
- Economic and technologic viability (< 0.5 miles from existing transportation system, species value or condition, volume availability, logging systems)

In consideration of all the criteria for determining timber harvest or timber production suitability and not just the fact that harvestable species can grow at a specific location, it appears this PWA does not have conditions that pass all the criteria. The main criterion for failure is that unacceptable resource impacts would likely occur due to road construction activities. This does not preclude helicopter operations that could fly material over sensitive areas to adjacent road systems. However, in most if not all cases helicopter logging and the associated expenses (such as manual slash treatments) would not be an economically viable option.

**Table 6--Stand data percentages**

Suitable for Timber Harvest	Forest Groups		WUI	
	0%	Parkland	3%	Total WUI
Cold Dry		49%	WUI in Dry and Mesic Forest	35%
Cold Moist		21%		
Mesic		1%		
Dry		21%		
Non-forest		5%		

**Fire**

For the purpose of fire analysis, the area contains two geographically separated areas represented by two different fire occurrence rates. The largest portion of the area straddles the major mountain ridge that separates the Chewuch and Okanogan River drainages. All of the fires, with the exception of one human-caused fire, have occurred within this area.

An annual grass fuel type associated with the open conifer stands is the usual fire carrier at lower elevations, while the fuel type associated with the lodgepole pine is composed of heavy dead and down fuel in association with understory perennial grasses and forbs.

Under normal weather conditions the overall flammability is less than the stands found at lower elevation due to the closed canopy configuration associated with lodgepole pine stands. Under drought conditions and high fire danger, however, the probability of crown fire is greater. Past fire activity in the area reflects this fact. Changes in microclimate (i.e., humidity and temperature) below the closed canopy directly affect the overall flammability of the lodgepole pine type. The microclimate is changed when the stands are invaded by mountain pine beetle or through timber harvest. The latter affords a better opportunity, with prompt treatment of residual fuel left after harvest, to prevent large scale destruction of the lodgepole pine stands within the area.

The remaining portion of the area lies west of the Chewuch River and runs from the Pasayten Wilderness south along Farewell and Falls Creek drainages. This area is higher in elevation and the forest communities present are more representative of subalpine types. Lodgepole pine again occupies the majority of the area, which is indicative of the historical role of fire. A portion of the area was burned in the Farewell Fire in 2003.

Application and use of unplanned ignition sources (i.e., lightning or human-caused) to accomplish resource objectives is not permitted under the current management direction.

### ***Insects and Disease***

The Wilderness Act of 1964 allows for the control of insects and disease, but taking such actions in wilderness is rare. Forest Service wilderness policy (Forest Service Manual 2324.11) directs the agency “to allow indigenous insect and plant diseases to play, as nearly as possible their natural ecological role”. Policy also directs the agency to “protect the scientific value of observing the effect of insects and disease on ecosystems and identifying genetically resistant plant species”, and finally, “to control insect and plant disease epidemics that threaten adjacent lands or resources.”

A portion of this PWA is comprised of a parkland forest group and is known to support stands of whitebark pine. Due to a combination of anthropogenic causes (introduced white pine blister rust, global warming, and fire suppression leading to high severity wildfires) coupled with predation from native mountain pine beetles, whitebark pine stands are at risk across their range. These whitebark pine stands are of inherent value as a plant community, for providing important habitat for wildlife including the federally listed grizzly bear, and for their aesthetics in contributing to the social setting. Wilderness designation would limit restoration options for these stands. Manipulations would only be considered in order to protect the composite wilderness resource, and only as a last resort to preserve naturalness at the expense of trammeling.

An insect and disease survey was completed for the vicinity in 2007. The Long Swamp PWA is covered by four separate insect and disease analysis units. This discussion summarizes the findings of the surveys.

In the 20 Mile analysis area, about 7,000 acres were so badly scorched by the Tripod Fire in 2006 that no other damaging agents could be detected.

