Appendix

D Response to Comments on the Draft Environmental Impact Statement

On Wednesday, 05June2002, a notice that the Draft Environmental Impact Statement (DEIS) was available for review on the Colville National Forest web site was mailed to planning participants. On that same date, DEIS hardcopies and digital CD copies were mailed to those who requested it. On Friday, 28June2002, The Environmental Protection Agency published a notice of availability for the DEIS in the Federal Register. This notice initiated the required 45 day comment period for the DEIS. The comment period ended Monday, 12August2002.

On Friday 30August2002, the Environmental Protection Agency published a notice of availability of EPA comments on the DEIS in the Federal Register. The EPA expressed a lack of objections[1] to the proposal, and noted that the DEIS is adequately documented[2] and meets the requirements under NEPA.

Public review generated seventy-five comment letters. From these, 189 comments were extracted. Comments are grouped into eleven categories, which correspond with the sections of this appendix:

The following guidance was used to identify comments:

> *Comments on an environmental impact statement or on a proposed action shall be as specific as possible and may address either the adequacy of the statement or the merits of the alternatives discussed or both* (Council for Environmental Quality Regulations for Implementing NEPA, Section 1503.3a).

[1] An EPA lack of objections rating (LO) indicates: the EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal.

[2] The EPA categorizes a document as adequate when: The EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action.

D.1 Botany

1) Why don't you consider designating the Quartzite Roadless Area as a Research Natural Area (RNA) and recommend it for future wilderness designation?

Response

The Colville National Forest Botanist analyzed the area for RNA eligibility in 1999. Colville National Forest plant associations, State of Washington Natural Heritage Plan elements and rare plants were all used to determine eligibility status. Eligibility analysis revealed that area plant associations and Natural Heritage Plan elements are represented in the existing RNA System. The rare plants that occur are protected by existing standards and are represented elsewhere on the Forest.

Consequently, based on Forest RNA objectives, the Forest Botanist did not recommend the establishment of a Research Natural Area in the drainage above Betts Meadows.

2) The document does not give the location for sensitive plant field surveys. In order to protect sensitive plants from ground-breaking disturbances, surveys for sensitive plants need to be performed by botanists in the areas planned for ground-breaking disturbances.

Response

Like other sensitive resource information (heritage sites), the location of sensitive plants is exempt from the Freedom of Information Act because of the potential for disturbance. As noted on DEIS page 3-96, sensitive plant effects analysis incorporates the results of botanist surveys, including intuitive inspections within proposed activity areas.

3) The analysis of effects to sensitive plants was overly simplistic. The effects on canopy removal adjacent to sensitive plant populations are complex. It does not necessarily follow that logging will automatically reduce fire, and therefore risks to sensitive plants. Some sensitive plants are more sensitive to soil disturbances than to severe fire, or can even benefit from severe fire. In fact, it is unlikely that fire would be severe enough to kill all sensitive plants, since there have been fluctuations of fire severity over the recent evolutionary past.

Response

Potential habitat for 26 sensitive plants is included within the project area. Step two of the Biological Evaluation revealed one population of Dryopteris cristata. Because no harvest or management activity threatens this population the likelihood of adverse effects is low.

Although a *reduction* of canopy would occur on all vegetation management activity areas, no clearcuts (canopy *removal*) are prescribed. The seed tree commercial silvicultural prescription described on page 2-10 of the DEIS would remove up to 85% of the canopy, however this prescription would occur on less than 2% of the area proposed for commercial vegetation management. No seed tree prescriptions are proposed within 1000 feet of the population of crested shield-fern.

The *Report to the Colville National Forest on the Results of the Quartzite Planning Area Fire History Research* by Schellhaas, et al reveals a high-frequency low-intensity historic fire regime. "In many instances, the Quartzite Planning Area is out of synchrony with historic mean fire frequency intervals by a factor of 10." Quartzite vegetation management strategies strive to improve native sensitive plant *habitat* by moving toward those historic conditions with which plants evolved.

References

Schellhaas, R. Spurbeck, D. Ohlson, P. Camp, A.E. and Keenum, D. 2000. Report to the Colville National Forest on the results of the Quartzite planning area fire history research. PNW Research Station, Wenatchee Forestry Science Lab, Wenatchee, WA. 78 p.

4) From DEIS page 3-97 "*Detrimental effects to sensitive plant habitat accompany road construction because roads have historically served as vectors for noxious weeds*." The idea that mitigation for noxious weeds is likely to be [very] effective is overly optimistic.

Response

The key term in the quote is "historically." Before noxious weed mitigation was incorporated into road construction, roads did serve as vectors. Adaptive management over the past 10-20 years however, has produced noxious weed prevention strategies that are very effective. The 21 mitigation measures included with the project (DEIS pg. 2-23 & 2-24) are the result of observing what works and what doesn't work, on the ground. They are designed to aggressively prevent the establishment of noxious weeds along new roads and elsewhere. Subsequent mitigation will adapt, as conditions change and prevention strategies evolve.

D.2 Economics

1) Economic studies confirm that unroaded areas such as Quartzite are more valuable to local economies in their natural state than as logs trucked to the local mill.

Response

Your comment is noted. See the response to comment #4 in this section. Also, as noted on DEIS page 2-1, the National Environmental Policy Act of 1969 directs all agencies of the Federal Government to study, develop, and describe appropriate alternatives to those proposed actions involving unresolved conflict. Public comment generated three key issues involving unresolved conflict, one of which was road management. Consequently, three of the seven alternatives analyzed provide the decision maker with the opportunity to preserve the unroaded area.

2) On page 3-204 there is a statement about Timber Sale Area improvements not being used to mitigate the effects of the alternatives and therefore their costs would not be included in the accounting section of this DEIS. It says they are "listed in Section 2.117." There is no "Section 2.117" in this DEIS. Thus I could not figure out what the improvements are and further did not understand why the costs should not be disclosed.

Response

The reference on DEIS page 3-204 is incorrect. DEIS Section 2.2.3 (page 2-14) is the correct reference.

Three timber sale area improvements are listed in this section:

One hundred fifty acres of the non-commercial thinning discussed in Section 1.4 would occur on 150 acres, to reduce inter-tree competition for water, nutrients and sunlight. These are included in Section 1.4 of this EIS.

One hundred fifty acres of the prescribed fire for big-game winter range improvement discussed in Section 1.4 Prescribed fire for big-game winter range improvement would occur on 150 acres. These are included in Section 1.4 of this EIS.

The two road closures discussed in Section 1.4 of this EIS would occur. They are Forest Roads 4300.300 and 4342.250.

The costs of these activities are disclosed on DEIS pages 3-205 and 3-206. Because they are not timber-sale activities, and do not mitigate the effects of these activities, they are not included in the timber sale cost-revenue analysis.

3) I question the feasibility of Alternative K due to the high amount of helicopter logging and the much higher costs of post harvest treatments. If Alternative K cannot be implemented due to costs, then Alternative A is implemented by default.

Response

The IDT was also concerned with the expenses incurred with helicopter yarding when they designed alternatives. To keep these costs down in the Existing Roads Alternative (K), the IDT limited helicopter units to not more than ½ mile from existing roads. And even though the Existing Roads Alternative (K) has a higher percentage of helicopter yarding compared to other action alternatives, the timber sale cost-revenue analysis for this alternative reveals a present net value of over $1,500,000; due largely to the absence of road construction costs.

4) In the DEIS, the Colville National Forest has not adequately addressed the socio-economic value of un-logged forests, nor is such assessment included in the CNF LRMP to which this proposal is tiered. The USFS has failed to include adequate assessment of socio-economic values in TSPIRS reports, Reports to the Forest Service, or M&E reports. Adequate assessment of these values has not occurred at any level of forest planning. Since this assessment is required by law and has not been adequately conducted at any previous assessment level of the USFS, assessment at the project level is required in order for analysis of the proposed action to be in compliance.

By law, the United States Forest Service ("Forest Service") must fully account for all benefits and all costs of natural resource management decisions and make those decisions in a manner that maximizes net public benefits. While Section 3.5.1 of the DEIS itemized "adverse effects that cannot be avoided," these losses to the forests and society are not factored in, or even mentioned, in the economic analysis. By failing to utilize appropriate professional expertise capable of disclosing all natural resource benefits and externalized costs, the Forest Service is in violation of NEPA's mandate to rely upon a systematic and interdisciplinary approach to decision making.

Response

An economic analysis of the Colville National Forest Plan, including the timber program, is beyond the scope of this project.

The Final Environmental Impact Statement for the Colville National Forest Land and Resource Management Plan includes quantitative and qualitative resource outputs and environmental effects for non-priced resources (pgs. II-85 thru II-89). Appendix B of the Final Environmental Impact Statement for the Colville National Forest Land and Resource Management Plan describes how non-priced outputs and social and economic impacts, were addressed in the Forest Planning process (pgs. B-59 thru B-91).

The DEIS analysis meets the cost-benefit requirements of NEPA (40 CFR 1502.23), which states "the weighting of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-

benefit analysis." The document should reflect important qualitative considerations, which are likely to be relevant and important to a decision. The financial analysis is presented from the standpoint of monetary costs and revenues to the U.S. Government. In addition to the financial analysis, the DEIS considers the adverse human health and environmental effects the project would have on minority and low-income populations. A summary of both the financial analysis and the effects on minority and low-income populations for each alternative is on pages 3-202 thru 3-206 of the DEIS. The DEIS also identifies impacts to wildlife, fish, water, soils, and remote recreation.

D.3 Fire

1) Research by fire physicist, Jack Cohen (Missoula), has shown that the Forest Service should concentrate on landowner education and fuels reduction at the urban-wildland interface. This is more effective than thinning (logging). Due to the limitations imposed by the existing alternatives it will not be possible to create a community based wildfire protection project. The Forest Service should coordinate their activities with private landowners in the Chewelah Creek watershed with the goal of protecting the community from wildfire. Current efforts to protect communities from the threat of forest fire are being planned without consideration for what is actually effective at protecting houses and communities from the forest fire. Additional thinning, beyond the individual structural protection, for close to 400 meters (for our maximum tree height of 165 feet) from buildings may enhance a community's resilience to wildfire. At issue is the ability of firefighters to safely defend community space.

Response

While the Wildland Urban Interface (WUI) is an intrinsic component of the project planning area, the Purpose and Need does not isolate the WUI, and instead, strives to develop forest matrix, patches and corridors that are consistent with fire landscapes across the National Forest System lands within the project planning area, regardless of proximity to urban areas. The project recognizes the National Fire Plan, and shares objectives where they coincide with the Quartzite Purpose and Need. Also, see the response to comment #7 in this section.

The federal WUI around Chewelah will be considered by the forthcoming Forest-wide Wildland Urban project.

2) Having seen the incredible fuel loads in BPE2, exacerbated by the bark beetle and root rot infestations, I believe that catastrophic wildfire is the greatest threat to the area. Working to bring the excess of SS4 and 5 onto a successional path leading toward SS7 is the best way to continue the forested character of the area while reducing the chance of a major fire.

Response

Your comment is noted. DEIS page 1-10 cites vegetation management objectives that are consistent with this approach. Project design focuses on moving the vegetation toward the natural range of variation by developing forest matrix, patches and corridors that are consistent with fire landscapes. Also, see response to comment D.4 General: comment #9.

3) The Quartzite DEIS contains inadequate discussion of the definition of the term "thinning" in the context of reduction of small-diameter materials and brush, thus the public is deprived of understanding that thinning of merchantable trees is likely to increase, rather than decrease, fire risk. There is no discussion of how the objectives on thinning to restore HRV and the objective of thinning to reduce small-diameter materials and brush are largely at odds. This lack of information deprives the public of making an

informed decision regarding the appropriate balance between attempting to restore stand-structure HRV and attempting to reduce small-diameter materials and brush.

Response

The purpose of thinning is to increase the distance between the tree crowns in the stand (reduce crown bulk density) to lessen the probability that fires can spread through the crowns and to reduce ladder fuels that allow surface fires to transition into crown fires. The resulting fuel (activity fuel) may be left scattered, piled or underburned (Evers, 2001).

Thinning to improve stand structure HRV would thin out the smaller diameter understory, commercial and non-commercial, leaving a larger fire resistant stand. In most cases activity fuel will be treated with prescribed fire, grapple piles, lop and scatter or leave top attached.

In all type of thinning, if the slash is not treated, then the risk of intense or crown fire is usually increased. If the surface fuels are treated, then thinning will decrease potential fire intensities in the stand. Thinning can open up the stand canopy to a point where crown fires would have difficulty getting started or sustaining themselves (PNW Research Station, 2002).

References

Evers Louisa (2001) Effects of Fuels Treatment on Habitat Elements Important to Survey and Manage Species. 22 pp.

4) We note that the DEIS on page 3-53 cites the PNW fire ring research report for the Quartzite. We find this document reaches unsubstantiated conclusions and does not follow the NEPA requirement for accurate scientific methodology. The assumption that all fires burned until encountering a topographic or fuel barrier greatly amplifies the extent and size of wildfires. See, Uncertainty in surface-fire history: the case of ponderosa pine forests in the western United States, Can. J. For. Res. 31: 1205-1226 (2001) by William L. Baker and Donna Ehle. Pg 1209. The Baker paper suggests that the mean fire interval is longer than previously thought in Ponderosa Pine forests. The methodology of targeting fire scarred tree or burnt downed log skews the analysis significantly biases the value of the sample for estimating mean fire interval and the fire rotation. Arbitrarily selecting eight sub-areas within the larger watershed makes the analysis suspect. The Mean Fire Frequency Interval (given as 2.3-2.8 years in the DEIS) is no indicator of intensity/spread or frequency of fires on any given acre. What we see from the data are fires that likely went out and burned limited acreage or even one or two trees. It also appears as though fires did not hit the Quartzite area uniformly.

Response 1[3]

Baker and Ehle identify several potential problems with existing published fire history research, including:

- **Targeting of fire scars.**
- **Use of composite fire-free intervals.**
- **Inclusion of the origin to first scar (OS) interval.**
- **Unburned areas within the fire perimeter.**
- **Unrecorded fires.**
- **Age of trees at the time of the first fire scarring.**

[3] Provided by USDA USFS PNW Wenatchee Forest Sciences Laboratory

We will show how these issues have been handled in fire history studies conducted by the Wenatchee Forestry Sciences Lab, and specifically the fire history work presented in the Quartzite report (Schellhaas et al. 2000). We believe that the Quartzite report addresses and goes beyond the concerns and uncertainties raised by the Baker and Ehle paper. We also note that Baker and Ehle define the focus of their paper to be on "…nearly pure ponderosa pine forests, excluding mixed conifer forests…". Pure ponderosa pine forests are uncommon on the Colville N.F. and elsewhere in eastern Washington (Williams et al. 1995). Although ponderosa pines are common and serve as a primary source of fire scar material, they occur within the Colville N.F. and Quartzite Planning Area primarily as a component of mixed conifer forests.

Targeting of fire scars.

Our data collection was targeted to areas with the most fire scar samples and to trees with the highest number of externally visible scars because these provide the most information about historic fires and should "have the highest priority for sampling" (Arno and Sneck 1977). However, analysis of these fire scars was applied only to the areas where the scars were found and was not extrapolated to infer fire history for other areas. Our data is very site specific.

In some areas where multiple-scarred trees were not found, we collected samples from live trees, snags, logs, and stumps with as few as one visible scar. In other areas where fire scars were not present, we collected increment cores from young, dense stands and from remnant trees to determine germination dates and changes in ring patterns that may be attributable to known fire years found on nearby scar samples.

Use of composite fire-free intervals.

The author's point that the use of composite fire-free intervals for an area can be misleading may be true if the site is very large and if it is assumed that each fire burned throughout the entire area. However, the area included in the Quartzite fire history report was stratified into smaller tracts of homogeneous land types (aspect and slope) that are likely to have similar fire histories (Agee 1993).

We did not assume that each fire burned through an entire area. We based fire perimeters on those areas where evidence of that fire was found. Table 1 in the Quartzite report (page 22) indicates the means and ranges of fire frequency occurring within sample polygons and Table 2 (page 23) indicates the means, ranges of fire size, and percent of the area burned by each historic fire detected within these areas. The use of these ranges addresses Baker's proposed remedy of the use of bracketing the uncertainty contained within the composite fire-free interval.

We have also established point-based fire samples to determine the fire frequency at specific points across the landscape (Agee 1993, Wright 1996). The fire frequencies at these point samples are listed in Table 3 of the Quartzite report and are not area dependent.

Baker and Ehle argue that many of the historic fires that were detected in the examples shown in their Figure 2 (page 1210) were very small in size based on the limited number of fire scar samples representing each fire. In that figure, nearly all fire years are represented by less than five samples, and in most cases one or two fire scar samples. On average, each fire year shown in the Quartzite report is represented by over 12 scar samples.

It should be stressed that at Quartzite, cross-dating was used to determine the exact year of fire occurrence (Stokes and Smiley 1968, Yamaguchi 1991). Cross-dating is the process of matching patterns in tree-ring width among several climatically sensitive trees. It eliminates problems in computing fire frequency that result if missing or false rings are present on fire-scar samples. Baker and Ehle go to great pains to point out uncertainties in fire history sampling, yet they ignore the most fundamental aspect of fire history sampling: determining the exact year when a fire occurs. Several studies they cite and rely on for their

conclusions did not employ cross-dating i.e. Arno 1976, Arno and Sneck 1977, Arno and Petersen 1983, Barrett 1988, McBride and Laven 1976, to name a few.

