Environmental Assessment

Designation of a Research Natural Area in the Smith Butte Area

Gifford Pinchot National Forest
Mount Adams Ranger District
Skamania County, Washington

Township 7 North, Range 11 East Sections 19, 20, 29, and 30, Willamette Meridian

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Chapter 1: Purpose of and Need for Action

Planning Area Description

The potential Research Natural Area (RNA) in Smith Butte is located on the eastern edge of the Gifford Pinchot National Forest, in the Mount Adams Ranger District, in Yakima County, Washington, and is located just over six air miles northeast of Trout Lake, Washington. Smith Butte is located at approximately 46°04’N latitude, 121°27’W longitude. The proposed RNA includes portions of Sections 19, 20, 29, and 30, in Township 7 North, Range 11 East, Willamette Meridian. The elevation of the RNA ranges from approximately 3,700’ at the base of the butte to 4,300’ at the summit.

Smith Butte is a volcanic cinder cone on the eastside of the crest of the Cascade Mountains, southeast of Mount Adams. Smith Butte is forested with previously unlogged stands of grand fir, ponderosa pine, and Douglas-fir. A dry meadow near the top of the cinder cone is located on the remains of an ancient volcanic vent, and provides relatively pristine habitat for the mardon skipper butterfly, a Forest Service sensitive species and a Washington State endangered species. The meadow does not appear to have been significantly impacted by domestic livestock grazing; as such it provides a baseline reference of ungrazed, unmanaged meadow conditions for the southeastern part of the Gifford Pinchot National Forest.

The topography surrounding Smith Butte is relatively flat, with a slight southerly aspect. From its base elevation of 3,700 feet, the sides of the cinder cone rise steeply, with an average slope of approximately 50%. The slopes of Smith Butte are generally smooth and regular. The west side of the proposed RNA has the most moderate slope, with the northwest, east and south sides being somewhat steeper. The southwest side of the butte is broader than the other flanks. The butte has two high points. The summit is located approximately 25 feet higher and less than a tenth of a mile east of the other high point. A saddle lies between these two highest points. The highest part of the meadow begins in this saddle, and then slopes to the southeast. All aspects of the forested slopes are represented in the proposed RNA.

Smith Butte experiences typical eastside weather, which is characterized by warm, dry summers and cold, wet winters. The butte is within the snow dominated zone and is covered with snow throughout the winter and early spring. The majority of the annual precipitation falls as snow in winter with some rains occurring in autumn and late spring. Summer precipitation is very low. The prevailing summer winds are from the southwest.

Smith Butte is located in the upper White Salmon River watershed, which is in the path of a summer weather pattern that produces lightning. These storms can bring a minimal amount of precipitation or can be rain free. The weather pattern occurs when a low pressure system moves into the region from the south while there is high pressure to the east. This weather pattern typically produces cumulous clouds that move from the southwest to the northeast. The cumulous clouds and associated lightning generally occur to the west of Smith Butte. However, cumulous clouds can build up on the east side of Mount Adams and rotate clockwise around the mountain, bringing lightning to the Smith Butte area (Upper White Salmon River Watershed Analysis, 1998).
Proposed Smith Butte Research Natural Area
General Vicinity Map
Purpose of and Need for Action

The Smith Butte area was identified in the Gifford Pinchot National Forest (GPNF) Land and Resource Management Plan (LRMP) (USDA Forest Service 1990), as a "proposed" RNA based on the unique nature of the area, and recognition that designation of this area as an RNA would make an important contribution to the Natural Heritage network. This analysis is tiered to the Final Environmental Impact Statement that was completed as part of the LRMP.

The purpose of establishing the RNA in Smith Butte area is to contribute to a series of RNAs designated to "illustrate adequately or typify for research or education purposes, the important forest and range types in each forest region, as well as other plant communities that have special or unique characteristics of scientific interest and importance" (36 CFR 251.23). As the only mature grand fir zone forest on the eastern edge of the Gifford Pinchot National Forest that has not been entered for timber harvest, the proposed RNA in Smith Butte area contributes to this series of RNAs as representative of relatively cold, dry, grand fir plant communities that are not currently adequately represented within the Natural Area system (Washington Natural Heritage Plan 1999).

In addition, the RNA contains an example of a relatively pristine dry meadow that hosts the mardon skipper butterfly (Polites mardon), a Forest Service sensitive species and a Washington State endangered species. An evaluation by the Regional RNA Committee of the need for RNAs, pursuant to direction in Forest Service Manual (FSM) 4063.04b, identified these types as suitable and desirable for inclusion in the national network. Establishment of the RNA in Smith Butte area provides long-term protection and recognition of this type.

Comments received from interested and affected members of the public supported establishment of the RNA. Site conditions and public concerns have been reviewed; no important changes to the proposed action have occurred.

The system of Research Natural Areas was established with the goal of allowing natural processes to dominate. RNAs preserve natural features and plant communities for research and educational purposes. The objectives of RNAs are (Franklin et al. 1972):

- to provide baseline areas against which the effects of human activities in similar environments can be measured;
- to provide sites for study of natural processes in undisturbed ecosystems;
- to provide gene pool preserves for plant and animal species.

Proposed Action

The proposed action is to establish the RNA in Smith Butte area proposed in the Gifford Pinchot National Forest (GPNF) Land and Resource Management Plan (LRMP) (USDA Forest Service 1990), and to manage it according to the direction provided in the GPNF Plan (Chp. IV., pages 138-140), with a focus on allowing forest ecological processes to proceed without management intervention, while retaining the ability to maintain the summit meadow in an open condition through management to benefit the mardon skipper. Formal designation of the RNA by the Regional Forester would amend the Forest Plan pursuant to 36 CFR 219.4.
The proposed RNA in Smith Butte area would be designated Management Category Y, Prescription Y8. The proposed RNA is presently being managed in accordance with this prescription so designation would not impact other programs or activities.