In 2005, mountain pine beetles killed over 300,000 lodgepole pines and 13,000 whitebark pines in the Twenty Mile Analysis Area. The Tripod Fire eliminated much of the host material, but the 2006 aerial survey detected about 1,600 lodgepole pines and 2,000 whitebark pines killed by mountain pine beetles. In 2007, an estimated 16,500 lodgepole

pinus were killed, but fewer than 100 whitebark pines. About 100 acres of whitebark pine near North Twentymile were treated with verbenone in 2007 to prevent mountain pine beetle attacks. A ground survey will be conducted in 2008 to determine the level of mountain pine beetle activity in the treated area, and in nearby untreated whitebark pine.

Less damage from mountain pine beetles was reported in 2007 in the Falls Creek Analysis Area. Most of the trees killed were whitebark pines. An estimated 2,300 whitebark pines were killed, down from 14,600 in 2006. Large pockets of beetle-killed whitebark pines were observed on Farewell Peak, and in the vicinity of Birch Mountain and Obstruction Peak. About 800 lodgepole pines were also killed, down from 1,900 in 2006. An outbreak of mountain pine beetles in Falls Creek was first noted in the late 1990s. Much of the suitable host has now been killed, and the mountain pine beetle population appears to be declining.

In 2006 two pockets of spruce beetle activity were detected along the Chewuch River near Twentymile Creek, with about 200 spruce trees killed. These same pockets were mapped in 2007, with another 150 spruce trees reported killed. A 40-acre patch of spruce beetle activity was mapped north of First Butte. In the Falls Creek area damage from the 2003 Farewell Fire, and subsequent blowdown of disturbed or damaged spruce, probably initiated the increased population of spruce beetles that has been observed for the last three years by aerial survey. An estimated 1,500 acres have been affected, and about 7,800 Engelmann spruces killed. This is much fewer than the 43,800 spruces reported killed in 2006.

Three small (<10 acres) pockets of Douglas-fir beetle activity were reported in the Eightmile area. Two were mapped on the ridge between Dog Creek and Thirtymile, the third was mapped south of First Butte. Fire-damaged Douglas-firs in the analysis area will be susceptible to bark beetle attack for at least one more year. A small pocket of Douglas-fir beetle was also detected in the Falls Creek area.

Defoliation by western spruce budworm was detected extensively in the Falls Creek and Eightmile Analysis Areas. About 4,000 acres were detected, which is considerably less than the 13,300 acres reported in 2006. A 417 acre area was also detected in or near the southern portion of the PWA.

Several pockets of fir engraver damage were reported in the Falls Creek area, intermingled with spruce beetle damage. An estimated 1,600 true firs were killed or top killed. In the Eightmile area a total of about 900 acres were affected, and an estimated 2,000 true firs killed or top killed.

### ***Threatened, Endangered and Sensitive Plant Species***

There are nine rare plant species known to occur in the area. These nine species include *Agoseris elata*, peculiar moonwort (*Botrychium paradoxum*), different nerve sedge (*Carex heteroneura*), boreal bog sedge (*Carex magellanica ssp. Irrigua*), Norway sedge (*Carex norvegica*), northern single spike sedge (*Carex scirpoidea var. scirpoidea*), valley sedge (*Carex vallicola*), diverse-leaved potentilla (*Potentilla diversifolia var. perdissecta*), and Tweedy's willow (*Salix tweedyi*).

### **Noxious Weeds**

A dalmation toadflax (*Linaria dalmatica*) plant was reported on the Andrews Creek Trail. There is a population of orange hawkweed (*Hieracium aurantiacum*) in the Parachute Meadow area. Oxeye daisy (*Leucanthemum vulgare*) occurs on an acre adjacent to the Chewuch Trail.

### **Minerals and Soils**

Soils are derived from glacial till and are overlain with volcanic ash of varying thickness. Outwash soils near streams are often poorly drained because of high water tables. Soils are shallow on the over-steepened slopes plunging directly into the Chewuch River. Rock outcrops are common along these slopes.

Soils generally have very high infiltration rates except in areas with year round high water tables. Ash soils become very dusty when dry. Trails may become very dusty when dry under moderate to heavy use. Soils without the ash layer tend to be stable during dry periods. In the eastern portion of the area, soils covered with litter have low erosion hazards and are considered generally stable for management activities. Where soils are not covered with litter or are very shallow, erosion hazards are moderate. Mass erosion hazards are generally low.