The Quartzite report addresses uncertainties regarding composite fire-free intervals by its thoroughness in area coverage, the large number of collected scar samples, and the precise determination of fire years through cross-dating. Also, the application of fire scar dates to only those areas where they were found further eliminates all concerns raised by Baker and Ehle concerning this issue.

Inclusion of the origin to first scar (OS) interval.

The author's description and examples of including the interval between the tree origin date and the date of the first fire scar (OS) is not reliable or valid (Arno and Sneck 1977, Grissino-Mayer 2000). The validity is questionable since it is not known how many fires occurred during this interval. They assume this time period was free from fires but it is very uncertain if fires did or did not occur during this time.

Having reviewed thousands of fire scar samples in eastern Washington, we have empirical evidence within the OS interval of fire damage in the form of tree ring patterns or other anomalies that match adjacent fire scar dates. These ring patterns demonstrate the uncertainty and bias involved in using the OS interval as a fire-free interval. To include this as an interval would also be inconsistent with the authors' arguments as shown in Table 1 on page 1206. This table lists reasons why a tree may not be scarred by a fire such as the "bark being sufficiently thick to resist heat load" and the lack of "previous scars, wounds or fissures". Besides, many scar samples do not include the pith due to such things as rot making inclusion of this interval impossible.

Unburned areas within the fire perimeter.

The authors are concerned that some areas within a fire perimeter remained unburned. We agree that unburned patches probably did occur within fire boundaries, however these patches were likely to have been small (Everett et al. 2000, Gray et al. 2002).

Due to the large number of fire scars we collected, their distribution across the landscape, and our conservative estimates of fire extent we believe concerns about unburned areas are minimal. If adjacent or nearby fire scarred trees indicated a common fire event we did assume the fire burned the area between these samples. However, we did not assume this to be the case if the samples were separated by large distances or by topographic or other physical barriers that may have limited the spread of the fire.

Unrecorded fires.

There is some discussion about the issue of unrecorded fires. A fire event may not scar every tree in an area and subsequent fires may burn off evidence of previous ones. If unrecorded fires did occur, the impact would be to further shorten the true fire-free interval even less than our conservative estimate. If a fire was unrecorded on an individual scar sample or group of samples but recorded on other samples in the area, the effect would be that our estimated fire size is smaller than what really occurred.

Unrecorded fires are most likely to have occurred in the distant past due to the loss of the fire records over hundreds of years. In the Quartzite report we established a set time period for analysis based on the evidence of our data. We did not include fire data prior to 1670 due to the limited number of samples recording fire years prior to this time.

Age of trees at the time of the first fire scarring.

Baker and Ehle argue that very long fire-free intervals are needed to account for the establishment and persistence of ponderosa pine seedlings. They state that ponderosa pine must be at least 50 years of age

to survive a fire, yet their Figure 3 (page 1212) indicates that 1/3rd of the trees scarred before 50 years of age. In fact they show that 7% of the fire scars were on trees less than 20 years old, providing evidence that ponderosa pine seedlings can and do survive fire at young ages.

Table 5 of the Quartzite report shows similar results, where the age at the time of the first fire scar ranged from 5-117 years with a mean age of 32 years. Our site-specific results indicate that trees as small as 0.7 inches in diameter survive fire events with a mean stump diameter of 5 inches at the time of the first fire.

Gray and Riccius (2000) and Everett et al. (2000) also noted fire scarring of trees as young as 10 years old. This would also suggest that historic fire severity was low; a characteristic of a frequent fire regime. Even if most fires killed most seedlings, a small percentage of survivors would be all that is sufficient for a tree species to persist over hundreds of years in a stand (Agee 1994).

Conclusions "Uncertainty in surface-fire history: the case of ponderosa pine forests in the western United States" is a flawed paper. However, the authors have raised some legitimate concerns regarding fire history sampling and analysis. That being said, all of the issues they raise are resolved in the Quartzite fire history report.

One aspect Baker and Ehle have not addressed though is the importance of cross-dating. Analyzing fire dates without cross-dating will create great uncertainties about actual fire years which will lead to unreliable fire-free intervals. Most scientific journals today will not accept fire history manuscripts unless they have been cross-dated. Many of the examples that Baker and Ehle use in their paper come from studies that did not use cross-dating. Moreover, their use of hypothetical examples and limited samples collected from outside our region provides misleading and dubious results as they relate to the Quartzite planning area.

They also make the following conclusion: "The more relevant information for fire managers is how often an area should be burned, how much land area to burn each year, or how often, on average, each tree should be burned. Information about the spatial variability of fire is also needed. This information is also essential to understand the spatial ecology of fires." We agree with these conclusions and have provided all this information in the Quartzite fire history report.

The main emphasis of Baker and Ehle's paper is with the use of the composite fire-free interval. Using one statistic in isolate cannot describe in full the fire regime for a landscape. The Quartzite report presents land managers with the full arsenal of descriptive statistics to develop a sound management strategy.

The Colville National Forest should feel confident with the conclusions of the Quartzite fire history report not only due to the methods and analysis used, but also because it is founded on current, local, on-site data collection.

References

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Response 2 [4]

The recent paper by Baker & Ehle (2001) is a provocative discussion of sources of uncertainty and variability in fire history studies. With 200+ such studies completed in western North America, it is an appropriate time to take stock of methodologies from both scientific and managerial perspectives. To the extent that this paper raises the awareness of researchers about important issues regarding sampling and analysis of fire scars for fire history studies, it is a useful means of generating some good dialogue.

The paper reviews the sources of uncertainty in fire-scar reconstructions of historic fire frequencies in "nearly pure" ponderosa pine forests of western North America. The authors review some basic principles regarding the formation, sampling, and interpretation of fire scar records in long-lived tree species. They

[4] Provided by USDA USFS PNW Research Foresters David W. Peterson and David L. Peterson.

also review various estimates of fire frequency that can be derived from fire-scar records and point out potential sources of error associated with each method. Because fire-scar estimates of fire frequency contain some uncertainty and bias (and yet remain the best source of information about past fire regimes in ponderosa pine forests), the authors propose developing multiple estimates of historic fire frequencies with differing sources of error and opposite biases, and thereby create a bracketed estimate of historic fire frequency that has a high probability of containing the true fire frequency and yet is narrow enough to be useful.

One of the major points of B&E is that inferences about fire patterns are inherently scale based. This is of course true, can be readily demonstrated quantitatively, and should probably be acknowledged better in fire history studies. B&E articulate this point in great detail, although the general principles of this issue have been known for quite some time.

Another major point of B&E is that fire scars provide an imperfect record of past fires and there will therefore be uncertainty in any reconstruction of past fire history. It has long been understood that fires scar only a small percentage of trees, so methods have been developed to compensate for this problem, including deriving fire frequency estimates from fire scar records compiled from multiple trees within small, relatively homogeneous areas. Such an approach strikes a balance between the risk of recording a fire that did not affect all the sampled trees and the risk of not detecting fires that failed to leave a fire scar record in the sampled trees.

Critique of Baker and Ehle:

Although B&E identify a number of valid sources of uncertainty in fire history studies (and opportunities for future research to address these questions), there are a number of significant problems with their analysis and conclusions regarding biases in fire scar studies. These need to be identified and corrected before we can draw conclusions about the reliability of fire frequency and fire interval estimates in ponderosa pine forests. These problems include:

Failure to fully consider the importance and impact of unrecorded fires on estimates of mean fire intervals.

Incomplete assessment of assumptions behind composite fire interval estimates

Flawed inferences about time required for seedlings to develop fire resistance and improper inclusion of the origin-to-scar (OS) interval in FI estimates

Use of data and results from wetter mixed-conifer and subalpine forests to draw inferences about “nearly pure ponderosa pine forests”

Importance of unrecorded fires:

B&E acknowledge that the majority of trees are not scarred by fires, that some fires leave no scars in a stand, and that unrecorded fires is a source of uncertainty that biases individual-tree estimates toward overestimation of the population mean fire interval. They state, “The mean individual-tree FI, in a sense, can be interpreted to be a minimum fire assumption; the only trees assumed to actually have burned in a particular fire are those that contain a scar dating to the fire.” Despite this prominent (and correct) acknowledgement, B&E largely ignore this source of bias in their discussion of the composite mean fire interval and in determining “correction factors” for ponderosa pine forests. This issue is particularly important in the discussion of the composite FI.

Assumptions behind the composite FI

The mean composite FI was developed to reduce the bias toward long fire intervals caused by unrecorded fires in fire scar chronologies from individual trees and produce a better estimate of what B&E term the population mean fire interval. A composite fire history record (or master fire chronology) created from trees sampled over a small area (e.g., < 1 ha) can create a better estimate of the population mean FI by reducing the number of unrecorded fires. The composite mean FI underestimates the population mean FI only when 1) trees are sampled over a large enough area (or fires are patchy enough) to cross historic fire boundaries and introduce fire events not experienced by all the trees in the sample, and 2) the bias introduced by these partial fires exceeds the bias introduced by unrecorded fires. Therefore, the composite mean FI can be interpreted as a maximum-fire assumption only when it is based on enough trees and a large enough area to overcome biases from unrecorded events and thereby underestimate the true mean fire interval.

The best estimate of the population mean FI at any location is probably derived by creating a composite mean FI from crossdated fire-scars on trees sampled within a small, homogeneous area. Including recorded fire events from several trees minimizes error due to unrecorded fire events. Limiting the sampling to a small, homogeneous stand or patch type reduces the chance of including fire events that affected only a fraction of the area.

Interpretation and use of the OS interval

B&E assert that the period from tree establishment to the first fire scar represents a fire-free period and should be included as such in calculations of mean fire intervals for individual trees. Although it is true that this period contains at least one fire interval of sufficient length to allow development of fire resistance, it could easily encompass fire intervals during which fires were not recorded in fire scars. In fact, this is likely because unscarred trees are less likely to record fire events than previously scarred trees. Scarring is also less likely for young trees because less abundant surface fuels reduce fire intensity and duration and because small diameter stems do not sufficient disrupt heat flow to create eddy currents and elevated temperatures on the lee side of the tree (a common cause of fire scar formation).

If the purpose of the mean fire intervals from individual trees is to set a reasonable upper bound on the population mean FI, it is unreasonable to include an interval known to contain a greater likelihood of unrecorded fire events and therefore introduce a greater source of error.

B&E include the origin-to-scar (OS) interval in individual-tree mean FI calculations based on flawed interpretation of previously published data. Figure 3 shows the ages at which trees were first scarred (data compiled from five published studies). B&E interpret the mode of the frequency distribution (40-60 years) as indicating the mean time required for ponderosa pine to develop fire resistance and regenerate. This is flawed logic. Rather, the mode indicates that trees are most likely to be scarred between the ages of 40 and 60 (or 80), probably because of factors related to stem size and fuel accumulations. The relevant information for regeneration is contained in the first bar (far left), which shows that 7% of trees survived a fire during the first 20 years after establishment despite experiencing temperatures hot enough to form a fire scar. This implies that the time required for ponderosa pine to successfully regenerate (at these sites) is less than 20 years, not 50 years as concluded by B&E.

B&E also present figure 5 showing a relationship between mean individual-tree FI with and without the OS interval included. They interpret the slope of the regression (1.66) as indicating a consistent bias and conclude that the mean individual-tree FI should be inflated by a factor of 1.66 to correct for this bias. However, they have already stated that the individual-tree mean FI is an upper bound on the population mean FI because of the high likelihood of unrecorded fires. If including the OS inflates the mean individual-tree fire interval by a mean factor of 1.66, this means that the OS interval is, on average much larger (1.66 times the mean number of fire intervals) than our upper bound for the true population mean fire interval (based on known fire events). This is further evidence that most trees experience multiple fire events prior

to being scarred for the first time, and the OS interval should not generally be included in individual-tree mean FI estimates.

In conclusion, the OS interval should not be included in calculations of the mean individual-tree fire interval in most ponderosa pine systems. The OS interval typically includes an early period when thin-barked seedlings are killed by fire, a middle period (probably short) when low intensity fires scar saplings with intermediate bark thickness, and a late period when thick bark allows trees to resist scarring by fires of low to moderate intensity and duration. Unless a fire occurs during the middle period, or early in the late period, the first scar indicates the time to a moderately severe fire and is a highly biased estimate of the population mean FI.

Applying results from wetter and colder forests to ponderosa pine forests

B&E state that their focus is on "…nearly pure ponderosa pine forests, excluding mixed-conifer forests…" but include data and draw conclusions from many studies from mixed-conifer, and even subalpine forests. These wetter and colder forest ecosystems typically feature fire regimes with much less frequent, but more severe (often stand-replacing), fires. They also feature tree species that are less likely to develop and retain fire scars. While it may be appropriate to use data from a subalpine forest ecosystem to show how targeted sampling could lead to bias in the resulting mean FI estimates, it is extremely inappropriate to apply correction factors derived from subalpine forests to ponderosa forests.

Relevance for fire history studies conducted by the Wenatchee Forestry Sciences Lab:

The fire history studies conducted by the Wenatchee Forestry Sciences Lab are distinctive because:

The sample size is very large

Sample trees are well dispersed spatially

Sampling is conducted on different landforms with different inherent fire patterns

This approach captures most of the fires and much of the variability in space and time that is often missed in other fire history research. It also allows for analysis of fire patterns at multiple spatial scales, from tree to stand to watershed to larger areas of the national forest and bioregion. This will be further demonstrated by ongoing work supported by the Joint Fire Science Program.

In summary, there are several different ways to collect and analyze fire history data. B&E's preference for fire intervals based on extensive individual tree information is one way to do it. Targeting trees with multiple fire scars is another way. The value of the latter technique increases with large sample size and good dispersal of sampling. So there are multiple, equally valid approaches to fire history. B&E indicate that it is preferable to bracket final calculations of fire intervals when the appropriate data are available. However, a well-conceived study with sufficient attention to sampling strategy should be able to capture most of the variability in past fire occurrence, as well as serve as a strong basis for potential fire management strategies.

5) The choice of moving fuels toward historic conditions will not be attained if slash is created. Slash is not a historic condition. A return to historic conditions would mean that stands experience frequent fires, yet the Forest is not proposing to return to historic fire frequencies. The goal of trying to recreate historic fuel conditions serves no purpose without the context of frequent fire. The use of historic range of variability is inappropriate as a stated goal since that is not what is being proposed here, but rather a management system that will allow periodic extraction of commercial timber.

Response

The Purpose and Need explains that the objectives are to improve conditions and not replicate historic conditions. Prescribed fire would be used to reduce naturally occurring dead and down fuels, reduce ladder fuels, prepare sites for planting of seedlings, reduce post-harvest slash, improve big game forage conditions and reduce stocking levels.

6) The Quartzite DEIS contains inadequate presentation and discussion of forest-wide prioritization of areas proposed for fire-risk reduction treatment. If Forest Service assessments of the magnitude of the post-fire suppression situation are accurate, such prioritization is critical, due to the limited resources available for treatment.

Response

The Forest is currently proposing a separate Forest wide project that prioritizes fire-risk reduction treatment in the Wildland Urban Interface.

7) The DEIS contains no discussion whatsoever of the wildlands-urban interface (WUI), and contains extremely limited discussion of the concept of the interface between public and private land, in spite of the fact that it purports to be a proposal to reduce the risk of severe wildfire and in spite of the fact that the National Fire Plan mandates that the fire-risk reduction work in the WUI be the top priority in fire-risk reduction actions.

Response

While the WUI is an intrinsic component of the Project Planning Area, the Purpose and Need does not isolate the WUI, but instead, strives to develop forest matrix, patches and corridors that are consistent with fire landscapes across the National Forest System lands within the Project Planning Area, regardless of proximity to urban areas. The project recognizes the National Fire Plan, and shares objectives where they coincide with the Quartzite P&N. Also, see the response to comments #1 and #5 in this section.

8) The Quartzite DEIS contains inadequate discussion of the inter-related components of fire-ignition potential, fire intensity, and fire severity. There is no discussion of how a reduction in fire-severity risk often leads to an increase in the fire-intensity risk and how an increase in fire intensity can affect the speed at which a fire moves across the landscape, which will, in turn, affect the ability of the fire to be contained before it reaches an adjacent area with a high-severity risk.

Response

DEIS pages 3-60 thru 3-66 describe the existing fuel inventory and the reference role of fire for each of the four biophysical environments found within the analysis area. DEIS pages 3-80 thru 3-91 describe the effects each alternative would have on fuels and fire behavior in the context of risk, frequency, severity, and intensity, and their relationships. DEIS page 3-91 notes:

> *All alternatives show an increase in fuel loading from stand treatment. The size class that will remain on site will be the 3-inch and larger material. It is anticipated that less than 10 percent of these fuels will be consumed during jackpot burning. These larger fuels will not be continuous and do not significantly affect fire spread. For fuels reduction activities the 0 to 1 inch materials are specifically targeted. These fuels significantly contribute to fire spread. The reduction of the 0 to 1-inch fuels will break up the continuity stopping or slowing rate of spread and reducing flame lengths.*

9) Because actions proposed in the National Fire Plan have not been subjected to the NEPA process, it is imperative that site-specific proposals, such as the DEIS for the Quartzite project provide the public with an understanding of how the actions proposed in this project fit into the larger effort to remedy the effects of fire suppression through more commercial logging. The public must also be provided with the information necessary to assess the chances of success of various "treatments" designed to reduce fire risk.

Response

See the responses to comments #7 and #3 in this section. Also see the response to comment #11 in section D.9 Timber/Logging/Silviculture.

10) While there is brief discussion of how many acres might be burned per day within the PPA and restrictions on burning that might be imposed by weather and state regulation, there is no discussion of how many burning days it will take to accomplish all the prescribed burning, nor is there discussion of the substantial increase in fire-ignition risk that would result if areas were logged, but not burned.