Management Direction

Resource Natural Areas – Management Category Y
Management and protection of the proposed RNA in Smith Butte area will be directed toward maintaining natural and ecological processes. Activities of humans that disturb or modify natural ecological processes will be discouraged. The proposed RNA in Smith Butte area is included, along with other proposed and designated RNAs, in the GPNF LRMP which states:

The goal is to manage Research Natural Areas (RNAs) in a natural state for research and education, and/or to maintain biological diversity. They provide opportunities for research, study, observation, monitoring, and those educational activities that retain undisturbed conditions. In effect, they provide a baseline for biological diversity found on the Forest.

The proposed RNA in Smith Butte area and the other proposed and designated RNAs are listed as Management Area Category – Y in the LRMP, and include the Management Prescriptions A8, YC, Y8, and W6. Standards and guidelines for these management prescriptions are noted in the LRMP. These standards and guidelines apply to proposed RNAs that are actively being evaluated for RNA status though the Forest Planning process (LRMP IV-138).

Research Natural Area (Y): The proposed Smith Butte Research Natural Area (RNA) is situated in the allotment. It contains 220 acres and encompasses all of Smith Butte. The goal of RNAs on the Forest is to manage them in a natural state for research and education, and/or to maintain biological diversity (Forest Plan, IV-138).

For established RNAs, livestock grazing will usually occur only if required for noxious weed control or to preserve the vegetation for which the RNA was created. When the RNA is approved, the Regional Forester shall, as appropriate, establish a level of acceptable causal or incidental livestock use that can be tolerated and is consistent with the management prescription of the RNA (Forest Plan, IV-139). Currently, cattle are largely excluded from the proposed RNA due to the steep terrain, lack of forage and water, and numerous fallen trees that make walking difficult. The area is also highlighted as an area to be avoided in the annual operating instructions given to the permittee. If conditions change in the future, additional exclusion measures may be needed.

Gotchen Late-Succesional Reserve – Management Category LS
The proposed RNA in Smith Butte area is surrounded by and included in the Gotchen Late-Succesional Reserve (LSR) and was designated when the LRMP was amended for the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl, also known as the Northwest Forest Plan (USDA and USDI 1994). The LSR is managed to “protect and enhance late-successional and old-growth forest ecosystems, which serve as habitat for late-successional and old-growth related species including the northern spotted owl” (USDA and USDI 1994). The Northwest Forest Plan directs that management activities adhere to the standards and guidelines for the Management Categories designated by the LRMP if they are more restrictive. Designation of the RNA in Smith Butte area will not conflict with management of the Gotchen LSR.
Mt. Adams Cattle and Horse Allotment

At Smith Butte, livestock grazing is not needed to maintain the objectives for which the RNA is being established, i.e. grazing is not needed to maintain the terrestrial plant communities within the RNA. The proposed RNA in Smith Butte area receives extremely limited and only incidental grazing by cattle, concentrated near the base of the butte. Because livestock use is currently incidental and low level, no changes to the allotment boundary are proposed.

Minerals and Geology

The LRMP directs that common variety mineral material sources will not be inventoried or developed, and leasing of mineral or energy resources will only be permitted with a no surface occupancy stipulation on RNAs (IV-139). There are no hard rock mining claims in the proposed RNA in Smith Butte area. The RNA will be proposed for withdrawal of mineral entry upon formal establishment.

Recreation

The LRMP directs that recreational use of the RNA will not be encouraged, though incidental dispersed use may be permitted. Camping, collecting plants, berrypicking, and other uses by the general public may threaten or interfere with research, educational opportunities, or other purposes for which the RNA was established, and are therefore prohibited (subsistence hunting and gathering by Native American tribes provided for under Treaty are not included in this prohibition). In addition, interpretation of features of interest will not be permitted, except for research or educational purposes, and trail construction will be permitted only if required to meet the needs of research, for educational purposes, or to protect RNA values. The RNA would be shown on special forest product maps to indicate as “areas closed to all harvest”, and no special forest products permits would be issued for the RNA.

Transportation

New roads and facilities will be permitted only if they contribute to the Research Natural Area objectives. Off-road vehicles should not be permitted within the RNA, including snowmobiles. Trail construction or reconstruction will be permitted only if required to meet the needs of research, for educational purposes, or to protect RNA values.

Fire Management

The LRMP directs that “fires may be permitted to burn only if they are within a prescription designated to accomplish objectives of the RNA.” The Forest Plan further states that fuels within RNAs will not be treated, but that prescribed burning may be authorized as a management practice to control noxious weeds or preserve plant communities.

The Gifford Pinchot National Forest Fire Management Plan (2004) (FMP) states that Human-caused fires, or fires occurring where protection from fire is the objective will be suppressed. The appropriate management response for such fires ranges from aggressive initial attack to a combination of strategies to confine the fire. Naturally ignited wildland fires occurring where fire is an essential process for producing resource benefits will be managed for that use when certain prescriptive elements identified in the forest fire plan have been met (FMP pg. 5).
Wildland fire use refers to the management of naturally ignited wildland fires to protect, maintain and enhance resources and to allow fire to function in its natural ecological role to achieve resource management objectives. The FMP tiers to direction in the Forest Plan that provides guidance for the achievement of resource objectives through the use of fire. Fire use is a strategy on the Gifford Pinchot National Forest although, currently, because of organizational capability and/or land-based constraints, there are limited areas where naturally ignited fire can be used (FMP pg. 6).

The range of appropriate management response used on the GPNF will be based on objectives, relative risk (external influences), complexity and defensibility of management boundaries (pg 20). Consistent with current Forest Service policy, Gifford Pinchot National Forest fire managers will make an initial attack fire suppression response on all human caused wildland fires, or where a Fire Management Plan has not been approved to allow fire use for resource benefit (FMP pg 6). A fire management plan for Smith Butte RNA will be developed as part of the RNA Management Plan for Smith Butte. The fire management plan will be designed to facilitate the potential use of prescribed fire or natural ignitions only if and when it is deemed necessary to facilitate or restore natural ecological processes.