In the western portion of the area, soils covered with litter have low to moderate erosion hazards and are considered generally stable for management activities. Where soils are not covered with litter, erosion hazards are moderate to high. Mass erosion hazards, in the form of debris avalanches, is high near Chris Creek and low to moderate throughout the remainder of the area.

The Long Swamp PWA is underlain by metamorphic and intrusive igneous rocks. The area includes approximately 5,900 acres of land having moderate to high potential for mineral exploration and development. These areas include 600 acres in the southeast part of the area in the Bernhardt Creek drainage and 5,300 acres in the eastern part of the area in the headwaters of Twentymile Creek. Exploration targets include gold and lead-silver veins in the Bernhardt Creek area and post-glacial, surficial uranium deposits in the headwaters of Twentymile Creek (Grant, 1982). In addition, approximately 500 acres west of Thunder Mountain in the upper parts of the Twentymile drainage offers high potential for a bulk tonnage molybdenum deposit (Grant, 1982). Lands within the area west of North Twentymile Peak also have a low to moderate potential for surficial uranium deposits. At present (6/2008), there are no active claims within the Long Swamp PWA.

The area has not been the subject of expressions of interest, lease applications, or leases for coal, oil and gas, or geothermal resources. The area has no potential for the occurrence of coal and oil and gas resources and a low to moderate potential for geothermal resources.

### **Cultural and Heritage Resources**

The *Cultural Resource Overview of the Twisp-Winthrop-Conconully Planning Unit* (Bennett, 1979) identified evidence of several cabins and several lookouts in the area.

## **Land Uses and Special Uses**

There are several outfitter-guides who are permitted for horse and hiker guiding within the area. Grazing allotments are managed under term grazing permits.

## **Private Lands**

There is no private land within the area and no known outstanding subsurface rights.

## **NEED FOR WILDERNESS**

### **Location and size of other wildernesses in the general vicinity, and distance from the area and population centers:**

The area adjoins the 529,477 acre Pasayten Wilderness and is approximately 25 air miles northeast of the 151,435 acre Lake Chelan/Sawtooth Wilderness and approximately 35 air miles northeast of the 570,573 acre Glacier Peak Wilderness on the Wenatchee National Forest. The area is within four to six hours driving time from the greater Puget Sound area and three hours from Wenatchee.

A separate analysis identified where the PWAs could contribute to the wilderness recreation setting either by preserving the primitive recreation setting adjacent to existing wilderness, or by contributing assessable and attractive day use destinations (which are under heavy pressure in existing wilderness). The analysis also examined which PWAs would contribute either a unique landform to the wilderness system, or where trails access vegetation types that are underrepresented in wilderness at a regional scale.

In ranking this PWA for its potential to provide a high quality wilderness recreation setting it ranked as high. The area has an extensive system of trails that adjoin the Pasayten Wilderness. Much of the trail system does not connect to the Pasayten Wilderness, thus tempering this high ranking. Vegetation types would provide a setting that is currently unrepresented in wilderness.

### **Present visitor pressure on other wildernesses, trends, and changing patterns of use:**

Overall, there is a continuous, slight increase in the number of people visiting wilderness areas. The user groups showing the most increase are day-hikers in the Pasayten and Lake Chelan-Sawtooth Wildernesses and day horse users in the Lake Chelan-Sawtooth Wilderness. There also appears to be a slight increase in off trail travel to specific destinations within these wilderness areas. There is also a trend to shorter multiple-day trips.

### **Extent to which non-wilderness lands provide opportunities for unconfined outdoor recreation experiences:**

There are approximately 900,000 acres of National Forest System land outside of wilderness on the Methow Valley Ranger District. In the summer non-wilderness portions of the district draw hikers, stock users, mountain bikers and more limited motorcycle use.

Certain portions also offer regionally significant rock climbing and mountaineering. In the winter the area features outstanding cross-country, backcountry skiing, and snowmobiling. The area is within four to six hours of driving time from the Puget Sound and Spokane areas and two hours from Wenatchee.