Response

It is difficult to determine on how many burning days it will take to accomplish all the prescribed burning acres because of all the variables involved. Variables include prescribed fire project priorities; smoke issues, resource availability, and environmental parameters such as RH and fuel moisture.

There would be a slight increase in fire ignition risk in areas where road building occurs and allows access to the public. However, wildlife road-closure mitigation that installs gates immediately after construction, would significantly reduce the threat. Also, the preferred alternative, Existing Roads (K), proposes to build no new roads. In addition, there have been only 3-recorded human caused fires in the PPA; the last one occurred August 27, 1970.

11) There is no substantiation for the conclusion that the risk of severe fire would outweigh the increase in ignition potential that would result from exposure of the forest floor and increased human access to stands following logging.

Response

The Quartzite DEIS does not make the conclusion stated in the comment. Also, see the response to comment #10.

12) There is no substantiation for statements such as that on page 3-89: "stand treatment will bring an immediate increase in risk from damage to wildfire from slash but the long term effects outweigh the short-term risk."

Response

The sentence that follows this statement in the DEIS substantiates this predicted effect:

> *The combination of stand treatments, which reduces ladder fuels, and prescribed fire, which reduces stand treatment created slash, ladder fuels and dead-down material, will contribute in bringing the planning area back to its historic level of fuel loading. It will also move the planning area back toward its historic condition.*

Short term means the time between stand treatment and fuels treatment. Typically a stand is treated and the slash is allowed to cure for one summer prior to prescribed fire treatment. Risk is increased until prescribed fire treatment.

13) There is no substantiation for the conclusion in the DEIS that the short term increase in fire ignition potential would be worth the long-term reduction in fire ignition potential.

Response

See the response to comment #12.

14) The Quartzite DEIS lacks adequate discussion of the fire return cycle in the PPA. The Quartzite Watershed Analysis lumps 80% of the project area into one category, "frequent," which is defined as 4-95 years. Without further breakdown of this category, it is impossible to know how much of the analysis area varies how widely from historic condition. Fire suppression policy has been in place for less than 100 years, therefore much of this 80% may be well within historic fire-related condition. The disparity between current and historic conditions is exponentially less in stands with a 95-year return rate when compared to stands with a 4-year return rate.

Response

Please refer to DEIS pages 3-53 and 3-54. This section goes over in detail the fire history study conducted by the Pacific Northwest Research Station, Wenatchee Forestry Sciences Laboratory.

15) There is no discussion of the fact that in many cases, a stand's natural fire cycle may be such that the fire suppression era has had little or no effect on the stand's current structure. In Many forest ecosystems, for example in the high elevation lodgepole pine and fir forest in the West, "stand replacement" blazes are the norm. (Cascadia Fire Ecology Education Project Vol. 2, Spring 1997, p.3)

Response

Please refer to pages 3-62 through 3-66 of the Quartzite DEIS. For BPE 4 – Cool Mesic Douglas-fir grand fir/forb shrub it states, "*Where stand-replacing fires occurred on a more regular basis, not enough time has elapsed since the onset of effective fire suppression to cause any marginal increase in within-stand fuel loading between historic and current levels*".

16) The DEIS does not discuss the existing fuel breaks created by the ski runs in the 49 Degrees North ski area and how these fuel breaks may be serving to reduce the risk of fire in the area.

Response

While these ski-run fuel breaks reduce fire risk on the east facing slopes of Chewelah peak, they are located outside the Quartzite project area, on the east side of the ridge that separates the Colville River watershed from the Pend Oreille River watershed. They do little to protect the uninterrupted fuel continuity found on the dryer west facing slopes lying between the Colville River Valley and Chewelah Peak. Because of this lack of influence, they were not included in the discussion.

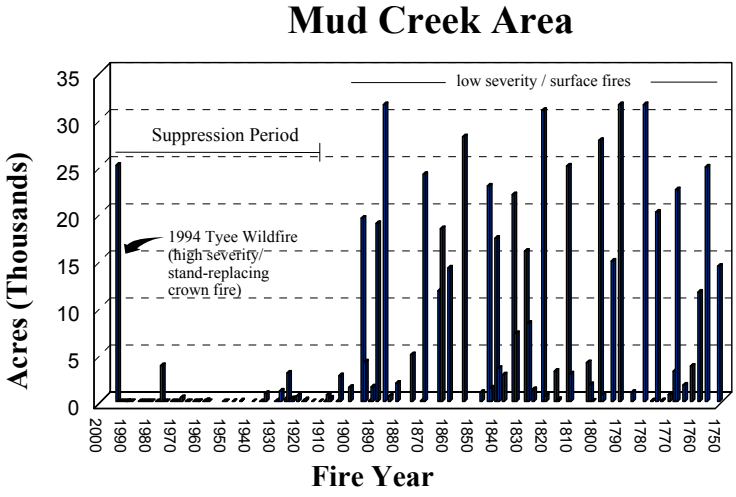
17) The report *(Report to the Colville National Forest on the Results of the Quartzite Planning Area Fire History)* states that 1920 is the "cutoff date for historical analysis because of an abrupt change in fire frequency and size after that date." Yet the Conclusion chapter of the document makes clear that one of the purposes of the document was to compare pre-1920 fire history with post-1920 fire history, stating that "in many instances,

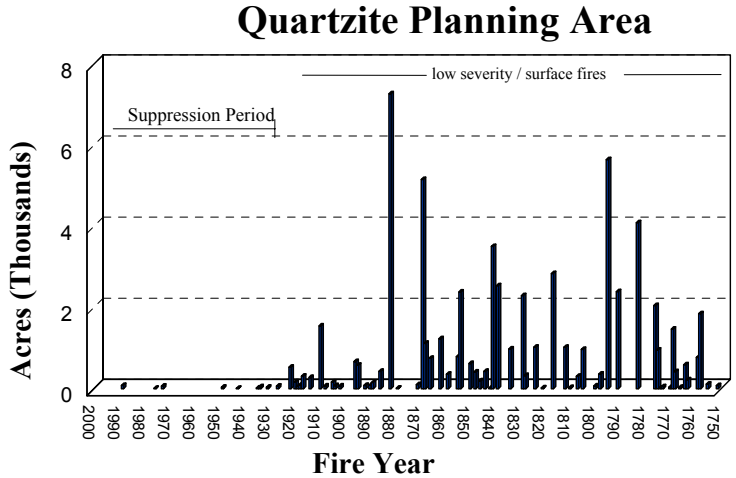
the Quartzite Planning Area is out of synchrony with historic MFFIs by a factor of 10." How can this be known without an analysis of post-1920 fire history to which the pre-1920 fire history is compared?

Response[5]

We did not ignore fire after 1920 and did analyze its occurrence and extent. The reader has only to look at figures 2 and 3 on page 30 to see this analysis. Our statement about the Quartzite Planning Area being "out of synchrony with historic MFFIs by a factor of 10" is true based on our fire scar samples. However, our intent in the Quartzite Report was not to "compare pre-1920 fire history with post-1920 fire history" as the submitter suggests. Our purpose was to present the Colville National Forest with information on the historical fire regime of the Quartzite Planning Area to provide them "insight into the kinds and patterns of vegetation that likely existed and" to provide "land managers with information that can be used to create, restore, and maintain sustainable vegetation patterns" (Quartzite Report, pg. 5). Since suppression was successful and ongoing after 1920 and the Colville National Forest already had information on post-1920 fires in this area, we chose not to elaborate on the suppression era.

18) Page 30 includes a chart that indicates a dramatic reduction in acres burned in the suppression years. One would assume that the increase in fuel loading in the area occurred gradually over the years. Therefore, if fuel loading were gradually increasing the risk of severe fire in the study area, one would expect to see an upward swing in the number of acres burned of fires ignited in the study area; yet we see no such trend. Why is this the case?





Acres burned from 1750 to present. Pre-suppression fires were predominantly low-severity surface fires. The 1994 Tyee fire, a portion of which burned the Mud Creek study area, was a high-severity stand replacement fire and occurred decades after fire suppression began. Because of suppression, fuel loadings and arrangements were conducive to this stand-replacement event.

Response[6]

Successful fire suppression is the main factor in the limited numbers of acres burned after 1920 in the Quartzite Planning Area. When a fire has occurred in Quartzite after 1920, suppression efforts have so far been able to postpone the risk of stand replacing fire. It would be quixotic to believe that this trend can continue indefinitely. One only has to look at the part of the Mud Creek area (Everett et al. 2000) that burned in the 1994 Tyee fire on the Wenatchee National Forest as one of many examples where the risk of stand-replacing fires due to increasing fuel loadings was

[5] Provided by USDA USFS PNW Wenatchee Forest Sciences Laboratory
[6] Provided by USDA USFS PNW Wenatchee Forest Sciences Laboratory

delayed only so long by successful fire suppression (see figure at right). So far, containment efforts have been successful in Quartzite but as the Tyee fire example shows, catastrophic stand-replacing fires can occur in an area of historically frequent/low-intensity fire because of decades of fuel accumulation.

The Quartzite area is on too small a scale to see an upward swing in numbers of acres burned by severe fire. However, if one looks on a regional scale, they will see this upward trend in severe-fire acres burned. In the western United States, the fire seasons of 2000 and 2002 dramatically show this point.

References

Everett, R.L., R. Schellhaas, D. Keenum, D. Spurbeck, and P. Ohlson. 2000. *Fire history in the ponderosa pine / Douglas-fir forests on the east slope of the Washington Cascades*. For. Ecol. and Mgmt.129: 207-225.

19) The report does not discuss the number of fires that have been ignited in the study area since suppression began or the total acres burned in such fires. This represents a glaring information gap in the study. For if a number of fires have occurred in the Quartzite, as we know they have, information on the severity of those fires would reveal if the report's conclusion of an exponential increase in fire severity risk was valid.

Response[7]

The report does not discuss the post-1920 fire occurrence in the text, however that information is displayed by Figures 2 and 3 showing fire extent up to the present. Again, post-1920 fire numbers and extents were already known so we concentrated on providing pre-1920 fire history information.

We were able to draw conclusions about some historical fire severities based on size of tree when first scarred although we do not have knowledge of fire severity for all fires. Even if it were possible to compare pre and post-1920 fire severity based on the data we collected, it would not be a valid appraisal. Post-1920 fires have been suppressed preventing the culmination of their true potential. The Quartzite Report does not try to quantify risks of severe fire and does not conclude that there is an exponential increase in severe fire risk. We do stand by our conclusion still that this area is predisposed to "fires that are of greater severity than those that occurred during the past several centuries". The predisposition toward increased severe fires in the Quartzite area is based on current arrangements of vegetation only, not on past fire effects. Horizontal and vertical connectivity creates a greater risk of catastrophic stand replacement fires (Agee 1994, Arno et al. 1997, Covington and Moore 1992, Everett et al. 2000, Everett et al.1996, Mutch 1994). The Mud Creek study area chart displayed above also exhibits the potential for destructive fires within similar successionally advancing forests.

References:

Agee, J. K. 1994. *Fire and weather disturbance in terrestrial ecosystems of the eastern Cascades*. In: Volume III Assessment, Paul F. Hessburg, Science Team Leader and Technical Editor; Eastside Forest Ecosystems Health Assessment, Richard L. Everett, Assessment Team Leader. General Technical Report PNW-320, U.S. Dept. of Agriculture, Forest Service, Pacific Northwest Research Station, Portland Ore.

Arno, S.F., H.Y. Smith, and M.A. Krebs. 1997. *Old growth ponderosa pine and western larch stand structures: influences of pre-1900 fires and fire exclusion*. USDA Forest Service, Intermountain Res. Sta., Research Paper, INT-RP-495. 20 p.

Covington, W.W. and M.M. More. 1992. *Post-settlement changes in natural fire regimes: implication for restoration of old-growth ponderosa pine forests*. In: Proc. Conf. On Old-Growth Forests in the Southwest

[7] Provided by USDA USFS PNW Wenatchee Forest Sciences Laboratory

and Rocky Mountain Regions. GTR-RM-213. USDA Forest Service, Rocky Mountain For. And Range Exp. Station, Fort Collins, CO, pp. 81-89.

Everett, R.L., R. Schellhaas, D. Keenum, D. Spurbeck, and P. Ohlson. 2000. *Fire history in the ponderosa pine / Douglas-fir forests on the east slope of the Washington Cascades*. For. Ecol. and Mgmt.129: 207-225.

Everett, R.L., R. Schellhaas, T.A. Anderson, J.F. Lehmkuhl, and A.E. Camp. 1996. *Restoration of exosystem integrity and land use allocation objectives in altered watersheds*. In: McDonnel, J.J., J.B. Stribling, L.R. Neville, D.J. Leopold (Eds.), Proc. American Water Resources Association on Watershed Restoration Management, Herndon, VA, pp. 271-280.

Mutch, R.W. 1994. Fighting fire with prescribed fire – a return to ecosystem health. Journal of Forestry, 92:11, 31-33.

20) The report *(Report to the Colville National Forest on the Results of the Quartzite Planning Area Fire History)* fails to included the factor of weather and how weather influenced fire cycles in the study area.

Response[8]

The role of weather is beyond the scope of our report. However, we did not notice any major deviations in weather effects on tree ring growth over the past 300 years. Weather is a broad subject encompassing short time frames and attributes like temperature, precipitation, wind, solar radiation etc. and is not known and documented except in the 20th Century, the time when fires were suppressed. We are currently collaborating with scientists at the University of Washington on the role of climate on historic fire at different spatial scales.

21) The Quartzite DEIS contains no discussion of the variety of ownership of lands burned each year. The DEIS contains no discussion of the fire-risk factor of private and state land within the PPA and how the condition of non-federal land will affect the efficacy of proposed fire-risk reduction treatments on federal land.

Response

This project recognizes the National Fire Plan and shares objectives where appropriate. The PPA does not address risk on private land nor manage the types of fuels treatment that occur on these lands. The Forest is currently proposing a Forest wide project that prioritizes fire-risk reduction treatment in the WUI.

The information that we do have says that most burning occurring on private land within the Project Planning Boundary is pile burning. This type of burning is private individuals or private timber companies burning landings or yard debris. Jackpot or underburning is not a widely accepted practice on private lands.

Any stand treatments and fuels treatment from this project occurring within a quarter mile of private land may help reduce the risk of a wildfire leaving federal land to private land. In addition, lower fire intensity would result and would create a defensible space for firefighters to protect private property.

22) The Quartzite DEIS does not contain adequate presentation or discussion of available science regarding the efficacy and/or wisdom of conduction management activities designed to reduce fire risk, particularly commercial logging, in roadless areas. These downsides to mechanical treatments should be of particular concern in context of managing roadless areas, where ecological values are known to be especially high.

[8] Provided by USDA USFS PNW Wenatchee Forest Sciences Laboratory

Response

No area within the *unroaded area* is more than one mile from a road, and conditions within this area are much different than those found within the large unroaded tracts associated with roadless areas.

D.4 General

1) Why is Betts Meadows listed as a key issue? If you give this land special status, and deal with the surrounding land differently, it will establish a future precedent. In fact, special treatment of this area may require a Forest Plan amendment. The decision for management of the area around Betts Meadows must be based on existing laws, regulations, and management direction.

Response

As noted on DEIS page 2-1, the National Environmental Policy Act of 1969 directs all agencies of the Federal Government to study, develop, and describe appropriate alternatives to those proposed actions involving unresolved conflict. Public comment generated three key issues involving unresolved conflict, one of which was Betts Basin. Consequently, three of the seven alternatives analyzed provide the decision maker with the opportunity to defer proposed activities in Betts Basin at this time.

2) I cannot track the logic for selecting the Existing Roads Alternative as the Preferred Alternative. All the alternatives (except F) are within the standards and guidelines of the Forest Plan and are therefore feasible for implementation. From a process and profession viewpoint, Alternative B is just as defendable as Alternative K. Most differences are minor or insignificant, and are still within existing standards or adequately mitigated. Why not go for the alternative that is the "best recommendation for managing this particular piece of ground at this point in time" and best achieves the objectives discussed in the Purpose and Need?

Response

The Existing Roads Alternative (K) was identified as the preferred alternative in the DEIS because it would implement critical vegetation and wetland enhancement activities while maintaining valued watershed characteristics. After reviewing public comments generated during scoping, and considering the concerns and unresolved conflicts identified with the key issues, the Forest Supervisor recommended the Existing Roads Alternative (K) as the Agency's preferred alternative.

Project decision rational we will be thoroughly discussed in the record of decision.

3) I do not feel the selection of Alternative K as the Preferred Alternative is adequately supported or justifiable. The selection of Alternative K should be based on new information or for specific reasons that track throughout the analysis and the decision process. Alternative K does not resolve the Key Issues. Logging is still going to occur in the Betts drainage, the "unroaded" area is still going to be violated by logging, and it treats less of the area for forest health. Why then has Alternative K been selected as the preferred?

Response

See the response to the previous comment.

4) Alternative K will result in higher short and long-term costs of vegetative management including logging, prescribed fire, and commercial and pre-commercial thinning, It will also increase the long-term risks of catastrophic fire and reduce the capability of implementing other ecosystem health improvement projects. Although all the action alternatives show a positive cost benefit, Alternative K is the least feasible alternative except when sawlog values are high. We do not feel that your reasons for selecting the preferred alternative are justified and by selecting Alternative K you may have created more unresolved concerns and issues than you resolved.

Response

Your comments are noted. Please see the response to comment #3 in this section.