Wildlife and Plants

The LRMP states that no active management will occur within RNAs unless it is required to protect Forest Service sensitive or federally-listed species, or is included in an approved RNA management prescription.

Decision Framework

The responsible official will review the proposed action and the other alternatives to determine which of them best meets the purpose of and need for action. When making the decision, the responsible official will also take into consideration the specific objective of providing for research and educational opportunities, as well as preserving the unique ecological characteristics that are representative of the area.

The final decision will be to either:

- Amend the LRMP to establish the RNA in Smith Butte area (Alternative A - the proposed action or Alternative B), or
- Decline to establish Smith Butte as an RNA, resulting in removal of Smith Butte as a proposed RNA from the Forest Plan during the next Forest Plan revision, or
- Conclude that significant impacts would result from the proposed action which would warrant the preparation of an environmental impact statement.

Public Involvement

The proposal was first initiated in 1998. It was re-initiated in 2005. Public scoping was conducted starting on March 7, 2005. Public scoping letters were sent out to 43 recipients, including Federal and State agencies, the Yakama Tribe, recreational groups, environmental groups, and interested citizens. Four public scoping comments were received. The comments received were supportive of RNA establishment. Comments emphasized the need to actively discourage recreational use of the RNA, and address management of fire risk within the RNA and on adjacent lands. Based on the selected alternative, a detailed RNA management plan addressing these issues would be developed.
subsequently to the establishment of the RNA. An additional scoping opportunity was offered in August 2013 before the release of the draft Environmental Assessment. Five comment letters or emails were received during this second scoping period, mostly in support of the designation. The Gifford Pinchot Accountability Group and Jack Roscoe felt that the area was already protected under other designations and that the designation as a research natural area was not necessary.

The draft Environmental Assessment was released for a 30-day comment period on Tuesday, October 22, 2013. Seven comment letters or emails were received during the comment period, all in support of the designation. Comments emphasized the need to actively discourage recreational use of the RNA, and address management of fire risk within the RNA and on adjacent lands. Based on the selected alternative, a detailed RNA management plan addressing these issues would be developed subsequent to the establishment of the RNA.

The draft decision and final Environmental Assessment will be available for a 45-day objection process as outlined in 36 CFR 219, Subpart B.

**Key Issues**

Key issues are defined as those impacts that would directly or indirectly be caused by implementing the proposed action, could not completely be mitigated through the application of standards and guidelines from the LRMP or specific mitigation measures, and would drive the development of another alternative. On the basis of scoping comments received by the public and the interdisciplinary team, three significant issues were identified:

**Fire Risk Management**

In response to the high fuel loading caused by budworm defoliation and associated tree mortality, Mt. Adams Ranger District staff have proposed management actions to reduce fire risk and maintain late-successional forests in the Gotchen LSR. Due to Smith Butte’s status as a candidate RNA, management treatments were not proposed for Smith Butte. Smith Butte is entirely surrounded by the Gotchen LSR, an area managed to protect and enhance late-successional habitat and species.

In addition to the heavy fuel loading in the region, the location of Smith Butte is also an important consideration for fire management planning. Smith Butte is located near the eastern boundary of the Gifford Pinchot National Forest, approximately one and a half miles from the Yakama Indian Reservation and within two and a half miles of state and private forestlands.

The establishment of the RNA in Smith Butte area needs to be analyzed in terms of the potential effect upon fire risk and management on adjacent lands.

*Evaluation Criterion:*

Compare alternatives in terms of how fire risk to adjacent lands would be affected.

**Mardon Skipper Butterfly**

The meadow near the summit of Smith Butte provides quality habitat for the mardon skipper, a species of butterfly considered sensitive on National Forest System lands in Washington and Oregon. The mardon skipper is listed as an endangered species on Washington State Department of Fish and Wildlife’s Species of Concern list. The mardon skipper population in Washington State consists of a few hundred individuals present at only nine geographically isolated sites. The habitat at many of
these sites has been degraded by non-native plants and human uses. None of the sites are protected for the purpose of mardon skipper habitat conservation; therefore, long-term conservation potential at these sites is uncertain (Potter et al. 1999).

Despite the small size of the meadow at Smith Butte, the relative abundance of mardon skippers provides evidence of the quality of the habitat at this site (A. Potter, pers. comm., 2001). The RNA offers unique opportunities for research on and protection of this rare species.

The biological needs of the mardon skipper present a further consideration with regard to fire management. Fire does not appear to be the primary factor at work in maintaining the open nature of the meadow on Smith Butte; little encroachment has occurred during nearly a century of fire suppression. Fire, however, may help maintain the meadow. Conversely, allowing the entire meadow to burn in one event would have a negative impact on mardon skipper populations at the site (A. Potter, pers. comm., 2001).

The potential effects of fire within the proposed RNA in Smith Butte area need to be considered within the context of mardon skipper habitat management and species viability.

**Evaluation Criterion:**

Compare alternatives in terms of mardon skipper impact determinations.

**Management Strategy Effects on RNA Objectives and Attributes**

The LRMP directs that “fires may be permitted to burn only if they are within a prescription designated to accomplish objectives of the RNA.” The Forest Plan further states that fuels within RNAs will not be treated, but that prescribed burning may be authorized as a management practice to control noxious weeds or preserve plant communities. The main question is whether the natural ecological processes of stand development in the presence of fire suppression (which is not a natural ecological process) is less or more important to meet RNA objectives than restoring the historical fire regime (i.e. restore the natural ecological process of fire) where, in the process, active stand manipulation is necessary.

Fire has a significant ecological role in the grand fir zone. Fire is a natural stand dynamic that helps maintain forest health. Lighter fires can also reduce fuel loading and help prevent future stand-replacing fires. Frequent fires promote the regeneration of early seral species. Restoration of a pre-historic fire regime would, however, necessitate active stand manipulation designed to control fuel loading, including stand density reduction, removal of woody understory vegetation, and prescribed burning. These activities materially alter the natural ecological processes of stand development that have led to the growth of a pristine example of a mature grand-fir series forest, the unique attribute which led to the original proposal to add Smith Butte to the Natural Areas network as an RNA.