**The need to provide a sanctuary for those biotic species that have demonstrated an inability to survive in less than primitive surroundings or the need for a protected area for other unique scientific value or phenomena:**

***Wildlife***

The Long Swamp PWA provides important habitat for a number of wildlife species that are either unique or require large blocks of continuous habitat. Species include grizzly bear, gray wolf, wolverine, lynx, boreal owl, bog lemming, and great gray owl. In addition, Long Swamp is part of a larger expanse of continuous lynx habitat that has the highest reported concentration of lynx in the lower 48 states. For American marten (*Martes americana*), grizzly bear (*Ursus arctos*), wolverine (*Gulo gulo*), and Canada lynx (*Lynx canadensis*) the wildlife sustainability index is 120.1 (a high relative ranking) and the habitat connectivity index is 58.5 (also high relative ranking).

***Fish***

Several native species in the interior Columbia River Basin have demonstrated an inability to survive in less than primitive surroundings, especially the bull trout. In addition to habitat changes on National Forest System lands, other factors off forest such as hydropower generation, hatchery programs, harvest, and changing ocean conditions further challenge the persistence of some far-ranging native species. Broad-scale assessments have demonstrated a positive correlation between unroaded areas and persisting native fish stocks. Often, assessments like these don't differentiate between wilderness and roadless areas; rather they combine the two into an "unroaded" category. These assessments show current strongholds (most secure and robust populations) are dependant on wilderness and roadless areas. Some of the more resilient native fish populations in the Interior Columbia Basin are located in unroaded areas on National Forest System lands.

For the Okanogan-Wenatchee National Forest PWAs were assigned an aquatic ranking based on federally listed and sensitive fish species that are sensitive to human disturbances. A high ranking was assigned when listed fish species occur in the PWA or when ecological process including high quality water help sustain listed fish species downstream of the PWA. All other PWAs are ranked low. This PWA is assigned a high ranking based on these factors.

***Rare Plant Species***

An analysis was completed to prioritize which PWAs would contribute the most to providing refugia for those plant species on the species of interest/species of concern (SOI/SOC) list. The analysis ranked three factors. The first factor, the total number of sites occurring within the PWA, ranked as high for this PWA. The second factor, which also ranked as high for this PWA, examined the degree of rarity of any SOI/SOC species

present, and also recognized the importance of individual PWAs in supporting a high incidence of populations relative to Washington State as a whole.

PWAs are generally unsurveyed for rare plants due to a relative lack of projects occurring in these areas. Thus an additional factor examined the potential for the PWA to support SOI/SOC species. Based on databases, first the SOI/SOC plant species were identified that are present within a five-mile radius of the PWA, but are not known to occur within the PWA. Then the PWA was analyzed to see if the potential habitat for these species occurs within the PWA. Based on this analysis, this PWA ranks as high.

Finally, a composite score was assigned to each PWA based on combining each of the rankings described above. This PWA ranks overall as high priority for preserving rare plant refugia with a wilderness designation.

### **Ability to provide for preservation of identifiable landforms types and ecosystems:**

Using Bailey's Ecoregion classification system, this area is categorized as the Eastern Cascades Ecoregion, which is well represented in the wilderness system in the Pacific Northwest.

An analysis compared vegetative cover types that are under-represented in wilderness on the National Forest System in Region 6 with those same cover types present in the PWA. Large-scale cover types were available through existing data layers and represent approximately ten percent of the vegetative cover of this PWA (6,437 acres). These types include forb lands, alpine meadows, non-alpine meadows, ponderosa pine, and western red cedar. Taken as a whole, the contribution of underrepresented vegetation types ranks as moderate for the portion of this area with underrepresented cover types, but as high for the number of acres that are represented within this PWA relative to the other PWAs in the planning area (ranks 8 out of 52 PWAs).

Some under-represented cover types fill microhabitats such as riparian areas or perched water tables. Such finer scale cover types represented in this PWA include sparse amounts of cottonwood and well-represented amounts of aspen.

In particular, the forb land, non-alpine meadows, and ponderosa pine would make a significant contribution within the eastern Washington planning area.