5) On page 3-179 it states "support for the timber industry is strong and relatively unopposed by any locally organized environmental groups". Then you go on to reference the organized environmental groups in neighboring counties and that they are opposed to logging and/or road building. We find these statements to be misleading. What do you mean by "relatively unopposed"? What "locally organized environmental groups"?

Response

The "support for the timber industry…" quote originates from the *Social Assessment for the Colville National Forest CROP Program* (Findley, et al. 2000). This focused social assessment details the social structure of the northeast Washington tri-county area and of the individuals and organizations in greater Spokane interested in forest policy. Stake-holder groups, the Forest Service, and affected Native American tribes are described from data collected in personal interviews.

Findlay, et al uses the term "relatively unopposed" to provide insight into the unique community circumstances, forest dependence, and social grouping distributions that occur within the assessment area.

The assessment identifies two organized environmental groups located in the tri-county area: Kettle Range Conservation Group; and Pend Oreille Environmental Team.

References:

Findley, Angela J.; Carroll, Matthew S.; Blatner, Keith A. 2000. Social assessment for the Colville National Forest CROP program. Gen. Tech. Rep PNW-GTR-499. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 106p.

6) The purpose of this section (3.1) is to give the public quantified descriptions of distinguishing features for the Quartzite project area; however, the section is far to generalized and riveted with interpretations made by the Forest Service. This limits the public's ability to assess the project.

Response

As stated on DEIS pg. 3-1, "this section provides a review of information contained within the *Quartzite Watershed Scale Ecosystem Analysis Report* and highlights the dominant features and ecological processes of the watershed." DEIS pages 3-6 thru 3-214 provide quantified descriptions of distinguishing features for the Quartzite project area.

7) The Quartzite DEIS inaccurately refers to the Vegetation Alternative as Alternative K, which in actuality is Alternative F (DEIS p. 3-165). Alternative K is the Preferred Alternative.

Response

Thank you for recognizing the misprint. The correction has been made in the FEIS

8) The two photos at the beginning of Chapter 1-1 appear to be digitally doctored make the 1998 photo appear darker. This is shown by the open, treeless area just left of center being of a darker color being much darker than in the first photo, even though it has less trees. Were the grazing intensities different between the two photographs?

Response

No image manipulation occurred. Livestock grazing was absent for both time periods.

9) The vegetation management does not describe what is meant by the term "developing forest matrix"

Response

As stated in DEIS Section 1.3 (The purpose and Need for the Proposed Action), the objective of vegetation management proposals is to improve ecosystem integrity by moving the vegetation toward the natural range of variation by developing forest matrix, patches and corridors that are consistent with fire landscapes. *Land Mosaics: the ecology of landscapes and regions* provides definitions for matrix, patches and corridors:

- *Matrix*: the background ecosystem or land-use type in a mosaic, characterized by extensive cover, high connectivity, and/or major control over dynamics.
- *Patch*: a relatively homogeneous nonlinear area that differs from its surroundings.
- *Corridor*: a strip of particular type that differs from the adjacent land on both sides (Forman, 1995).

"Developing forest matrix, patches and corridors that are consistent with fire landscapes" means the proposed action is designed to move the current mosaic of forest matrix, patches and corridors away from the more homogenous, matrix dominated mosaic associated with fire suppression landscapes, toward a mosaic which better represents conditions consistent with historic frequent low intensity fire landscapes.

In many instances, the Quartzite Planning Area is out of synchrony with historic mean fire frequencies by a factor of 10 (Schellhaas 2000). Putting spatial solutions in place permits us to predict with some confidence that biodiversity, soil, and water will be sustainably conserved for future generations (Forman 1995).

References:

Forman, Richard T. T 1995. Land Mosaics : the ecology of landscapes and regions. Cambridge University Press, Cambridge.

Schellhaas, R. Spurbeck, D. Ohlson, P. Camp, A.E. and Keenum, D. 2000. Report to the Colville National Forest on the results of the Quartzite planning area fire history research. PNW Research Station, Wenatchee Forestry Science Lab, Wenatchee, WA. 78 p.

10) Livestock was not listed as a management activity in riparian corridors. Will the project exclude livestock from all riparian corridors?

Response

DEIS page 3-207 notes that the only Forest Service allotment within the project area (the Cottonwood range allotment) is vacant, and there are no near future plans to re-activate this allotment.

11) The range of decisions to be made is too narrow and does not include enough alternative methods of vegetation control, particularly natural thinning through competition and natural thinning through invertebrates and microorganisms.

Response

The seven alternatives analyzed by the DEIS present the decision maker with a full range of effects on the resources associated with the key issues, including a variety of activity modifications to accommodate the vegetation resources associated with the Forest Health issue. Thinning through competition and invertebrates and microorganisms has been ongoing for seven decades, and more recently has moved to the overstory, where in the absence of historic disturbance, these agents are causing mortality in large old trees. The No-Action alternative and significant portions of the area in two other action alternatives perpetuate these thinning processes.

12) The document does not distinguish between natural disturbances and man-caused disturbances, which have no counterpart in ecosystems. There is no advantage to the ecosystem to having roads as they do have no natural component.

Response

Section 1.3 of the DEIS (Purpose and Need) notes that road corridors create habitat for noxious weeds that displace native plants. They also have introduced change to a variety of wildlife habitats. The connectivity of wildlife travel corridors has been disrupted in many places where roads cross riparian areas. In addition, road access has fragmented seclusion habitat for large home range vertebrates.

Because road management is a key issue that guided alternative development, road associated disturbances are analyzed in a variety of resource areas throughout the document. The decision maker will have the opportunity to choose between the disadvantages and advantages roads provide the ecosystem.

13) NEPA obligates federal agencies to ensure the scientific integrity of an EIS. See 40 C.F.R. § 1502.24 & 1506.5(a)-(b). For example, NEPA requires that agencies "insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements. They shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions relied upon in the statement . . ." 40 C.F.R. § 1502.24. Furthermore, the information presented in an EIS must be of "high quality" and include "accurate scientific analysis." 40 C.F.R. 1500.1(b;) Idaho Sporting Congress v. Thomas, 137 F.3d 1146, 1151 (9th Cir. 1998.) NEPA also requires that an EIS provide the public with comprehensive information in order to give the public an opportunity to scrutinize the document's underlying assumptions, conclusions, and proposed actions in a meaningful way. Furthermore, there is not so much as a bibliography within the DEIS that lists the documents and research that serve as a foundation for findings and conclusions outlined in the DEIS. Clearly, this does not meet the requirements of NEPA.

Response

As noted in DEIS Chapter 4 - *List of Preparers*, "interdisciplinary team members were responsible for analyzing the effects the alternatives have on area resources." The agency insures the professional/scientific integrity of the discussions and analyses in the EIS through the qualifications of

interdisciplinary team members. The interdisciplinary team member qualifications listed on DEIS pages 4-1 thru 4-2 include both educational training, and professional experience.

The effects displayed in the DEIS are a digest of interdisciplinary team member reports. When other sources were relied upon for conclusions, they are cited in these reports, which are included in the project analysis file. Other references are included in responses in this appendix to the FEIS.

14) Alternative K fails to meet the stated purpose and need for the proposed action: the extent overstory removal and maximum size of trees to be logged under alternative K exceeds the restriction on commercial logging that would be imposed in a valid restoration project.

Response

The P&N strives to improve, not restore conditions. Also, see the response to comment #9 in this section.

15) Alternative K will fail to meet the purpose and need for the proposed action because it does not address the impacts of grazing on stand structure and fire risk. Until the significant adverse impacts of grazing are addressed, efforts to restore stand structure to historic conditions will fail. Consequently efforts to reduce the risk of severe wildfire will fail as well.

Response

See the response to comment #10 in this section.

16) The DEIS analyzes no alternative that neither logs the unroaded area nor builds any new roads. This is the only action alternative that would address the concerns of citizens opposed to the construction of new roads on USFS land and opposed to logging of roadless areas by any logging method.

Response

The context for the majority of the road-averse comments received during scoping was limited to the unroaded area. The project's key issues are a reflection of this public input. Alternatives designed around this key issue, accordingly focus road construction modification on the unroaded area. With six action alternatives and one no action alternative, the decision maker is presented with a reasonable range effects on resources associated with the key issues.

17) The primary reason citizens responding during scoping with concerns about the roadless area do not want roads in unroaded areas because they do not want logging in unroaded areas. Though Alternative K throws in the carrot of "no new roads," it cannot possible be considered a serious response to the many citizens and organizations that submitted comments during scoping indicating that they wanted no logging in the unroaded area.

Response

The No Action Alternative (A), the Wildland Alternative (E) and the Wildland Fire Alternative (J) would not "log" in the unroaded area. The Existing Roads Alternative (K) incorporates the concerns of other citizens who value forest health, and fuel reduction.

18) The DEIS does not analyze a restoration-only alternative. While this project itself is portrayed as restoration, it is clear that, though it is not openly stated, that a commercial timber sale is a driving dynamic behind this proposal. The lack of thresholds for maximum tree size removal, overstory removal, road construction and other actions are inconsistent with the principles of true restoration.

Response

The objective of vegetation management proposals is to improve ecosystem integrity. Scoping notices mailed in May of 1999 clearly identified the timber sale activities included with the proposed action. Also, see the response to comment #9 in this section.

19) In regards to future impacts on private lands, The DEIS indicates merely states that these would be difficult to predict. With the percentage of land in the PPA under private ownership, cumulative effects analysis must include an assessment of foreseeable actions on private lands. What are the current trends in private land use? Is there reason to expect a change in these trends? Past FPA's submitted for logging of private lands would serve as a useful tool for predicting future actions on private land within the PPA.

Response

The streamflow regime discussion in the Summary of Water Effects section of the DEIS (pg. 3-47) states: "Cumulative effects of timber harvest are difficult to predict to due to the variability of harvest on private lands within a watershed. Harvest in the recent past on private land in the Betts, Woodward and West Fork subwatersheds essentially preclude significant activity for the next 10-15 years. This recent activity is captured in the ECA calculations, and by the design of the alternatives. Future projections of timber harvest on private land within the Sherwood and Thomason drainages indicate any increases in streamflow would be inconsequential to channel morphology."

As stated in the DEIS, Washington State Forest Practices Applications (FPA) were used to calculate ECA, and to predict future actions on private land.

20) Page 3-91 states that "it will take subsequent treatments to get the analysis area to the desired future condition," yet these foreseeable future activities are not included in the cumulative effects analysis.

Response

The Forest Service has not identified any actions for the area in the foreseeable future. To include all proposals ever considered would overestimate future cumulative effects on the resources.

21) Given the scientific nature of the document *(Report to the Colville National Forest on the Results of the Quartzite Planning Area Fire History)*, a much more extensive summary of the report should have been provided in the DEIS.

Response

While a separate DEIS section is not dedicated to this report, its information is distributed throughout the document, especially within the affected environment and environmental consequences sections. See DEIS pages 3-53 and 3-54.

22) The DEIS contains no information on the total number of board feet to be logged for any of the alternative, making it impossible for the public to gain an understanding of the scale and magnitude of the proposal.

Response

The scale and magnitude of the proposal are well documented throughout the DEIS. Section 2.2.1 of the DEIS identifies the scope of activities (timber sale acres, prescribed fire acres, road construction miles, riparian management acres, and number of stream crossing improvements) for each alternative. DEIS Appendix B depicts these activities in both spatial and tabular format.

Only one resource uses timber volume to predict effects. DEIS Section 3.4.6 (Social and Economic Resources) expresses timber volume as revenue dollars in the timber sale cost-revenue analysis. Volume estimates are included in the analysis file, and are presented here for those who measure the scale and magnitude of proposals in board feet.

Alternative	Million Board Feet
No Action (A)	0
Proposed Action (B)	40.28
Upper Cottonwood (C)	27.56
Wildland (E)	16.26
Vegetation (F)	51.60
Wildland Fire (J)	16.26
Existing Roads (K)	35.92

D.5 Hydrology

1) Any loss of canopy cover should be avoided. The town of Chewelah has flooded in the past, and keeping forest cover intact is the best way to capture and retain moisture in the mountains above the town. The FS down played rain-on-snow events, however with large amounts of canopy removal will come more flooding.

Response

The cumulative effects of canopy removal (timber harvest) on water yield are considered in the Equivalent Clearcut Acres (ECA) Model. This aspect of the project is discussed on pp. 30, and 71-75 of the Hydrology Report and on pages 3-30 of the DEIS. The FEMA Flood Insurance Study, 1986 describes seven significant floods events have occurred since the turn of the century--1904, 1927, 1953, 1956, 1960, 1974. Another flood event occurred in 1997 after the report was published. The FEMA study suggests that significant flooding along Chewelah Creek probably occurs an average of every 15-20 years. This is consistent with the flood data showing that the 1974 event falls between a 10-year peak discharge and a 50-year peak discharge. (Quartzite Hydrology Report, p. 18) Five of these floods of record took place prior to the large scale timber harvesting that later occurred in the Chewelah Creek watershed. While timber harvest may increase the risk of flooding, it should not be identified as the sole cause of flooding. Rain-on-Snow weather events are described on pp. 4-5 of the Quartzite Hydrology Report and pp. 3-47 of the DEIS. This aspect of the project was analyzed using general precipitation zones (Map 2, Quartzite Hydrology Report). These zones are based on the average amount of snow on the ground in early January relative to the amount that could reasonably be melted during a model storm event. Subsequent analysis of the action alternatives used the amount of timber harvest proposed within each precipitation zone as an indicator of the risk of increased flooding during a rain-on-snow event.

2) The dates of stream flow for Chewelah Creek do not mach the dates used for precipitation. In 1974 and 1996 the entire eastern Washington Region was hit by large amounts of snow and subsequently large floods. It would be far more helpful in the FEIS if the FS matched the stream flow data to precipitation.

Response

Monthly streamflow data does not exist for any of the streams within the Quartzite Analysis Area. Thomason Creek had annual peak flow data collected between 1954 and 1973. Annual peak flow data however, does not show the correlation between monthly precipitation and monthly streamflows. The nearest known source of monthly streamflow data was USGS gauging station #12407700 on Chewelah Creek. This gauging station operated between March 1957, and September 1974. The U.S. Geological Survey ceased operations at this site in the fall of 1974. The closest source of precipitation data was the U.S. Forest Service gauge on top of Chewelah Peak. This gauge has been in operation from 1979 to the

present. The Forest Service precipitation gauge is not only on the boundary of the Quartzite Analysis Area, it is also located on the edge of the hydrologic divide for the Chewelah Creek watershed where the stream gauging station was located. Even though the U.S.G.S. stream gauging station and the U.S.F.S. precipitation gauge where not collocated on the same site or covered the same years, their combined data satisfactorily show the correlation between precipitation inputs and streamflow discharge as described on p 3-27 of the DEIS. This general precipitation/streamflow pattern is common for the snow-dominated watersheds in the Okanogan Highlands of northeastern Washington. In areas where local data is not available, it has to be transposed from similar sites located in other geographic areas. We were fortunate to have data this close to the area we were analyzing.

3) The DEIS identifies a series of Best Management Practices (BMPs) designed, in part, to reduce the erosion from the logging activities of the Quartzite project. The Forest Service's reliance on these BMPs, however, is based on "past observations" of similar projects. We find nothing in the DEIS to support the Forest Service's conclusion that the proposed BMPs will be adequate in the Quartzite project. Page 3-38 of the DEIS states that "monitoring item 25B is the mechanism for monitoring BMP's," yet provides no information on what past monitoring has indicated regarding the effectiveness of BMPs. Without meaningful monitoring of BMPs, there is no means of evaluating their effectiveness.

Response

"The Colville National Forest has developed plans to monitor Forest Plan implementation, monitor the effectiveness of management practices implemented under the Forest Plan, and validate the assumptions and models used in planning. The Forest prepares an annual Monitoring and Evaluation Report to document the results of this monitoring." (DEIS pp. 2-31) This report is available upon request from the Colville National Forest, Supervisor's Office. Specific monitoring guidelines for the Quartzite Project are addressed on pp. 2-32 and 2-33 of the DEIS. In addition to these, each BMP selected for the Quartzite project includes a section that describes the who, what, when, and where for the monitoring phase of each BMP to be implemented. (See Analysis File, Quartzite BMPs)

4) The discussion of impacts of ORVs contains little or no discussion of the results of monitoring of the impacts of ORVs. The effectiveness of BMP's which rely on road closures cannot be known without proper monitoring to determine whether the closures themselves are effective.

Response

Quartzite project area road closures will be monitored. "Monitoring: Forest and Ranger District resource and watershed personnel will evaluate implementation and the effectiveness of closures on a case-by-case basis." **Quartzite BMP, PW-8, Management by Closure to Use (Seasonal, Temporary, and Permanent), pp. 28, Quartzite BMP Analysis File.** Recent informal monitoring by district personnel indicates that road closure devices installed within the last 5 years effectively discourage all but the most persistent 4WD, ATV and ORV users.

5) The Colville National Forest does not have sufficient funds to maintain its current road network. The lack of maintenance results in water quality degradation. The CNF cannot insure clean water due to the existing lack of maintenance, and adding additional roads will only compound the problem. What is the state of road maintenance within the PPA? Was this factored into the DNR erosion model?

Response

Roads within the analysis area are maintained by a combination of federal, state, county, and private landowners. Each road segment receives maintenance based on the transportation management objectives of the individual or agency responsible for that particular road segment. The statement that

probably most closely describes the state of road maintenance within the PPA is "highly variable". Forest Service roads receive maintenance based upon the "maintenance level" assigned to each road. The Road Management Objectives (RMO's) contain this information by road segment. In addition to this periodic routine maintenance conducted by the Forest Service, the timber sale purchaser(s) is responsible for maintaining Forest Service roads used during the life of the timber sale contract. The DNR erosion model does not consider road maintenance. It uses geologic parent material, stream class, number of crossings, road width, road segment length within 200' of the stream, vegetative cover on cut and fill slopes, road surfacing material, and traffic levels to describe the condition of existing and proposed roads in relation to the estimated sediment delivered to streams. This information was collected in the field through a road condition assessment survey before it was entered into the model. See D.7 Hydrology Response #6 for additional information.