The establishment of the RNA in Smith Butte area needs to be analyzed in terms of the potential effect of fuels management on the attributes of the RNA which make it a valuable addition to the Natural Areas network, including opportunities for research.

**Evaluation Criteria:**

Compare alternatives in terms of maintenance of un-manipulated grand-fir type forest and opportunities for research.
Chapter 2: Project Alternatives

Alternative Descriptions

Alternative A, Proposed Action “Observation”
Alternative A would amend the GPNF LRMP to designate a 220-acre area as RNA in Smith Butte area. The Observation alternative would allow ecological processes to proceed without active management intervention on Smith Butte, but in the presence of continuing fire suppression (under conditions specified in the Gifford Pinchot Fire Management Plan 2004) as a form of passive management. This alternative would allow invasive species control.

An RNA Management Plan will be developed in accordance with LRMP direction. In summary, RNA management would not include the objective of restoring the forested vegetation to prehistoric conditions (pre-fire suppression). Management of the area would discourage recreation use. The RNA would not be shown on maps intended for sale to the general public, and no special forest products permits would be issued for the RNA. Camping, plant collection, and berry picking would be prohibited, with the exception of traditional use by Native Americans with treaty rights. Off road vehicle use would continue to be prohibited. Smith Butte would be withdrawn from mineral entry after formal establishment.

The Regional Forester and Station Director shall establish a level of acceptable, casual, or incidental livestock use that can be tolerated and is consistent with the management prescription. Timber harvest and firewood cutting would continue to be prohibited. Prescribed fire or fuels treatment activities would not be permitted within the RNA. Fire management would comply with direction provided in the Gifford Pinchot National Forest Fire Management Plan (2004), and would emphasize the use of the appropriate suppression response; action resulting in the lowest suppression cost and least net loss to the resource while in compliance with land management direction would determine the appropriate suppression response.

Alternative B, “Active Management”
Alternative B would amend the GPNF LRMP to designate a 220-acre area as RNA in Smith Butte area. The Active Management alternative would encourage activities designed to restore conditions on the RNA which would have existed in the absence of fire suppression. An RNA Management Plan will be developed in accordance with LRMP direction and include specific activities that would be permitted within the RNA to satisfy specific resource objectives.

Such activities could include prescribed fire (as approved by the Station Director with concurrence of the Forest Supervisor); vegetation manipulation to reduce forest fuel loading (in preparation for prescribed fire); and control of woody vegetation encroachment into the meadow located on the summit. Control of woody vegetation in the meadow would be carried out through use of hand loppers and hand saws to remove woody shrubs and trees less than 6 inches in diameter. Management of the area would discourage recreation use.

The RNA would be shown on special forest product maps to indicate as “areas closed to all harvest, and no special forest products permits would be issued for the RNA. Camping, plant collection, and berry picking would be prohibited, with the exception of traditional use by Native Americans with treaty rights. Off road vehicle use would be prohibited. Livestock grazing would be prohibited. Firewood cutting would be prohibited. Smith Butte would be withdrawn from mineral entry after formal establishment. Fire management would comply with direction provided in the Gifford Pinchot
National Forest Fire Management Plan (2004), and would emphasize the use of the appropriate suppression response; action resulting in the lowest suppression cost and least net loss to the resource while in compliance with land management direction would determine the appropriate suppression response.

**Alternative C, No Action - do not establish as an RNA**

Alternative C would drop Smith Butte from consideration as a RNA during the next Gifford Pinchot National Forest Land and Resource Management Plan revision. Until that time, Smith Butte would be managed as a proposed RNA, as the current Forest Plan directs. This means that, in the short term, Smith Butte will be managed under the same standards established under Alternative A, but in the long term Smith Butte would be managed as a part of the Gotchen Late Successional Reserve (LSR). The management objectives for LSRs are to protect and enhance conditions of late-successional and old-growth forest ecosystems.

Limited stand management is permitted, for (1) the purpose of thinning or managing the overstory to produce large trees; release advanced regeneration of conifers, hardwoods, or other plants; or reduce risk from fire, insects, diseases, or other environmental variables; (2) underplanting or limiting understory vegetation control to begin development of multistory stands; (3) killing trees to make snags and coarse woody debris; (4) reforestation; and (5) use of prescribed fire.

Management of Smith Butte as an LSR would not preclude opportunities to manage the summit meadow for the benefit of the mardon skipper butterfly. Camping, plant collection, and berry picking would be allowed. Off road vehicle use would be prohibited. Livestock grazing would be permitted. Firewood cutting would be prohibited. Fire management would comply with direction provided in the Gifford Pinchot National Forest Fire Management Plan (2004), and would emphasize the use of the appropriate suppression response; action resulting in the lowest suppression cost and least net loss to the resource while in compliance with land management direction would determine the appropriate suppression response.

**Comparison of Alternatives**

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<thead>
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<th>Alternatives Evaluation Criteria</th>
<th>A: Observation (Proposed action)</th>
<th>B: Active Management</th>
<th>C: No Action</th>
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<tr>
<td>Fire risk to adjacent lands</td>
<td>Equal among all alternatives</td>
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<td></td>
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<tr>
<td>Mardon Skipper impact determination</td>
<td>MAY IMPACT</td>
<td>NO IMPACT</td>
<td>NO IMPACT</td>
</tr>
<tr>
<td>Maintenance of Un-manipulated grand fir type</td>
<td>Will maintain</td>
<td>Will not maintain</td>
<td>Will maintain in the short term, may not maintain in the long term</td>
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<tr>
<td>Opportunities for research</td>
<td>Creates unique opportunities for research</td>
<td>Creates opportunities for research that are available outside of RNA</td>
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Chapter 3: Environmental Consequences

Introduction

This chapter discusses the potential effects on the human and natural environment resulting from the implementation of each of the three alternatives in this proposal.