6) Statements such as "road sediments probably do not present a significant impact of streams except in localized areas" do not meet the high-quality science requirements of NEPA and cause concern that the Forest Service really does not know the level of increase in sediment delivery can be expected from the proposed logging.

Response

These "localized areas" refer to road segments adjacent to riparian areas and stream crossings. These areas were identified in the field using a road condition assessment survey and analyzed in the DEIS using the DNR Erosion Model. An explanation of the parameters used in the model are located in the DEIS on pp. 3-12. The model results for the existing transportation system appear on pp. 3-34 and 3-35 of the DEIS. This model was also used to calculate road sediments for each action alternative. These results appear on pp. 3-40 to 3-45 of the DEIS. Additional information can be found in the Analysis File, Hydrology Report, pp, 39, 45, 49, 55, 59, and 62.

7) Given the fact that the Chewelah area has experienced significant flooding in past years, the DEIS provides inadequate discussion and analysis of the potential exacerbation of flooding from rain-on-snow events and other peak weather events.

Response

See the response to comment #1 in this section.

8) The DEIS contains no discussion of the ECA model, nor discussion of its shortcomings. There is no discussion of the accuracy or appropriateness of using the ECA model for the Quartzite watershed.

Response

The ECA model is thoroughly discussed on DEIS pp. 3-30 and 31, additional discussions can be found in the Quartzite Hydrology Report, pp. 30-33.

9) The DEIS states that "In the spring of 1974 a rain-on-snow event caused the lake to overflow and quickly cut through the glacial material at the outlet. Downstream reaches below the lake are still recovering from the major flood that resulted," yet there is no discussion of how logging in the roadless area directly above the lake would affect the potential for such an event to occur again in the future, or how such an event would affect the potential for flooding now that Horseshoe Lake is no longer there.

Response

The Quartzite Hydrology Report describes the existing condition and the history of Horseshoe Lake and Sherwood Creek on pp. 24 and 25. The effects of proposed timber harvest in Sherwood Creek are described on page 73 of the same report. The analysis of these effects is based on the ECA model, field observations, and analysis of the Quartzite precipitation zones. The DEIS also addresses the effects of logging in the Sherwood drainage on pp. 3-47.

10) On page 3-29 the DEIS states that "Channel types and condition are not known on non-NFS land." Given the proportion of the PPA that is private land, such information is essential to accurate analysis of the effects of the proposed project on water quality.

Response

Forest Service lands are primarily located in the headwaters of the analysis area. Some short-term increases in sedimentation are likely to occur over existing levels. These will result from new road construction, stream crossings, and increased traffic levels during log haul. We do not anticipate changes in water quality from our proposed activities that will exceed state 303(d) standards on federal lands. Therefore, we do not anticipate any indirect or cumulative effects to downstream private landowners. If we had anticipated downstream effects on private lands, then the channel types and conditions referred to might be necessary for further analysis.

D.6 Noxious Weeds

1) Item 55 on page 2-24 states the Forest will "encourage Sevens County to spray county road right-of-ways adjacent to and within the National Forest System Boundary. This violates the Mediated Agreement for Managing Unwanted and Competing Vegetation because it places spraying as the primary control method. Why has the Forest abandoned Integrated Weed Management in favor of a chemical solution? What is the long term plan, to spray year after year? What are the impacts on water quality from this spraying, both site specific and cumulatively?

Response

Stevens County is responsible for the management of noxious weeds on their right of ways adjacent to and within the Colville National Forest. The DEIS does not prescribe a change or addition to any of the current integrated management tools used by the county for the control of their weeds. Item 55, page 2-24, simply indicates that the Colville National Forest is going to continue to encourage Stevens County to manage noxious weeds within their right of way.

2) We have also observed weed spread in cut-to-length logging methods on Eagle Mountain. Has the Forest monitored past units on the south side of the United Eagle timber sale for noxious weed spread and soil damage?

Response

DEIS page 3-100 notes: Noxious weed infestations of knapweeds and goatweed are degrading the vegetation and soil condition in lower elevations along travel corridors and up on the slopes of Eagle Mountain in and around past mining activity. The Forest is aware of these long-established infestations.

The cut-to-length logging you mention occurred in 1997 and was a thinning harvest included with the United Eagle Timber Sale. The noxious weed prevention strategies employed with this sale have proven effective, and we are unaware of weed spread in this area. However, given this new information, we will re-assess the situation. Your assistance in locating new infestations is appreciated.

Also see the response to comment #2 in the D.8 Soils section of this appendix.

3) Literature documents the chance that conversion of forest to non-forest is possible if herbicides are used at a time when trees have recently been killed. The basic relationship of mycorrhizal function following overstory removal that kills the primary host, but does not kill the alternate perennial hosts, is largely unknown. However long-term conversion of forest to non-forest has been well-documented in the literature and the explanation seems to be due to the use of pesticides following radical stand destruction such as clearcutting or fire.

Response

The "use of pesticides following radical stand destruction" is not proposed by any alternative. All silvicultural and fire prescriptions would reduce stocking by thinning. The many trees remaining in the thinned forest would preserve the symbiotic association formed by fungal mycelium and tree roots.

Post-activity herbicide applications for the Quartzite Project were authorized by the Decision Notice for the 1998 Colville National Forest *Integrated Noxious Weed Treatment Environmental Assessment*. Spot applications would be limited to infestation-specific locations (estimated to total 3-8 acres). The Quartzite DEIS does not proposed herbicide application independent of the 1998 Colville National Forest *Integrated Noxious Weed Treatment Environmental Assessment.*

4) We have seen too many weed control projects with vague goals, or as in this case, without a clear statement of goals which allow the success of the project to be ascertained. We would like to know what the goals for noxious weed management are for this project, and whether they have been successfully accomplished to date.

Response

Quartzite vegetation management proposals are limited to activities associated with the timber sale, prescribed fire and non-commercial thinning. Quartzite noxious weed strategies are included as mitigation for these and other project activities. Accordingly, the DEIS on page 3-104 states that the noxious weed management strategy included with the action alternatives focuses on the prevention of weeds by using weed-prevention tactics and mitigation for all ground disturbing activities. DEIS page 2-23 and 2-24 describes the 21 noxious weed mitigation measures.

The goals for noxious weed management for this project are to prevent the establishment of noxious weeds following ground disturbing project activities. Because no ground disturbing project activities have occurred, goal accomplishment cannot be measured.

5) We are paid only cursory mention of the significant disturbance caused by roads. We suspect that the Forest intends to continue with its heavy dependence on non-native pasture grasses to be successful. Simply put, converting old road beds to Luna wheatgrass will attract cattle like magnets to these sites. In some cases, these linear pastures will spread existing weeds even further than they would if the road were left to grow over. Roads do much more than mere creation of habitat for weeds. They also create the ongoing need for management conditions that perpetuate weed populations such as yearly grading disturbance, and that spread weeds such as vehicle movement.

Response

The effects existing roads and roads proposed for development have on noxious weeds is thoroughly analyzed in the DEIS. Revegetation of disturbed areas will follow the *Seeding and Planting Guide for the Colville National Forest*. Many of the species listed in this guide are native and were selected for their ability to quickly occupy and stabilize bare ground to prevent erosion and noxious weed invasion. Species of low palatability were selected to discourage foraging species. However, livestock grazing does not occur in the project area. DEIS page 3-207 notes that the only Forest Service allotment within the project area (the Cottonwood range allotment) is vacant, and there are no near future plans to re-activate this allotment.

New roads constructed for this project would be closed after activities are completed. Maintenance would be low, and periodic grading would not occur.

6) Non-native seeding can attract cattle to any area where it is applied including closed roads, skid trails, landings, and burn piles. Cattle contribute to soil erosion, compaction, and disturbance which increases the potential of noxious weeds spreading into these areas and displaces soil into waterways.

Response

See the response to the previous comment.

7) The purpose and need for the Quartzite indicate that historic range of variability is a goal. This will result in a return to early seral conditions, which will benefit the introduction of non-native species. Thus only Alternative A - No Action will accomplish the goal of preventing of new invasions.

Response

The vegetative historic range of variation depicts a mosaic of stand types for the area that includes seral stands. While one of the goals of the project is to move stand conditions toward historic conditions, it is recognized that this project is just the beginning of what will hopefully become a maintenance regime that in the long run will restore these conditions, including historic seral components. This project's design emphasizes prevention of invasive species, regardless of stand type, by integrating effective mitigation.

8) Because of their known, unknown, and potentially adverse impacts, herbicide treatments should be considered only as a last resort with consideration given first to all other viable alternatives. This is a legal requirement of the Stipulated Agreement for Region 6. In addition, the decision to use herbicides on public lands necessitates the demonstration of an overwhelming public need that takes into account and discloses environmental impacts. Planning documents should provide an analysis of the long-term effectiveness and environmental effects of both chemical and non-chemical alternatives as well as required mitigation measures for unavoidable impacts. These were not included in this document.

Response

The Quartzite noxious weed management strategy focuses on the prevention of noxious weeds. However early-treatment and correction measures are included as mitigation. Those measures that incorporate the use of herbicides do so under the authority granted by the Decision Notice for the 1998 Colville National Forest *Integrated Noxious Weed Treatment Environmental Assessment.* This decision also stresses prevention as the first line of defense against the spread of noxious weeds, but is supplemented by a combination of biological, fertilization, manual, mechanical, and chemical treatment methods. The effects of which were analyzed in the 1998 EA.

The Quartzite DEIS does not propose herbicide application independent of the authority granted by the Decision Notice for the 1998 Colville National Forest *Integrated Noxious Weed Treatment Environmental Assessment.*

9) Monitoring should be included in all projects with invasive species impacts, not just "weed" management projects. In addition, mitigation measures should also be subject to evaluation monitoring. Instead, the BMPs do not provide species-specific direction.

Response

Project monitoring includes noxious weed mitigation effectiveness monitoring (DEIS page 2-32).

10) Applications of crushed rock to roads at stream crossings often results in spreading of noxious weeds from contaminated pit sites. How will this be prevented? The increased disturbance of adding rock and soil into riparian areas may bury wetland sediments, leading to increased invasion by noxious weeds. Assurances need to be made that this will not result in filling of wetlands and that any legal filling will not result in an increased need for chemical applications in riparian areas because noxious weeds were not duly considered.

Response

Mitigation #51 on DEIS page 2-24 states "Gravel and borrow sources are to be inspected before material is used. If noxious weeds are present, strip and stockpile the top 8 inches of contaminated material to reduce the transportation of noxious weed seed to other sites." This mitigation applies to the six areas where road/stream crossing improvements area proposed.

DEIS page 1-14 describes crossing improvements: "Proposals are designed to reduce the amount of road-generated sediment that reaches streams, by modifying road and ditch drainage structures such that water is directed away from streams. Applications of crushed rock to the road surface in these areas would also reduce the amount of sediment that moves off roads during storms and spring runoff." The objective of these activities is to improve stream and wetland conditions. "Filling" wetlands is not proposed.

11) The Woodward Meadows Road closure appears to involve illegal wetland filling and a high likelihood of introducing noxious weeds followed by closing the road so that these weeds can spread without monitoring.

Response

The Woodward Meadows road closure would simply close road 4342.250, not fill the wetland. The Woodward Meadows Riparian/Wetland management activities would use on-site resources to divert water, and improve wetland conditions previously degraded by channelization of a tributary to cottonwood creek.

12) The information about reed canary grass needs augmentation. What is the concern? Are you proposing to herbicide Betts Meadow to kill the unwanted reed canary grass?

Response

DEIS page 3-100 states: "Reed canary grass infestations in Betts and Woodward Meadows are well established and continue to displace native wetland species."

The reed canary grass infestation in Betts Meadows is located on private land, outside Forest Service jurisdiction. The Woodward Meadows Riparian/Wetland management activities included with the project

"would help to reestablish hydrologic functions and control the spread of reed canary grass" (DEIS pg. 3-20).

13) The use of damage thresholds for noxious weeds does not take into account the costs of control. Cost thresholds need to be considered as well. If it will cost millions of dollars to control a weed that has exceeded the damage threshold, will the Forest still try to control it?

Response

Damage thresholds describe existing infestation conditions, and situations where potential infestations trigger remedial action.

The objective of project prevention strategies is to avoid thresholds by keeping new noxious weeds from entering the area; reducing soil disturbance; and revegetating disturbed sites. The noxious weed mitigation associated with these strategies is a component of the alternatives, and accordingly, costs are incorporated into the timber sale cost-revenue analysis.

The 1998 Colville National Forest *Integrated Noxious Weed Treatment Environmental Assessment* displays the costs of implementing Alternative C (the selected alternative) on page III-39 and III-40.

D.7 Road Management/Transportation

1) The Jay Gould Ridge Road should be closed, but the Woodward Meadows Road should be left open (especially where the campground is).

Response

Your preference is noted. The map on DEIS page 1-16 shows that dispersed sites located within the first 1,500 feet of the Woodward Meadows Road (Forest Road # 4342.250) would remain accessible.

2) The Forest needs to present some supportable and current data on the true impacts of closed roads.

Response

The *Quartzite Watershed Roads Analysis Report* documents needed and unneeded roads; identifies open and closed roads associated with environmental and public safety risks; identifies site-specific priorities and opportunities for road improvements and decommissioning; and identifies areas of special sensitivity, unique resource values, or both. DEIS page 1-13 notes that the interdisciplinary team used the recommendations in this report to develop a road system for the project that is safe and responsive to public needs and desires.

The impacts of roads (open and closed), and road management activities proposed with the project are considered in detail by all resources in DEIS Chapter 3.

3) The DEIS states that the estimated new road construction mileage includes both temporary and classified road construction, however the document does not reflect how much of the planned new construction is temporary roads and how much is specified roads. The short and long-term impacts are significantly different between the two types of construction.

Response

Specified road design and location will be such that the roads will have a "free-flowing" alignment and "rolling" grades. The goal of these strategies is for the road to match existing topography thus minimizing excavation. Rolling drain dips will be used to shed water off of roadbed at regular intervals to minimize erosion from the roadbed.

While the quantity of temporary road is predicted in the Quartzite Transportation Report (see the Analysis File), roads currently planned as temporary construction will be assessed during implementation and re-categorized as needed. Similarly, any road planned for specified construction may shift to temporary, based on field conditions and specialist input provided at the time of layout.

With the exception of the timber sale cost/revenue analysis, DEIS effects analysis assumes all roads will be specified construction, thus ensuring the maximum impact is analyzed.

4) There is no discussion of the fact that road reconstruction often has the same impacts on the environment as new road construction. This deprives the public of making an accurate assessment of the impacts of road reconstruction.

Response

DEIS page 2-12 describes four classes of proposed road development: specified construction; temporary construction; light reconstruction; and medium reconstruction. Each class description discusses the construction/reconstruction methods that differentiate one class from another. Effects analysis for all resources recognizes these distinctions, and measures impacts accordingly.

D.8 Soils

1) There could be justification to modify the Proposed Action based on the soils analysis. It would appear (based on the summary table shown on p. 3-23) that road segments 6, 7, 8, 15, and 17 are highly questionable due to stability risks. Segments 5, 12, and 13 are also questionable but apparently impact only a small of the proposed road segment and it is unclear whether these impacts can or cannot be avoided by relocation.

Response

The following statement from the soils analysis report was inadvertently omitted from the DEIS. (It has been added to the FEIS.)

Field reconnaissance of road segments proposed for new construction did not reveal evidence of slope instability. Based on existing soils information and field reconnaissance, soil concerns can be mitigated through standard road construction procedures.

DEIS page 2-18 (Mitigation #15) describes road location, design and construction standards that would be used to minimize long term soil erosion and slope failures and soil movement, for alternatives that construct these road segments.

2) Has the Forest monitored past units on the south side of the United Eagle timber sale for noxious weed spread and soil damage? We find the harvester-forwarder was used on inadequate slash depth and appeared to damage soils.

Response

We monitored 2 Cut-to-Length (Harvester-Forwarder) Units in the United Eagle Timber Sale in 1997—Units 7 and 9. These units are located on the east side of Eagle Mountain. Unit 7 is located outside the Quartzite Analysis Area while Unit 9 is located just inside the analysis area boundary. Unit 7 had a total detrimental soil disturbance of 29.6% and is located on Aits loam with a slope range of 10-40%. About half of the disturbance was caused by displacement (15.6%) and the remainder was due to compaction (14%). Unit 9 had a detrimental soil disturbance of 19.3% and is located on Newbell stony silt loam with a slope range of 10-30%. Displacement accounted for 6.8% of the impacts, and compaction for 12.5%. At least part of the reason for the higher ratings in these units was because of inadequate slash depth. Mitigation measures designed for the Quartzite project recognize the potential for detrimental soil disturbance, and have adapted additional measures such as specific depths of snow, slash, or frozen ground necessary for operation of CTL equipment.

3) The EIS states that the Forest Service used the Department of Natural Resources sediment model, but have neglected the details of the model that allow the public the opportunity to evaluate if the model covers the necessary information.

Response

See DEIS pp. 3-13 and 3-14 for a description of the parameters used in the DNR Erosion Model. The model is described in more detail in the Analysis File, Quartzite Soils Report, pp 13-17.

4) As stated in the EIS the soils in this area are already potassium deficient. Has the Forest service conducted analyses to determine the mitigation masseurs will adequately address the loss of needle held potassium. The EIS states that fine organic matter and large woody debris would be retained on the ground for necessary sustained nutrient recycling. While a concern about potassium levels is mentioned in the EIS, it appears to be based on a general concern about low potassium geological formations, rather than actual site (unit) data. Since substantial amounts of biomass have already been removed, we would like to see actual site conditions analyzed for the baseline condition.

Response

"Substantial" is hard to define in terms of biomass removal. Only 44% of the analysis area has experienced past timber harvest and most of that (83%) occurred on private land. Timber harvest on private land typically involves only partial removal of the stand. This usually leaves a significant amount of basal area remaining on-site as standing trees. In addition, logging slash is usually left on-site after the tree boles have been skidded to the landing (as opposed to "whole-tree-yarding"). Historic fires may have removed as much or more biomass than past timber harvests. Mitigation measures have been designed to address specific concerns regarding potassium availability in the soils of Quartzite project. These mitigation measures are based on research from the University of Idaho, (DEIS, pp. 2-22)

Based on this research, we have not, and do not plan to analyze Quartzite soils for potassium content.

References

Garrison, Mariann T. 1996. A Summary of Geologic Information used by the Intermountain Forest Tree Nutrition Cooperative to Estimate Potassium Content of Rocks. Intermountain Forest Tree Nutrition Cooperative, University of Idaho, Moscow, Idaho.

Garrison, Mariann T. and James A. Moore. 1998. Nutrient Management: a Summary and Review. Intermountain Forest Tree Nutrition Cooperative Supplement Report 98-5. Intermountain Forest Tree Nutrition Cooperative, University of Idaho, Moscow, Idaho.

5) Logging with conventional ground-based equipment will cause unusually large amounts of soil compaction because of the very large areas to be treated. Removing a over 26 million board feet of timber will further degrade soils and impact soil productivity. The loss of the A Horizon for soils that have trees or equipment dragged through them is likely, but the long-term impacts of this action are not disclosed.

Response

"Many soils detrimentally impacted by timber harvest will recover over time, before the next cutting cycle. The effects of compaction however are evident even after long periods of time, and these soils are not expected to recover for many years. This will result in diminished soil productivity and fertility on severely compacted areas that may be evident through decreased growth rates of vegetation and increased susceptibility to insects and disease pathogens." (DEIS pp. 3-25) The Colville National Forest's Soil Disturbance Model includes the total effects of compaction, displacement, erosion, puddling, and burning. The model results for each action alternative are presented on pp. 3-21 of the DEIS.

6) The EIS discusses impacts on soils in terms of the compaction and landslide potential (DElS at II-39) but bases the analysis on aerial photographs, rather than actual on-the-ground surveys. The site-specific analysis and testing apparently has not been done.

Response

"Seven old activity units [within the Quartzite Analysis Area] were monitored with respect to soil compaction. At each unit, three 100 foot long transects were established perpendicular to the slope. A shovel test of compaction was made at five foot intervals (5, 10, 15,) along each transect. The degree of compaction was rated in one of four categories on a scale from 0 to 3. Zero indicates soil in an undisturbed state where there is currently no soil compaction. Categories 1 through 3 indicate low, moderate or high compaction respectively. In addition to the 60 points examined in each unit, 5 soil pits along each transect were examined to a depth of 16 inches and were used to verify the shovel test results and continually calibrate the individuals collecting the data." (Analysis File, Quartzite Soils Report, pp. 6) Also see Response 1.

7) The EIS does not disclose whether any bulk density measurements were taken of existing condition or how that will change with the alternatives.

Response

No direct bulk density measurements were taken in any past or proposed Quartzite harvest units. Changes in bulk density (compaction) were monitored in old harvest units using the shovel method. See Response #6 for the soils monitoring protocol. Compaction in proposed units are included in the Forest Disturbance Model. The model results are presented on pp. 3-21 of the DEIS.

8) We believe the proposed logging units may already be at a nutrient deficit, and removing a high percentage of the remaining material may further impact the soil productivity. The loss of on site moisture by tree removal is important (Harmon1995) and the timber sale units will experience very different decay processes and therefore productivity as a result. The impacts of the loss of biomass on nitrogen in soils, carbon sequestration and micronutrients are not discussed in the soil productivity section, yet impacts can be significant.

Response

It is unclear what the respondent means by "loss of on site moisture by tree removal is important". Tree removal reduces evapotranspiration because the total biomass of living vegetation is reduced. Decreased evapotranspiration normally results in increased soil (site) moisture. (See the Quartzite Hydrology Report, pp. 30 regarding the effects of canopy removal). Canopy removal can also result in increased soil temperatures. Increased moisture and increased temperatures usually create conditions favorable to decomposition of organic matter and increased biologic activity (Grier et al. 1998).

"The current forest matrix on lands reflects a trend away from the early to mid successional stages associated with reference disturbances, with mid and late seral, multi-stratum stages outside of reference conditions." (DEIS, pp. 3-55) Under historic natural disturbance regimes, tree densities and crown closures and were less than existing levels. Proposed treatments will remove only a portion of the trees from the overstory canopy and will more closely mimic historic levels. These effects normally decrease after a few years as other vegetation reoccupies the site. While soil temperatures and water content may be slightly higher as a result of these treatments, it is unclear whether this constitutes a negative impact. By removing only a portion of the stand and leaving the larger trees, none of the alternatives is expected to have an adverse effect on the availability of large down woody material and long-term site productivity. While all alternatives are expected to affect soil biology, the resulting vegetation (density, species, etc.) is expected to be within the natural range of variability for these sites. Therefore the micro flora and fauna are expected to be similar to naturally occurring stands. Nutrient loss from the removal of tree boles is typically small and can be replaced through the course of a rotation. Most of the nutrients in a tree are located in the bark, limbs, and foliage. (Grier et al, 1989; Quartzite Soils Reports, pp. 18-22) Whole tree yarding, where the limbs and tops are taken to the landing to be removed, can have a greater effect on nutrient levels than removal of the tree bole. (See mitigation measures for potassium availability, DEIS, pp. 2-22)

References

Grier, Charles C., K.M. Lee, N.M. Nadkarni, G.O. Klock, and P.J. Edgerton, 1989, Productivity of forest of the United States and its relation to soil and site factors and management practices; a review. Gen. Tech. Rep. PNQ-GTR-222. USDA Forest Service, Pacific Northwest Research Station, Portland, OR. 50 pages.

9) The EIS fails to disclose the effects of continued fire suppression on soils and related processes. The EIS also fails to disclose the effects of long-term artificial disturbance processes (logging) on soils and related processes in their efforts to mimic natural disturbances and trend the ecosystem towards historical conditions.

Response

The effects of fire suppression on soils have not been studied in detail, however the effects of fire have. Some studies indicate that fire suppression has allowed fuels to accumulate on the forest floor – the duff is thicker and the amount of down wood is probably greater. On sites with a short fire-return interval, the current duff depth may be outside the range of conditions experienced under a naturally occurring disturbance regime. In wetter sites with a long fire return internal, the amount of duff is probably within that experienced under a naturally occurring disturbance regime. However, these stands probably did not have the homogeneity that we see today – areas of thick duff and heavy accumulations of down wood would have be interspersed with areas that had been burned or underburned. Fire suppression has probably changed the location of nutrient pools by moving nutrients from the soil and high canopy to the forest floor and low canopy trees. These changes have almost certainly affected soil microbiology, soil chemistry and nutrient cycling.

"Without fire, the openings created by insects and disease will increase in size, but are expected to remain scattered and will migrate across the landscape over time. Brush, grasses, and other tree species will

invade these sites as the larger overstory trees die and fall to the ground. Erosion processes will not change over existing levels because the amount of vegetative cover will remain essentially constant." (DEIS, pp. 3-14)

"Timber harvest (especially ground-based operations) and mechanical slash disposal have the potential to increase mass wasting, surface erosion, soil compaction, puddling, and displacement. Permanent skid trails and landings will reduce the productive land base. The Forest Soil Disturbance Model was used to calculate the amount of detrimentally disturbed soils (compacted, displaced, puddled, eroded, or burned) in the analysis area." (Analysis File, Quartzite Soils Report, pp. 24)

10) The biggest concern should be that there are practically simultaneous major disturbances occurring at the same time (fire and logging), and that one disturbs the soil while the other disturbs the canopy. This removes the fail-safe features of ecosystem management, namely that there be a back up protective measure to insure long-term ecosystem health.

Response

BMP's and Mitigation Measures will be used to meet management direction. Post-harvest soils monitoring will be used to assess the effectiveness of mitigation measures and validate the assumptions used in this analysis. (See DEIS, pp. 2-20 to 2-22, and 2-32 for mitigation measures and monitoring requirements related to soils and fire)

11) Discussion of soil analysis is extremely limited. There is nothing in the DEIS that indicates that site-specific analysis took place. Computer analysis and statements such as "Analysis shows that existing Forest Service activity units do not exceed soil quality standards," do not suffice for actual, on-the-ground analysis of soil conditions within proposed logging units of the PPA. According to the DEIS, computer-based, non-verified data was used as input into the Soil Disturbance Model to predict soil disturbance. This not only fails the test for scientific accuracy, but it misleads the public and the decision maker as to the true extent of soil damage that will occur.

Response

See Responses #1 and #6

12) The DEIS suggests that logging and other management activities have occurred in the PPA, however, the DEIS does not tell us what activities have occurred on the specific units proposed for treatment.

Response

Alternative F proposes to commercially harvest 5476 acres within the analysis area. Approximately 7% (~369 acres) of these new harvest units are within the boundaries of old logging units. Most of these "overlapping" units in Alternative F are located in the Woodward drainage (~352 acres). The Woodward units were last harvested between 1965 and 1966. There are no overlapping units in the Sherwood drainage. There are ~17 acres of old harvest units inside proposed units in the Thomason Creek drainage in Alternative F. The proposed units that wholly or partially "overlap" older harvest units are: 5, 17, 103, 67, 102, 125, 101, 99, 70, 69, and 82. Alternative F proposes to harvest the largest number of acres of any alternative. It also contains the most acres in this category of "overlapping" units. The other action alternatives contain fewer affected acres than Alternative F.

13) Forest Service hydrologists applied a Washington State DNR Surface Erosion Model to analyze possible effects. In the past, FS personnel have felt confident enough to drop 2 major inputs in the model, thereby

rendering it highly questionable in terms of effectiveness. In this instance, were all inputs for the model included?

Response

"The methodology used by the DNR approach considers both mass wasting and surface erosion as factors in the analysis process, however field reconnaissance does not indicate that mass wasting plays a major role in the erosional processes within these watersheds. The mass-wasting portion was therefore dropped from further analysis under this model. The model also divides surface erosion into two factors--hillslope erosion and erosion from roads. Hillslope erosion is dependent on the proximity of the erosion source to streams, slope angle, soil texture, and areas where overland flows occur. Field evidence within these watersheds does not indicate that overland flows are reaching streams or occurring at all. Hillslope erosion was therefore not considered further under this model. Road erosion was finally identified as the only agent likely to significantly influence sediment delivery to streams. It was therefore, the only factor considered for further analysis in this model." (Quartzite Analysis File, Quartzite Soils Report, pp. 14) These model assumptions with regard to mass wasting, hillslope erosion, and road erosion are based on field reconnaissance of units both inside the Quartzite Analysis Area and in other harvest units across the district between 1994 and 2001. INFISH riparian buffers, new harvest technology, and recent silvicultural prescriptions have been very effective in mitigating mass wasting and hillslope erosion from harvest units.

"The model uses road construction types, geologic parent material, stream class, road width, road segment length within 200' of the stream, vegetative cover on cut and fill slopes, road surfacing material, and traffic levels to arrive at an estimate of sediment delivered to streams in tons/year. In addition to analyzing road sediment, a rough calculation of baseline sediment delivery to streams was conducted based on stream channel length, soil depth, bulk density, average slope, and creep rate." (DEIS, pp 3-12)

"The use of silt fences, slash filter windrows, timing of activities, and other standard BMP's are not calculated in the model. Because of this, the model probably overestimates the amount of sediment reaching streams." (Analysis File, Quartzite Hydrology Report, pp. 34)

14) Did the DNR model account for the variability in damaging thresholds for any given stream? Did the model take into account post-harvest site prep impacts to soil disturbance, which is often a significant source of erosion?

Response

"The results produced by this [DNR] model are for trends and watershed comparisons only." (DEIS, pp 3-12) See the Quartzite Hydrology Report and the Quartzite Riparian Inventory in the analysis file for site-specific stream reach information. The DNR Erosion Model does not use post-harvest site preparation, however the Forest Soil Disturbance Model does consider post-harvest site preparation in the effects analysis of action alternatives. See also Response #13.

15) In terms of project timeline, how many years did the DNR Surface Erosion Modeling account for? Did the modeling account for the full length of time roads would remain open?

Response

The model projects sediment delivery for 3 years. "Most road construction sediment is produced within the first three years of life of the road, but may continue at a reduced rate for long periods of time. (Megahan, 1974; Burroughs and King, 1989)" – Standard Methodology for Conducting Watershed Analysis, Version 2.0, Washington Forest Practices Board, 1993 "While the DNR Erosion Model uses a three-year period when sediment-producing activities are predicted to occur, it is quite probable that these effects will extend

over a longer period (as much as five years) during the life of this project." (Analysis File, Quartzite Hydrology Report, pp. 69) Some roads may remain open longer than the timber sale contract in order to complete post-harvest activities such as planting. Three-year road sediment projections by alternative are displayed in the Quartzite Hydrology Report.

References

Megahan, W.F. 1974, Erosion Over Time on Severely Distrubed Granitic Soils: A Model, USDA Forest Service, Research Paper INT-156

Burroughs, E.R. and J.G. King, 1989, Reduction of Soil Erosion on Forest Roads, USDA Forest Service, General Technical Report INT-264

16) Mitigation measures that are not completed or started for longer amounts of time than modeled by the DNR Surface Erosion Model will result in biased and optimistic results on the part of the model. It is likely that such delay could also lead to greater sediment delivery from ground-disturbing activities.

Response

The model analyzes the proposal as designed. To do otherwise would be speculative, involve conjecture, and be outside the scope of the model.

17) The use of the DNR soils model appears to be inappropriate since it is based on road erosion factors. The Quartzite analysis area has a large acreage in roadless condition, which should be compared with the unroaded portions using a robust model capable of looking at a large number of factors not necessarily related to roads.

Response

The model generates projected sediment deliveries for a baseline (natural) condition (including roadless areas). This amount is added to the modeled delivery by action alternative on pp. 69 of the Quartzite Hydrology Report. These projected sediment totals are also compared to modeled existing sediment levels on the same chart. Also see Responses #13 and #16. See the Quartzite Hydrology Report, pp. 13-15 and the Quartzite Soils Report, pp 13-17 for a more detailed explanation of the erosion model.

18) The conclusion that "*Fine sediment from surface erosion from hill slopes exposed at harvest is a minor source limited to a few areas of recent harvest with little or no delivery to streams*" (DEIS pg. 3-12) is questionable. We believe that a number of significant erosion events may be associated with timber harvest and feel that this needs to be quantified in the document.

Response

See Response #13

19) We do not accept the conclusions of the sediment analysis since it is based on a model, which we believe to be flawed. We will need to understand more about how the data was collected, and modeled to accept this figure.

Response

"The results produced by this model are for trends and watershed comparisons only and should not be used to quantify sediment production." Analysis File, Quartzite Soils Report, pp. 13 and 14. The

methodology is documented in the analysis file. Also see Response #13 and The Standard Methodology for Conducting Watershed Analysis, Version 2.0, Washington Forest Practices Board, 1993.

D.9 Timber/Logging/Silviculture

1) Commercial thinning produces good skier habitat if slash is brought down to 18-24" in height. Harvest units adjacent to the ski hill should receive such slash treatment. Why is one unit (at the top of the Sherwood drainage between 2 roads next to the ski hill) in Alternative K not receiving any slash treatment?

Response

The purpose and need for this project does not include improving skier habitat in the analysis area. The management area prescription is MA-5, which emphasizes scenic values and timber. Slash treatments include underburning, jackpot burning, machine piling at landings, grapple-piling slash in harvest units, or leave tops attached. A variety of factors influence which treatment methods are used, including: multiple resource objectives; project objectives and issues; yarding system, soil compaction potential, erosion potential; and prescription feasibility. Post harvest treatment in Unit 20 of Alternative K shows jackpot burning as the selected fuels treatment. Overall, jackpot burning would be expected to reduce slash depths to less than 24 inches in height. However, concentrations of slash over 24 inches will occur. In addition, portions of this area contain suitable lynx denning habitat that is to be maintained as described in Section 3.3.8 Wildlife and Habitat: Affected Environment pages 3-126 to 129 of the DEIS.

2) If the Sherwood drainage is not designated "roadless" then larger basal area reductions would be important. "The best general approach for managing wildfire damage seems to be managing tree density and species composition with well-designed silvicultural systems at a landscape scale that includes a mix of thinning, surface fuel treatments, and prescribed fire with proactive treatments in areas with high risk to wildfire." (Graham, Russell, et. al *The Effect of Thinning and Similar Stand Treatments on Fire Behavior in Western Forests*., 1999).

Response

Section 1.2, Chapter 1.0 pages 1-7 to 1-8 of the Quartzite Watershed Management Project DEIS discusses Forest Service road management policy. The policy seeks to develop an appropriate balance between safe and efficient access for all forest users, and the protection of healthy ecosystems. No road construction restrictions apply to the Quartzite analysis area.