Effects of Implementation on Key Issues

Fire Risk Management

Existing Condition

Limited information is available on stand conditions at Smith Butte prior to Euro-American settlement of the region. Before the advent of fire suppression, natural fires periodically burned throughout the area. Historical accounts suggest that in the eastern portion of the upper White Salmon River watershed, the forests of the late 1800’s and earlier had more open conditions and proportionally more fire tolerant species, including Douglas-fir and ponderosa pine, than today.

The natural fire regime created forests with single and multistoried canopies of widely spaced, large diameter trees. These canopies tended to have a greater proportion of early seral species, such as ponderosa pine, Douglas-fir, and less grand fir (Upper White Salmon River Watershed Analysis, 1998). Periodic ground fires reduced both the density of understory vegetation and the regeneration of grand fir. At lower elevation, fires favored understoreys dominated by xerophytic grasses (Upper White Salmon River Watershed Analysis, 1998).

The elevation and existing vegetation at Smith Butte suggest that the butte would not have been completely dominated by open ponderosa pine stands a century ago. Grand fir was likely a significant component of the forest at that time, but may have been somewhat less dominant in the understory and canopy than it is today. Likewise, the patchy landscape conditions created by frequent fires would have resulted in areas of brush and a denser understory in places.

Fire suppression in the area began in 1910 with the establishment of the Gotchen Guard Station (Upper White Salmon River Watershed Analysis, 1998). The dense, mature grand fir forests at Smith Butte developed in the absence of fire. Such forests can be susceptible to large disturbances. These stands can be overstocked and suffer moisture stress from summer drought. These factors result in an increased number of trees of low vigor, which are more subject to insect and disease outbreaks.

In the area surrounding Smith Butte, large fires have historically burned to the northwest of the butte (in 1880), to the east (in 1885), and to the southwest (in 1905, 1910, and 1918). However, none of these fires burned through the forests on Smith Butte or stands immediately adjacent to the RNA.

The first signs of a western spruce budworm outbreak were observed in the White Salmon River watershed in 1992 (Upper White Salmon River Watershed Analysis, 1998). The outbreak intensified through the mid and late 1990s. Budworm host species include grand fir, Douglas-fir, western larch, and Engelmann spruce, although other conifer species can be defoliated as well. Grand fir forests are at high risk of budworm epidemics where fire suppression and increasing stand density have resulted in a predominance of host species with low vigor (Upper White Salmon River Watershed Analysis, 1998).
The defoliation of budworm host species (Grand fir and Douglas-fir) at Smith Butte has resulted in top damage to suppressed and intermediate crown class trees, as well as a reduction in crown depth, and some mortality. Associated increases in fuels indicate significant increases in predicted surface fire flame lengths (Agee, unpub. report, 2001). Even in the absence of fire, the forests at Smith Butte may be in transition from late to early seral stage plant communities (R. Mendez-Treneman, pers. comm., 2001).

Scientists from the Pacific Northwest Research Station and the University of Washington are studying effects of repeated spruce budworm defoliation on key spotted owl habitat elements at Smith Butte, including changes in canopy closure, and down wood, and associated effects on potential fire behavior. Data collected at permanent plots in 1992 and again in 2000 indicate that the average crown closure has decreased from approximately 80% to 40%, down woody debris in all size classes has doubled, and potential flame lengths have increased (Hummel 2001).

Tree mortality due to the spruce budworm outbreak has caused a significant increase in fuel loading throughout the grand fir zone in the southern portion of the Gifford Pinchot National Forest. At Smith Butte, measurements of fuel loading for course woody debris (greater than three inches in diameter) indicate that fuels in this size class have nearly doubled in the last eight years, from 17.96 tons per acre in 1992 to 34.90 tons per acre in 2000 (Hummel 2001). Such increases in fuel loading increase the potential for lethal surface fires and may contribute to increases in torching potential.

In addition to the heavy fuel loading in the region, the location of Smith Butte is also an important consideration for fire management planning. In response to the high fuel loading caused by budworm defoliation and associated mortality, Mt. Adams Ranger District staff have proposed management actions to reduce fire risk and maintain late-successional forests in the Gotchen LSR. Due to Smith Butte’s status as a candidate RNA, management treatments were not proposed for Smith Butte.

Direct and Indirect Effects of Alternatives A, B and C

According to existing policy, response to fire on Smith Butte would be consistent with the response that would occur within the LSR surrounding the butte. Areas within the LSR that have undergone fuels reduction treatments will help facilitate control of fires burning in this area. In addition, roads located near Smith Butte form natural fire breaks and containment points, and for this reason, failing to implement fire risk reduction activities on Smith Butte will not substantially increase fire risk to adjacent federal, state, private or tribal lands (G. Bouchard, pers. comm. 2006). For this reason, fire risk to adjacent lands is consistent among all alternatives.

Cumulative Effects

Smith Butte comprises a small part of the forested landscape east of the Cascade crest in Washington State, and is located adjacent to, or nearby, extensive areas of grand-fir type forests with the Gotchen LSR (Forest Service) and Yakama Indian Reservation tribal lands. All of these lands have undergone, and will continue to undergo, fire suppression activities. Managing fire on Smith Butte on an equivalent basis to the landscape outside of Smith Butte does not add substantially to the effects of fire suppression in the overall area.
Mardon Skipper Butterfly

Existing Condition

The mardon skipper is listed as an endangered species on the Washington State Department of Fish and Wildlife’s Species of Concern list, and is a sensitive species on the Regional Forester’s Sensitive Species List for the Pacific Northwest Region of the Forest Service. At the summit of the butte there exists a pristine 2.5-acre dry meadow that is dominated by blue bunch wheatgrass (*Agropyron spicatum*), elk sedge (*Carex geyeri*), and Idaho fescue (*Festuca idahoensis*). Wildflowers include arrowleaf balsamroot (*Balsamorhiza sagittata*), *Erigeron sp.*, nettleleaf horsemint (*Agastache urticifolia*), mariposa lily (*Calochortus subalpinus*), wild violets, and others.