A variety of factors influence which silvicultural prescriptions are used, including: the historic condition of the vegetation; the inherent disturbance regime; the present character of vegetation; project objectives and issues; the silvicultural prescriptions identified by the management area prescriptions (Chapter 4 of the Forest Plan); and prescription feasibility. Page 2-10 to 2-13 of the DEIS provide information on the vegetation management activities proposed in Quartzite. Vegetation management activities include: managing tree density and species composition; post harvest activities, and judicious use of prescribed fire. Appendix B of the DEIS provides map and tables of proposed vegetation management activities. The findings expressed in this publication are considered in the design of proposed treatment activities in the Quartzite DEIS.

3) Commercial logging should be prohibited in the unroaded area, but non-commercial thinning (7" dbh maximum) should be used in the units located in the northern segment of the roadless area. Prescribe fire should be allowed in all units within the unroaded area.

Response

Section 1.2, Chapter 1.0 pages 1-7 to 1-8 of the Quartzite Watershed Management Project DEIS discusses Forest Service road management policy. The policy seeks to develop an appropriate balance between safe and efficient access for all forest users, and the protection of healthy ecosystems. Current Forest Service policy imposes significant restriction on road construction or reconstruction in inventoried roadless areas. No inventoried roadless areas occur within or adjacent to the Quartzite analysis areas. No road construction restrictions apply to the area. While the agency does not define the term "unroaded", the Quartzite Interdisciplinary team chose to define it for this specific project to help the public understand the effects associated with road construction.

Vegetation management activities are grouped into two categories: Timber Sale activities; and Prescribed Fire and Non-Commercial Thinning activities. All of these activities are proposed to meet the purpose and need of the project. A variety of factors influence which vegetation management activity or combination of activities are used, including: the historic condition of the vegetation; the inherent disturbance regime; the present character of vegetation; project objectives and issues; the silvicultural prescriptions identified by the management area prescriptions (Chapter 4 of the Forest Plan); and prescription feasibility. Timber merchantability standards are 7 inches diameter at breast height (DBH), with the exception of lodgepole pine which is 6 inches DBH. Appendix B of the DEIS provides maps and table of the proposed treatment activities. Judicious use of prescribed fire is proposed in all action alternatives. The Wildland Fire Alternative (J) does not propose prescribed fire activities in the unroaded area of the Quartzite watershed. Management of stand density and species composition is proposed in all action alternatives.

4) All of the issues of the area seem to be addressed in the preferred alternative (K). The thinning and burning detailed in Alternative will help get the forest to HRV regarding SS7 and will allow maintenance of that condition by low level ground fires that assist in the preservation of that seral state.

Response

Your comment is noted. The purpose and need guides the management direction on all National Forest System lands within the Quartzite Watershed.

5) The Horseshoe Lake area should be excluded from road building and logged only for brush, small saplings and small diameter trees to address the fire issue and promote the old-growth character.

Response

As noted in Section 1.2, Chapter 1.0 pages 1-6 to 1-8 of the DEIS, No inventoried roadless areas occur within or adjacent to the Quartzite analysis area. No road construction restrictions apply to the Quartzite analysis area. Objectives for road management proposals are to upgrade, maintain and develop those roads, which are necessary for long-term land management. Much of the area surrounding Horseshoe Lake is in non-federal ownership.

The objective of vegetation management proposals are to improve ecosystem integrity by moving the vegetation toward the natural range of variation; by developing forest matrix, patches and corridors that are consistent with fire landscapes; and by improving the landscape patterns of habitats for native and desired non-native species.

6) How many entries in the future will be necessary to continue the transition to SS7 at historic levels. I find no evidence of a discussion of projected future entries to continue the process forward.

Response

No foreseeable activities are planned in the project area beyond those stated in Section 1.5 (Responsible Agency and the Decision to be Made) of the DEIS. The scope of the decision is limited to the activities presently proposed within the project area. The proposed strategies are initial treatments and recognized as one step toward long-term restoration needs.

7) I am concerned about statements on 3-92 and elsewhere, the "Douglas-fir trees or stand conditions that are promulgating the outbreak, including dead trees > 21" dbh, may be designated to harvest." And, "Harvest involves removing most of the dead trees and some brood trees." One of the main accusations leveled at salvage sales is that the Forest Service uses them as an excuse to cut live trees. How is this different? What controls are in place to keep this from being an excuse to clear-cut?

Response

As stated in Section 1.0, of the DEIS the purpose and need guides the proposed actions on National Forest System lands and are interdisciplinary in approach. Section 1.5 of the DEIS outlines the scope of the decision to be made from this EIS.

8) In Alternative B there are several cutting units in the middle of the roadless area that do not appear in Alternative K. These units were scheduled for skidder and skyline yarding. On the map on page 3 of Appendix B the units appear about 1 inch north of the two white hexagons (what are those anyway?) and along the new road that enters from the Cottonwood Divide road. They have helicopter yarding units on either side of them. Why weren't they included in Alternative K as additional helicopter units?

Response

As noted in Section 1.2, Chapter 1.0 pages 1-6 to 1-8 of the DEIS, No inventoried roadless areas occur within or adjacent to the Quartzite analysis area. No road construction restrictions apply to the Quartzite analysis area.

The "two white hexagons" are no harvest buffers designed to meet multiple resource needs.

Units included in Alternative K were determined by economically feasible helicopter yarding distances from existing roads.

9) Alternatives B and K both have good points since they both reduce the risk of catastrophic fire.

Response

Your comment is noted.

10) We disagree with the characterization of 79% of the NFS lands within the project area as being 30- 75% structural stage 7 (DEIS at 3-59).

Response

Your comment is noted. The science background for the concept of HRV is documented in the Eastside Forest Health Assessment (Everett, et al.1994). Using structural stages, this analysis compared current levels of vegetation to the predicted historical levels as required by the Regional Foresters Amendment No. 2. Historical Range of Variability is an analytical technique used to characterize inherent variation in

ecosystem composition, structure and function. A variety of information, including old photo's, map data, and other historical records for each of the National Forests on the Eastside, was used to identify habitat. The characterization is based on Forest direction that was jointly developed by a team of ecologists, fire management staffs, and silviculturists from the Colville and Okanogan National Forests to describe landscape patterns for the Okanogan, Columbia, and Pend Oreille basins.

References

Everett, R., P. Hessburg, M. Jensen, and B. Bormann. 1994. Eastside Forest Ecosystem Health Assessment. General Technical Report PNW-GTR-317. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 61 pp.

11) We believe that it is useful to include a discussion of the Graham, Harvey et al paper: *The Effects of Thinning and Similar Stand Treatments on Fire Behavior in Western Forests.* The report expresses the opinion that thinning in moist stands should be approached carefully and may not achieve a decrease in insect or pathogen activities.

Response

No reference could be found supporting this statement in the publication ("The effects of thinning and similar stand treatments on fire behavior in Western forests," Graham, et al.)

The report expresses the opinion that the best general approach for managing wildfire damage is to manage tree density and species composition with well-designed silvicultural systems at a landscape scale that includes a mix of thinning, surface fuel treatments, and prescribed fire with proactive treatment in areas with high risk to wildfire. In the Quartzite DEIS the objective of vegetation management proposals is to improve ecosystem integrity by moving the vegetation toward the natural range of variation; by developing forest matrix, patches and corridors that are consistent with fire landscapes; and by improving the landscape patterns of habitats for native and desired non-native species. Pages 2-10 to 2-13 of the DEIS provide information on the vegetation management activities proposed in Quartzite. Vegetation management activities include: managing tree density and species composition; post harvest activities, and judicious use of prescribed fire. Appendix B of the DEIS provides map and tables of proposed vegetation management activities.

12) The document did not acknowledge that natural thinning through exclusion and selection by shade intolerance is common to all alternatives. This natural thinning is accomplishing silvicultural objectives. This was not analyzed in the document.

Response

The characterization of the analysis area is based on Forest direction that was jointly developed by a team of ecologists, fire management staffs, and silviculturists from the Colville and Okanogan National Forests to describe target landscape patterns for the Okanogan, Columbia, and Pend Oreille basins. Pages 3-56 to 3-58 of the DEIS describes the stand structure based management approach and biophysical environments that guides the alternative design. Structural stage classification incorporates successional pathways.

13) The document did not acknowledge that fire suppression is common to all alternatives. Fire suppression is a management tool that contributes to attainment of late-seral conditions. This was not analyzed in the document.

Response

Pages 3-56 to 3-67 of the DEIS describes biophysical environments and vegetation structure which incorporates the effects of fire disturbance across alternatives.

14) The cumulative effects analysis states that "In all recent projects harvest units were designed to improve big game cover quality over the long-term by increasing growth rates and reducing diseases and parasites of remaining trees," yet offers no support for whether these objectives have been met.

Response

Wildlife habitat improvement activities are monitored under the Colville Land and Resource Management Plan. Wildlife biologists review both cover units and open road densities to determine big game cover. Also see the response to comment #39 in section D.11 Wildlife.

15) There is no discussion in the DEIS of a baseline upon which insect and disease levels are measured. How can the Forest Service know if current levels are "epidemic" without a historical baseline against which to compare current levels. Even if it could be demonstrated that a higher percentage of trees within the project area are affected by insects or disease, this is not a demonstration that the level of insects and disease is higher than normal when viewed from a forest-wide perspective. Information regarding current levels of root disease is even more scant than the information on insect infestation, offering virtually so support for the assumption that disease levels are out of synch with HRV.

Response

Historic conditions are a benchmark and reference point that help us better understand the mix of historical disturbance regimes and the underlying variation in the ecosystem processes and functions. Historically insects and pathogens played a role in forested ecosystems by contributing to the development of wildlife habitat, nutrient cycling, as well as stand and landscape level structural diversity. Pages 3-52 to 3-76 of the DEIS discusses vegetation, forest fuels, the natural role of fire, insects and pathogens, and potential patterns of forest stand development. Page 2-31 of the DEIS mentions surveys and monitoring used to determine the level of forest insect and disease activity on the Colville National Forest and adjoining lands. The annual survey describes the location and severity of pests and damaging agents detected. Forested Plant Associations of the Colville National Forest Gen Tech Rep. PNW-GTR-360 (Williams, et. el, 1995) documents the effects of disturbance by plant series. Appendix 2, Table 93 of the publication provides information on average trees per acre, stand density index, and other stand structural development attributes. Baseline forest insect and disease levels are inferred from structural stages.

Stand exams, photographs, field survey and mapping were used to determine current levels of insect and pathogens. The analysis area is delineated into 1286 stand polygons. In 1991 a low level aerial flight was used to identify insect and pathogen activity in across the analysis area. To project expected stand development, several stands with root disease were modeled using the Inland Empire Variant of Prognosis.

References

Williams, C.K., B. Kelly, B. Smith and T. Lillybridge. 1995. Forested plant associations of the Colville National Forest. Gen. Tech. Rep. PNW-GTR-360. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 375 p.

16) Page 3-86 states "It is anticipated that the Douglas-fir beetle outbreak will increase before it begins to subside," while page 3-92, in making a case that an upper limit on the volume of insect-affected wood to be salvaged cannot be set, the DEIS states, "the duration or severity of an insect outbreak cannot be predicted."

In still another location (page 3-75) the DEIS states "it appears that the outbreak has peaked, but small pockets of new infestations will continue for the several years and new areas of dead trees will become evident." It would appear that the statement that duration or severity cannot be predicted is the correct statement, and that the Forest Service should refrain from attempting to do so or in order to justify commercial logging as the way to stop the outbreak.

Response

As stated in Section 1.0, of the DEIS the purpose and need guides the proposed actions on National Forest System lands and are interdisciplinary in approach. Vegetation management activities are grouped into two categories: Timber Sale activities; and Prescribed Fire and Non-Commercial Thinning activities. The objective of vegetation management proposals is to improve ecosystem integrity by moving the vegetation toward the natural range of variation; by developing forest matrix, patches and corridors that are consistent with fire landscapes; and by improving the landscape patterns of habitats for native and desired non-native species. As stated on page 3-74 of the DEIS the resistance of live trees is the most important natural factor controlling Douglas-fir beetle populations.

17) The DEIS uses convoluted logic to support a contention that the beetle outbreak represents something more than a natural event. Page 3-75 states, "the current outbreak cannot be construed as entirely natural, due to the significant changes in stand structure, composition, and hazard that have occurred as a result of human actions. Severe overstocking and a shift in tree species composition have created large homogeneous areas within the analysis area predisposing stands to risks of insects and disease." This statement confuses the severity of the outbreak with the risk of an outbreak, which are two quite different things.

Response

Page 3-74 of the DEIS states that Douglas-fir beetles are a normal component of northeastern Washington ecosystems and discusses stand susceptibility to Douglas-fir beetle. Insects and diseases will continue to be a part of this landscape and awareness as to the risk is important to managing trees as well as landscape integrity.

18) The DEIS provides little hard-and-fast information regarding the size of trees that would be logged in proposed logging units. There is no way for the public to accurately determine the size of trees to be cut or the percentage of the overstory to be removed. For projects purporting to be restoration projects and fire-risk reduction, maximum size of trees to be cut is an important indicator in determining whether the proposed actions can truly be considered restoration. For example, numerous *restoration guideline* documents set 12 inches dbh as the maximum diameter tree size that should be removed in restoration projects. The bar for fire-risk reduction projects is set substantially lower than that.

Response

Pages 2-9 and 2-10 of the DEIS provide definitions of each silvicultural prescription. Appendix B Alternative Maps and Tables provide information on proposed treatment activities. Page 3-81 of the DEIS states that live trees over 21 inches diameter at breast height (DBH) are to be maintained. This requirement is a Forest Plan standard. Dead trees 21 inches diameter or greater may be harvested after other resource considerations are made.

The objective of vegetation management proposals is to improve ecosystem integrity by moving the vegetation toward the natural range of variation; by developing forest matrix, patches and corridors that are consistent with fire landscapes; and by improving the landscape patterns of habitats for native and desired non-native species. Vegetation management activities include: Timber Sale activities; and Prescribed Fire

and Non-Commercial Thinning activities. The Quartzite Watershed Management Project does not identify "restoration" objectives in the proposed action.

19) Page 3-76 articulates what basically amounts to a *blank check* regarding the volume of wood that would be salvaged from beetle-killed trees; page 3-81 represent a blank check on the number of dead trees larger than 21 inches that would be harvested.

Response

National Forest Management Act of 1976, in conjunction with the Forest and Rangeland Renewable Resources Planning Act of 1974 and the National Environmental Policy Act of 1969, requires assessment of alternative management actions to facilitate balanced, integrated approaches to resource protection and development. The act also requires sound management practices to prevent excessive losses due to pests. Page 3-76 of the DEIS quantifies the impact of the Douglas-fir beetle-caused losses in the analysis area.

Page 3-81 reads "Dead trees greater than or equal to 21 inches diameter may be harvested after other resource considerations are made. This would generally occur where tree mortality is attributed to Douglas-fir beetle or root disease; for removal of brood trees; where dead or dying trees pose safety risks during logging operations especially in helicopter units; to prepare the site for prescribed fire and/or regeneration.

20) No information regarding the current conditions in specific units. This deprives the public of an opportunity to field check the Forest Service's assessment of current conditions. Providing the prescription alone does not meet this need. In the event that a member of the public disagreed with the prescription, the debate would be academic. However, if current conditions were provided (which is not the case with this DEIS), it would enable the public to audit the USFS's assessment of conditions, including extent of tree mortality, extent of insect presence, etc.

Response

Section 3.3.1 on pages 3-52 to 3-76 of the DEIS provides a detailed description of vegetation conditions including: timber harvest, fuel inventory, biophysical environments and vegetation structure, insect and diseases, forest health, blowdown, and old growth. Graphs on pages 3-59, 3-62, 3-67, and 3-65 show the results of a stand by stand comparison of current to historical ranges of stand structure.

Page 2-10 to 2-14 describes the vegetative management activities designed to improve ecosystem integrity by moving vegetation toward the historic range of variation. Appendix B of the DEIS displays the proposed vegetation management activities by unit.

21) Page 3-67 of the DEIS states that a total of three out of 338 stands examined met the NIZOG definition of old growth, yet, in spite of several footnotes throught the document refering the reader to a discussion of NIZOG in section 3.3.1, no such discussion exits in said section or anywhere else in the DEIS regarding NIZOG criteria or its appropriateness in identifying old-growth in the CNF. KRCG maintains that the NIZOG definition is inappropriate for identifying old growth in the CNF. Forests in the CNF are hotter and dryer and have shorter fire cycles, thus, historic old growth in the region was likely comprised of smaller diameter trees that the region in which the NIZOG definition was developed.

Response

Based on recommendations from Region 6 and Region 1 ecologists, the Regional Forester directed the Colville National Forest to use the North Idaho Zone Old Growth (NIZOG) definitions for old growth stands.

The NIZOG definitions and criteria the Forest uses are based on the April 5, 1993 letter by Edward Schultz, past Forest Supervisor.

The minimum stand size for old growth stands under NIZOG definitions is 10 acres with a minimum stand width of 800 feet. Old growth forests encompass the late stages of stand development and are distinguished by old trees and related structural attributes that vary by forest type. Based upon groupings seen in data, and upon professional review by foresters, ecologists, and wildlife biologists on the NIZOG Committee, 150 years was selected as the lower age boundary for Old Growth on most forest types. The number of trees over a given age and size (diameter at breast height) were used as minimum criteria for old growth. Associated characteristics (such as number of snags, down woody material, and diameter variation) are also considered in Old Growth Minimum Criteria. For most stands in the analysis area, the minimum criteria for old growth characteristics for large tree age is 150 years and 10 trees per acre greater than 21 inches diameter at breast height.