Mardon skipper surveys conducted at the meadow in July 2000 and in July 2001 found a total of 60 and 42 individuals respectively. A survey on July 1, 2005 detected a total of 52 mardon skippers. Despite the small size of the meadow at Smith Butte, the relative abundance of mardon skippers provides evidence of the quality of the habitat at this site (A. Potter, pers. comm., 2001).

At present, the meadow is a prime habitat for mardon skippers. There are several other known mardon skipper sites in the vicinity of Smith Butte. The majority of these other sites are in old timber harvest units that will eventually become unsuitable as the trees reoccupy these units, shading out the grass and forb species. It is unknown where the butterflies came from that inhabit these created openings; however, it is possible that the Smith Butte meadow population acts as a source population, and that individuals from the top of Smith Butte occasionally disperse down the hill to other suitable habitat.

Other known sites in the area are along roadsides that are subject to disturbance from road maintenance activities. Natural meadows, such as at Smith Butte are important for maintaining the mardon skipper population on the Forest since they likely act as source populations. These sites will likely need periodic active management to remove encroaching trees.

Alternative A: Direct and Indirect Effects

Under Alternative A, management to maintain the current size of the meadow hosting mardon skipper would not be permitted. Encroaching conifer trees would be left to grow. It is uncertain what effect this would really have since it doesn’t appear that the size of the meadow has shrunk considerably in the last few decades. It may be that the soil found on the site will not allow conifers to fully occupy the meadow. In the short-term, implementing this alternative would not impact mardon skippers. In the long-term, the population at the meadow may be reduced if the meadow is allowed to be occupied by conifers (which may occur in the absence of fire or active control).

Since this population is one of the largest on the Forest and since it may act as a source population that allows individuals to disperse to and occupy new sites, loss of the habitat at Smith Butte would have an impact on mardon skippers in the eastern part of the Mount Adams Ranger District. Since many of the occupied mardon skipper sites in the Gotchen area are in created openings, maintaining occupied natural meadows is important for the long-term persistence of mardon skippers in this part of the District. Since this alternative would preclude vegetation manipulation to maintain the size of the meadow, it may impact individuals and habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species because conifer encroachment in the meadow appears to be very low.
Alternative B: Direct and Indirect Effects

This alternative would allow conifer removal in the meadow so habitat for mardon skippers can be maintained. This alternative will therefore have **no impacts** to mardon skippers.

Alternative C: Direct and Indirect Effects

This alternative would allow conifer removal in the meadow so habitat for mardon skippers can be maintained. This alternative will therefore have **no impacts** to mardon skippers.

Cumulative Effects

There is very little that is known about the dispersal distance for mardon skippers. They have been known to fly 0.25 mile, and three males were found about a mile from the natural meadow during a mark-recapture study (Erik Runquist, 2004). There are no known natural meadows inhabited by mardon Skippers within a mile of Smith Butte. The only other known sites within a mile of Smith Butte are in old timber harvest units.

There are no management actions proposed in these units, but it is likely that they would be thinned at some point and possibly jackpot burned to reduce fuel loading. In addition, cattle grazing in these units will probably be allowed into the foreseeable future. Neither of these management actions is likely to result in extirpation of mardon skippers in these units, assuming that appropriate mitigations would be applied to any prescribed burning to avoid portions of the units inhabited by skippers, and livestock are managed to achieve proper grazing use. In the long-term however, the populations in these units will likely be lost as the trees mature.

Since past actions created habitat for the mardon skipper, and since there are no current, or proposed future actions that would affect known mardon skipper sites, implementing this alternative would have negligible cumulative effects in the areas within the probable dispersal distance from Smith Butte.

Management Strategy Effects on RNA Objectives and Attributes

Existing Condition

Smith Butte maintains a very rare example of mature grand fir forest within Southwest Washington that has not been altered by active management; status as an un-manipulated example of this forest type is an important attribute that it would bring to the network of Research Natural Areas.

One of the objectives of the proposed RNA in Smith Butte area is to provide sites for study of natural processes in undisturbed ecosystems. According to Evers et al. (unpublished, undated white paper), natural fire regimes do not exist anywhere in the mid-Columbia area today. Though Smith Butte has not been actively managed through timber harvest or other stand altering activities, fire suppression may be considered a form of passive management that has led to forested stand conditions that are likely outside of the historical range of variation.

Alternative A: Direct and Indirect Effects

Maintenance of un-manipulated grand-fir type:
Alternative A, the “observation” alternative, maintains Smith Butte as an example of an un-manipulated grand-fir type forest, a primary attribute upon which the original RNA proposal was based, by prohibiting timber harvest, prescribed fire, fuels management, and other active forms of stand manipulation.

Opportunities for research:

The proposed action presents opportunities for research of a natural, un-manipulated grand-fir type stand under a regime of fire suppression, which, within southwest Washington, is an opportunity unique to Smith Butte. Scientists from the Pacific Northwest Research Station and the University of Washington are studying effects of repeated spruce budworm defoliation on key spotted owl habitat elements at Smith Butte, including changes in canopy closure, and down wood, and associated effects on potential fire behavior. Implementation of the proposed action would support continuation of this ongoing long-term study.

**Alternative B: Direct and Indirect Effects**

**Maintenance of un-manipulated grand-fir type:**

Alternative B, the “active management” alternative, compromises the un-manipulated nature of Smith Butte in the interest of restoring a more “natural” fire regime. The “active management” alternative fails to maintain Smith Butte as an example of an un-manipulated grand-fir type forest, a primary attribute upon which the original RNA proposal was based.

Opportunities for research:

The “active management” alternative would create research opportunities on restoration of the historical fire regime in a mature grand-fir forest, but in the process would compromise the un-manipulated attribute that makes Smith Butte unique. The benefits of this Alternative include the ability to restore the stand to conditions that would have existed in the absence of fire suppression. However, opportunities to manipulate grand-fir stands in the interest of fuels management, and/or restoration of a more “natural” fire regime exist elsewhere within the Gotchen area of the Gifford Pinchot National Forest.

**Alternative C: Direct and Indirect Effects**

**Maintenance of un-manipulated grand-fir type:**

Under Alternative C, Smith Butte would be managed as part of the Gotchen LSR, which could involve fuel treatments or the creation of fire breaks.

Opportunities for research:

Under Alternative C, Smith Butte would be less desirable than either Alternative A or B, as the setting of long term studies, as the land use designation would not provide assurance of maintenance of conditions at the site.

**Cumulative Effects**

No other past, present or reasonably foreseeable future actions that would affect the un-manipulated nature of the Smith Butte area.
Other Factors

Hydrology, Threatened and Endangered Fish and Critical Habitat

There are no springs, seeps, streams or areas of standing water on Smith Butte, therefore there are no hydrological or fisheries issues associated with establishment of the RNA. Consequently, establishment of the RNA is consistent with the Aquatic Conservation Strategy (USDA and USDI 1994).

Threatened, Endangered and Sensitive Wildlife

Northern Spotted Owl

Alternative A - Since Smith Butte is currently within the Gotchen LSR, and is currently comprised of late-successional forest, the area is not open for activities such as timber harvest, unless needed to restore natural ecosystem function. This alternative would preclude any type of timber harvest or other vegetation manipulation that could be used to maintain spotted owl habitat by reducing the potential for stand replacing fire. The tree mortality at Smith Butte due to spruce budworm is not as high as surrounding areas and vegetation manipulation to restore spotted owl habitat is not currently needed. The current situation provides the opportunity to study the effects of moderate levels of defoliation on spotted owls.

In the short-term, designating the area as a Research Natural Area would essentially continue the same management as what would occur under LSR standards and guidelines. Designation of the RNA will not negatively affect habitat for spotted owl in the short-term.

In the long-term, RNA designation could affect spotted owl habitat since it would preclude minor vegetation treatments that may be needed to maintain habitat, such as treatments to reduce the effects of continued spruce budworm defoliation, or reduce the potential for stand replacing fires. It is unknown however, whether or not treatment would be needed in the future. Designating Smith Butte as a RNA under this alternative would have no effect on spotted owls.

Alternative B – This alternative would allow vegetation manipulation, if needed or desired, to maintain ecological functions. With this alternative, it is more likely that spotted owl habitat can be maintained on the butte in the long-term (50 to 100 years). This alternative is essentially the same as what would be possible under standards and guideline for LSRs. If trees were harvested on the butte, yarding would have to be done by helicopter because building roads on the hill slope would be undesirable. Since vegetation manipulation is not currently needed, and it’s uncertain if it will be needed in the future, designation Smith Butte as a RNA under this alternative would have no effect on spotted owls. The potential effects of any vegetation treatment, if any are proposed in the future, would be analyzed in a separate NEPA document.

Alternative C – This alternative would continue management of the area under the standards and guidelines for LSRs. There would be no change in management in the short-term, and in the long-term, management actions could be implemented, if needed, to maintain spotted owl habitat. This alternative would have no effect to spotted owls.

Designating Smith Butte as a RNA would have no impacts on any species on the Regional Forester’s Sensitive Species list, any Management Indicator Species, or to neotropical migratory birds.
Survey and Manage Wildlife

Since the proposal to designate Smith Butte as a Research Natural Area is not a ground disturbing activity, surveys for Survey and Manage species are not required at this time. There have been no previous Survey and Manage wildlife surveys on Smith Butte; however, surveys were conducted for terrestrial mollusks in all of the proposed timber harvest units analyzed in the Gotchen Risk Reduction and Restoration Project. Many of these units are adjacent to the proposed RNA in Smith Butte area and the habitat is similar. No Survey and Manage mollusks were found in any of the Gotchen units, and based on habitat within the proposed RNA, it is unlikely that any of these species inhabit Smith Butte. There is no habitat on Smith Butte that is suitable for either of the Survey and Manage salamander species.

If needed, surveys would be conducted for mollusks at the time that ground disturbing activities are proposed within the RNA. Designating Smith Butte as an RNA would have no impact to Survey and Manage wildlife.

Threatened, Endangered, Sensitive and Survey and Manage Plants

There are no threatened, endangered, proposed, sensitive, or Survey and Manage plants located on Smith Butte. Therefore, RNA establishment will have no effect on Threatened and Endangered plants, no impact on Sensitive or Survey and Manage botanical species.

Cultural Resources

The proposed RNA in Smith Butte area borders a historical Native American hunting trail. Native American Treaty rights include the right to collect traditional resources from Smith Butte and the surrounding area (i.e., plant collecting and hunting). Establishment of the RNA will not alter or limit existing treaty rights, or impact the trail.

Grazing

Smith Butte is located within the Mt. Adams Grazing Allotment.

Multiple factors have historically and currently kept grazing to a minimum on Smith Butte. These factors include the steep slopes of RNA, limited forage within the forested areas of the butte, lack of water, existing down woody material, dense shrub vegetation in places, and the availability of better forage in other locations (J. Esteves, pers. comm., 2001). Evidence of limited historical and current use of the meadow by cattle does exist. No documentation is available as to this level of use, but it is estimated that the meadow may be visited for a few days per year by a few head of cattle (J. Esteves, pers. comm., 2001).

Currently the grazing allotment is managed to protect the RNA from grazing impacts. Activities that will attract cattle are prohibited within one half mile of the RNA boundary, and permittees are required to drive livestock away from the RNA boundary and remove cattle that stray into the RNA (Mt. Adams Grazing Allotment Management Plan 2013).

In the Grazing Allotment Environmental Assessment, the decision was made to continue to minimize grazing within the area through proper placement of salt. A threshold of incidental use of the RNA by livestock needs to be established in the RNA Management Plan to ensure that livestock use remains consistent with RNA management objectives. The Forest Service would continue to monitor the area to ensure that grazing does not conflict with RNA objectives.
Recreation

The proposed RNA in Smith Butte area presently receives very limited recreational use and the official designation of the RNA should not affect this use. The area is known to have occasional use by mushroom hunters (J. Nakae, pers. comm., 2001). Limited plant collection within the RNA by herbalists or medicinal plant collection by Native Americans is possible, although as a proposed RNA, the area has been off-limits to plant collection by the general public for a number of years. It is also possible that hunters may occasionally use the butte.

Two sno-parks, the Pineside Sno-park and the Smith Butte Sno-park, are located near the RNA and receive relatively heavy use by cross-country skiers and snowmobilers (J. Nakae, pers. comm. 2001). The parking area for the Pineside Sno-park is near the junction of Forest Service Roads 82 and 8225, just less than three road miles to the southwest of the RNA. The Pineside Sno-park includes multiple loop trails over existing roads. The parking area for the Smith Butte Sno-Park is located at the end of Forest Service road #110, approximately a half mile northwest of the RNA. Both snowmobilers and cross-country skiers generally prefer flatter terrain, and stay on the designated roads, which are unplowed. Due to its steep slopes, Smith Butte is generally avoided by cross-country skiers and snowmobilers. No trails exist or are planned on the butte itself.

Transportation

The proposed RNA in Smith Butte area does not include any current roads, historic roads or human trails. None are planned for the area. Establishment of the RNA will not block transportation system development.

Invasive Plants

The GPLRMP (1990, IV-139) specifies that exotic plants and animals are not permitted within Research Natural Areas. There are a few known invasive plant infestations that occur within the proposed RNA; these occurrences are treated manually on an annual basis. There are no known non-native, invasive animals within the RNA. Establishment of the RNA does not preclude the continuation of treatment of existing invasive plant occurrences, nor would it prevent the practice of Early Detection Rapid Response (EDRR) to other invasive species, if detected within the RNA in the future. For these reasons, establishment of the RNA is not anticipated to cause an increase in establishment or spread of invasive species.

Other Required Disclosures

Effects on Prime Farm Land, Range Land, and Forest Land

Although not defined as prime range land, the land within and around Smith Butte is available for cattle grazing under permit from the Forest Service. No prime forest land or prime farmland is in the proposed RNA in Smith Butte area.

Floodplains and Wetlands

Floodplains: Executive Order 11988 sets the direction of federal actions to avoid adverse impacts associated with the occupancy and modification of floodplains. Floodplains are defined by this order as, “. . . the lowland and relatively flat areas adjoining inland and coastal waters are including flood prone areas
of offshore islands, including at a minimum, that area subject to a one percent [100-year recurrence] or greater chance of flooding in any one year.”

Wetlands: Executive Order 11990 sets the direction of federal actions to avoid adverse impacts associated with destruction or modification of wetlands. Wetlands are defined by this order as, “... areas inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds.”

There are no floodplains or wetlands in the proposed RNA in Smith Butte area; therefore, the designation is not expected to have any adverse impacts on floodplains or wetlands.

**Potential or Unusual Expenditures of Energy**
There would be no unusual expenditures of energy with this designation (under either action alternative). The project does not involve any forms of energy expenditure.

**Conflicts with Plans, Policies, or other Jurisdictions**
There would be no conflicts with plans, policies or other jurisdictions with any of the alternatives selected. All overlapping plans and policies have been evaluated for consistency (See Chapter 1). The Forest works with regulatory agencies in development of the proposal, including the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, Washington State Department of Ecology, and the State Historic Preservation Officer (See Chapter 4).

**Environmental Justice**
The proposed designation (in the action alternatives) does not appear to have a disproportionately high or adverse effect on minority or low-income populations, or Native American tribes. No mitigation measures to offset or ameliorate adverse effects to these populations have been identified. All interested and affected parties would continue to be involved with the comment and decision-making process. Consultation with Native American tribes has occurred (See Chapter 4).

**Consistency with the Gifford Pinchot Forest Plan, as Amended**
Formally designating Smith Butte as a RNA would require amending the Gifford Pinchot Forest Plan. The designation is consistent with all other Forest Plan standards and guidelines. The action alternatives were designed to be consistent with all Forest Plan standards and guidelines and stipulations from the Northwest Forest Plan. The Management Direction section in Chapter 1 (section 1.5.2) lists the management area categories for the Forest Plan and land allocations from the Northwest Forest Plan and how grazing activities fit within those allocations.

**Consumers, Civil Rights, Minority Groups, and Women**
The proposed designation (in either action alternative) does not appear to have a disproportionately high or adverse effect on consumers, minorities or women. The project would not have any effect on the civil rights of any human-being.
**Other Applicable State and Federal Laws**

The action alternatives are designed to be consistent with all other applicable state and federal laws. Applicable laws are listed in the Management Direction section (1.5.1) and throughout the individual Forest Service specialists’ reports.
Chapter 4: Consultation and Coordination

U.S. Fish and Wildlife Service

It was determined that there would be no effect to any Federally-listed wildlife species, therefore no consultation with the U.S. Fish and Wildlife Service was required.

National Marine Fisheries Service

It was determined that there would be no effect to any Federally-listed anadromous fish requiring consultation with the National Marine Fisheries Service under Section 7 of the Endangered Species Act.

State Historic Preservation Officer

Designating Smith Butte as a RNA would not affect any historic or pre-historic artifacts; therefore no consultation with the Washington State Historic Preservation Officer is required.

ID Team Members

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<tr>
<th>Name</th>
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<tbody>
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<td>Jessica Hudec</td>
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Federal, State, and Local Agencies

The Forest Service consulted the following individuals, Federal, State, and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

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Indian Tribes

The Cowlitz Indian Tribe, Nisqually Indian Tribe, and Yakama Nation all received correspondence in regards to this project. Forest Service archeologist had further communication with Clifford Cassasseka from the Yakama Nation on the proposed designation.
References


Bouchard, G. 2006. Personal communication.


Forest Service Manual 4063.04b.


USDA Forest Service and USDI Bureau of Land Management. 1994. Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl.

USDA Forest Service, 36 CFR 251.23.