The Forest GIS system has two old-growth map layers – one used to develop the 1988 Forest Plan and another provided by the Audubon Society. A 1936 County Forest Map layer is also in GIS and was used to help identify candidate late structural stage stands in the watershed. This information combined with inventory data, photo interpretation, and specific knowledge of the analysis area is used to identify candidate NIZOG stands. Old growth acres within the project analysis area are field verified. No timber sale activities are proposed in any NIZOG stand within the project area. Under the Regional Forester's Amendment #2 (RFA#2), the HRV analysis considers stands at the watershed level. Under the wildlife standard of the Regional Forester's Amendment #2 (RFA#2), live trees over 21 inches diameter breast height are to be maintained. The intent of the direction is to maintain late and old structure and hence promote old-growth forest structural components.

22) The CNF has its own definition of late structure: "Late and old forest structural stages are characterized by large diameter overstory trees (8 trees per acre > 21"diameter)." Using this definition, the DEIS indicates that there are "four thousand acres of late and old forest are distributed across the analysis area, representing 17 percent of the total area." Yet there is no discussion of the significance of these late and old forests; no discussion of the difference in the quality of old-growth habitat between these stands and those identified as old growth by NIZOG standards; no discussion of how the stands were surveyed, the size of the sampling area, the percentage of the area sampled; no discussion.

Response

Structural stages are defined in the DEIS on pages 3-57-3-58. A structural stage was assigned to each of the 1286 stand polygons in the watershed by the project silviculturist. Structural stages were arrived through use of inventory data, stand exam data, aerial photo interpretation, and specific field knowledge of the analysis area. Stand exams were done on approximately 5600 acres (representing 53% of forested acreage) of Forest Service land within the project area. As per Forest direction, late and old forest structural stages are characterized by the criteria of 8 trees per acre greater than 21 inches diameter at breast height. Under the wildlife standard of the Regional Forester's Amendment No. 2 (RFA#2), live trees over 21 inches diameter breast height are to be maintained. GIS map layers and associated attributes tables were used to identify candidate late and old structural stage and NIZOG stands. The project silviculturist then evaluated each candidate stand to determine if the stand met the minimum criteria for NIZOG.

Page 3-67 of the DEIS provides a discussion on Old Growth and Pages 3-69 to 3-72 of the DEIS provides information on Late Structure Stage stands. For most stands in the analysis area, the minimum criteria for old growth characteristics for large tree age is 150 years and 10 trees per acre greater than 21 inches diameter at breast height. The majority of late and old structural stage stand did not meet NIZOG because the age of the large tree component was less than 150 years and/or less than the required 10 trees per acre greater than 21 inches diameter at breast height. The intent Eastside Screens is to maintain the large tree component of stands that are an important stand component of old growth.

To effectively communicate the findings additional discussion on NIZOG and structural stages has been incorporated into the FEIS.

23) Virtually all research on restoration indicates that removal of trees over 12 to 14 inches will be counter to the objectives of restoration, whether the objective is to reduce fire risk restore HRV. The Quartzite DEIS fails to discuss the issue of maximum tree size threshold except to state a number of times throughout the document that no trees over 21" will be harvested. The Forest Service provides no support for the assumption that harvesting trees up to 20.9" will serve the purposes of restoration in this project when the overwhelming majority of research sets the bar much lower. Without information on the number of large trees proposed to be removed or specific information on canopy-closure reductions, the public is deprived of important information needed to assess the restoration merits of the proposed action.

Response

Please see response to comment #18 in this section.

24) Many portions of the roadless area proposed to be logged are currently SS6. This area has not been logged in the past, therefore it is an accurate reflection of the HRV for the roadless area. Therefore, the idea of logging within the roadless area to "promote" the development of SS7 is counter the roadless area's HRV. Is the Forest Service attempting to promote SS7 in areas that have never been SS7 in order to compensate for lack of LOS in other areas of the PPA where LOS existed in the past?

Response

The science background for the concept of HRV is documented in the Eastside Forest Ecosystem Health Assessment (Everett Report) Volume II. The HRV concept used pre-settlement conditions (1800 –1900) as a reference point for developing a range of conditions. The HRV concept, using pre-settlement conditions as a reference point, is used to avoid management activities, which move conditions in any biophysical environment away for the historical range of variability. Logging and other activities such as fire suppression efforts were not used to develop HRV. The HRV characterization is based on Forest direction that was jointly developed by a team of ecologists, fire management staffs, and silviculturists from the Colville and Okanogan National Forests to describe landscape patterns for the Okanogan, Columbia, and Pend Oreille basins. Pages 3-59, 3-62, 3-64, 3-65 and 3-66 of the DEIS provide a comparison of the current and historical distribution of structural stages within each biophysical environment. The analysis indicates that there in an excess of SS6 in three of the four biophysical environments and a deficit of SS7 in two of the four biophysical environments.

References

Everett, R., P. Hessburg, M. Jensen, and B. Bormann. 1994. Eastside Forest Ecosystem Health Assessment. General Technical Report PNW-GTR-317. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 61 pp.

D.10 Visuals/Recreation/Wildland

1) The 5200+acre unroaded forest above Betts Meadows should be permanently protected as a unique headwater forest. The Interior Columbia Basin Ecosystem Management Project (ICBEMP, PNW-GTR-385) concluded that undeveloped roadless areas are important. "Roadless regions constitute the least-human-disturbed forest and stream systems, the last reservoirs of ecological diversity, and the primary benchmarks for restoring ecological health and integrity." (Rhodes, McCullough and Espinosa, 1994) The Quartzite area is the last undeveloped landscape in the southern part of the Colville National Forest. These are some

of the last places where ecosystems remain intact and natural processes are allowed to function without human interference. These areas should be protected, not developed. The Forest Service should put the Quartzite proposal on hold until Congress acts upon proposed wilderness legislation. Ignoring the desires of numerous public comments, the Forest Service proposes extensive logging in a roadless area-which the Forest Service has managed to reduce to 4800 acres through the use of an arbitrarily imposed buffer-without due consideration for the irreversible or irretrievable loss of Wilderness values.

Response

Current Forest Service policy imposes significant restriction on road construction or reconstruction in inventoried roadless areas. Wilderness areas were provided for in the Wilderness Act of 1964 (Pub. L. No. 88-577), which established the National Wilderness Preservation System. The Wilderness Act directed review of FS-designated primitive areas and other larger roadless areas to consider their suitability for inclusion in the national wilderness system. This review was carried out and expanded (with respect to the national forests) in the Roadless Area Review and Evaluation or "RARE" studies. Roadless areas inventoried either as part of the RARE studies or as part of subsequent reviews during the NFMA planning process are referred to as "inventoried" roadless areas.

The Quartzite area did not qualify for analysis for potential wilderness designation during Roadless Area Review and Evaluation (RARE II). Appendix L of the Forest Plan[9] notes, "*The area near Betts meadows does not meet the roadless area criteria (larger than 5,000 acres).*" In addition, no inventoried roadless areas occur adjacent to the Quartzite analysis area. Consequently, no road construction restrictions apply to the area.

The 4800-acre area unroaded area analyzed with this project includes unique attributes. However, as noted on DEIS pages 3-58 thru 3-76, the ecological health and integrity of the area has been compromised by eight decades of fire exclusion. As a result, the spatial arrangement of the landscape has moved away from a historically resilient amalgamation. In many instances, the Quartzite Planning Area is out of synchrony with historic mean fire frequencies by a factor of 10 (Schellhaas 2000). Consequently, ecosystem health has diminished. Putting spatial solutions in place permits us to predict with some confidence that biodiversity, soil, and water will be sustainably conserved for future generations (Forman 1995).

References:

Forman, Richard T. T 1995. Land Mosaics: the ecology of landscapes and regions. Cambridge University Press, Cambridge. 632 p.

Schellhaas, R. Spurbeck, D. Ohlson, P. Camp, A.E. and Keenum, D. 2000. Report to the Colville National Forest on the results of the Quartzite planning area fire history research. PNW Research Station, Wenatchee Forestry Science Lab, Wenatchee, WA. 78 p.

2) The Sherwood drainage should be developed for increased winter recreation potential in conjunction with the proposed timber harvest by leaving the skid trails on the ridges, decreasing basal areas, maximize thinning and prescribed fire.

Response

The Forest Plan established thirteen unique management areas across the Forest. Management Areas are defined by the Forest Plan as units of land to which a prescription or set of prescriptions is applied in

[9] Appendix L, page L 3-19, Colville National Forest Land and Resource Management Plan.

order to achieve a particular management objective. The management area prescriptions define the type and intensity of resource activities that are or are not permitted within that management area.

The management goal for Forest Plan Management Area 3C is to provide for quality winter recreation opportunities including downhill skiing, nordic skiing and other compatible uses. The Forest Plan identifies six different management areas within the Quartzite Watershed Management Project planning area, none of which is Management Area 3C.

It is outside the scope of this project to propose a change in Forest Plan management areas.

3) A ski/hiker trail is of critical importance. This should extend along the ridgeline dividing Sherwood and Betts Meadow drainages to Road #4342. The trail should be extended along Jay Gould Ridge down to 4400′ elevation and then back to link-up with the Sherwood-Betts trail. Sale Area (KV) funds should be used in part to build this important trail.

Response

Your comment is noted. The proposed action for the project does not include trail construction. Trail construction is outside the scope of the purpose of and need for the proposed action.

4) The Sherwood drainage should be managed under alternative F. However, the road that is developed at the 4400′ elevation should be extended around the entire drainage on the same contour to create a safe search and rescue trail. This road should switch back up below the knoll where the intersection of units 83 and 53 come together. The skid road down the ridge between Sherwood and Betts should be retained for winter use only. This would create a loop through the Sherwood drainage. The remaining Quartzite area should adhere to Alternative K.

Response

Your preference is noted. See the response to comment #3 in this section. The Cottonwood Divide Road (Forest Road # 4342) serves as the Sherwood Basin safety net for errant 49° North downhill skiers who ski out of bounds.

5) While the DEIS acknowledges and increase in the use of ORVs in the PPA, this increase is not quantified. We suspect the Forest Service cannot begin to quantify the increase because the Forest Service has not conducted the required monitoring to determine the extent of the increase. Without knowing the extent of the increase, the impacts of ORVs cannot be meaningfully included in the cumulative effects analysis. Analysis must address not only the vast potential but the likelihood that both non-motorized and motorized recreation use will increase significantly, if not dramatically in the short-to-mid term. The population of Washington State is projected to increase by 50 percent by 2025.

Response

Following the 2000 census, the Sate of Washington projected the average annual population growth rate for Stevens County between the years 2000 and 2025. The State projected a population growth rate ranging from a high of 4.19% per year, to a low of 1.35% per year. For the years between 2000 and 2005 (a more accurate projection), the growth rate ranges from a high of 3.54% per year, to a low of negative 0.154% per year.

The Forest uses the Recreation-Opportunity Spectrum (ROS) to analyze broad categories of recreation opportunities on Forest lands (see the discussion on DEIS page 3-195). ROS establishes use thresholds measured as *People At One Time per acre of usable land* (PAOT/acre). Competition for recreation

resources exceeds site capacities when use is above threshold levels. Recent Forest PAOT/acre analysis using a 3% population growth rate revealed that use would reach only 1/10 of the threshold.

Cumulative effects analysis for all resources reflects these population and ROS use projections for ORV use, and other recreation activities.

6) There is no discussion of the rationale that led to *roadless* being defined as areas more than 100 meters away from a road or past action. Without discussion of this methodology, this buffer is arbitrary and capricious. There is no discussion of what the total acreage of the roadless area would be if this condition were not imposed on the calculations. According to our calculations, without this condition, the area meet the 5000 acre minimum required for automatic inclusion in the inventory of roadless areas. A major effect of logging in the roadless area is not discussed: the reduction of the acreage from its current size to 1440 acres will virtually ensure that the area will never be included in the RARE II inventory.

Response

See the response to comment # 1 in this section. No inventoried roadless areas occur within or adjacent to the Quartzite analysis area.

DEIS page 1-8 notes: While the agency does not define the term "unroaded", the Quartzite Interdisciplinary team chose to use it in response to public concern for proposed road construction. **For this analysis** the team defines an unroaded area as any area greater than 1,000 acres in size and greater than 100 meters from any existing road or past harvest activity. The team uses this definition to help the public understand the effects associated with road construction. The definition is specific to this project.

The team chose the parameters: greater than1,000 acres and greater than 100 meters from any existing road or past activity, to focus analysis on those areas where remote recreation would most likely occur. The unroaded area located within the Quartzite Project Area has some of the attributes required for remote recreation (natural integrity, and apparent naturalness), other attributes (opportunity for solitude, and primitive recreation opportunities and unique features) are diminished or lacking.

The Washington State Wilderness Act of 1984 designated the Salmo-Priest Wilderness Area that is located in the northeast corner of the Colville National Forest. With the passage of this act, Congress stated that the Forest Service was not required to review the wilderness option for the remaining Roadless Area Review and Evaluation (RARE II) areas. The Colville National Forest contains 18 of these areas (none of which occur within the Quartzite Project Area). And even though timber production is the Forest Plan management emphasis for many of these areas, roads or timber sales have affected fewer than 5% of these lands since the Forest Plan was signed in 1988.

7) There is inadequate discussion of the significance of the fact that the Quartzite roadless area is the closest roadless area to the Spokane metropolis, nor is there any related discussion of the impact logging in the roadless area would have on recreationists who visit the area because of the roadless area.

Response

The Remote Recreation Cumulative Effects discussion on DEIS page 3-201 describes the effects the project would have on remote recreation opportunities across the Colville National Forest:

As noted above, lands within the Quartzite area did not qualify for analysis for potential wilderness designation during Roadless Area Review and Evaluation (RARE II). And while the unroaded area located within the Quartzite Project Area has some of the attributes required for remote recreation (natural integrity, and apparent naturalness), other attributes (opportunity for solitude, and primitive recreation opportunities and unique features) are diminished or lacking. Alternatives that degrade the natural integrity and the

apparent naturalness of the area (B, C, F & K), would force users to seek other areas, but they would not appreciably reduce the inventory of available areas across the Colville National Forest, and the inland northwest region.

8) DEIS Page 3-201 states that "*while the unroaded area located within the Quartzite Project Area has some of the attributes required for remote recreation (natural integrity, and apparent naturalness), other attributes (opportunity for solitude, and primitive recreation opportunities and unique features) are diminished or lacking*," which contradicts what the DEIS states on page 3-197: "*a short distance away from the access roads there is almost no likelihood of encountering another party while using the area," and "most of the area is within one mile of existing roads, but topography, and the presence of running water in local streams, can limit the sights and sounds associated with these roads and other Colville River Valley impositions*." The DEIS contains inadequate discussion of the manner in which proposed logging the roadless area would affect these rare qualities.

Response

DEIS page 3-196 notes: For the Quartzite Project, recreation and wilderness attributes were used to depict the existing character of the unroaded area. Five descriptors were used to determine the Recreational-Opportunity-Spectrum rating: access, remoteness, social encounters, visitor management and on site development. Four criteria were used to describe wilderness attributes: natural integrity, apparent naturalness, opportunity for solitude and primitive recreation opportunities and unique features.

While the "social encounter" descriptor simply predicts the potential to meet other people while visiting the area, the "opportunity for solitude" descriptor considers this and other factors influencing solitude. Views of traffic on US Highway 395, traffic noise and noise from the city of Chewelah all diminish the opportunity for solitude in the unroaded area. The full quote from DEIS page 3-197 states:

The majority of the area faces south and west with some exposure to Washington State Highway 395. As noted above, most of the area is within one mile of existing roads, but in some locations, topography, and the sound of running water in local streams, can limit the sights and sounds associated with these roads and other Colville River Valley impositions.

As also noted in the DEIS affected environment description of the unroaded area on DEIS page 3-197, primitive recreation opportunities are limited by *the size of the area and the ease of access to existing roads. Even considering the steepness of the terrain, the entire area can be reached within two hours.* Unique wilderness features are also lacking, as noted in the DEIS: *There are no unique features within the unroaded area. Quartzite Mountain is a unique feature within the Quartzite Planning Area, but is located outside the unroaded area*.

9) The DEIS contains no discussion of the fact that the Quartzite area has been proposed for wilderness by a coalition of environmental organizations.

Response

Your comment is noted. The DEIS does however give special attention to the results of project scoping. DEIS page 2-4 notes that "*there is concern that [proposed] activities in the unroaded area would reduce natural integrity, reduce the opportunity for solitude, and reduce primitive recreation opportunities. Some consider unroaded areas essential for both humans and wildlife*." This issue is one of the three key issues used to design alternatives to the proposed action. Three of the seven alternatives preserve the option of wilderness designation.

10) When the CNF was granted an extension on the revision of its LRMP, the public's opportunity to have the Quartzite roadless area reconsidered for wilderness was postponed. If the CNF was on schedule with the

revision process, the public would currently be discussing whether or not Quartzite should be included in the inventory of roadless areas rather than whether or not the area should be logged.

Response

The timeline for the revision of the Colville National Forest's Land and Resource Management Plan is outside the scope of this project level EIS. However, see the response to comment # 9 in this section.

11) The Quartzite contains inadequate discussion of the economic value of roadless areas. For example, discussion of the findings of Michael Power, Ph.D economic study, *The Economic Impact of Preserving Washington's Roadless National Forests,* are not discussed in the DEIS.

Response

See the response to comment # 4 in Section D.2 Economics.

The Economic Impact of Preserving Washington's Roadless National Forests by Thomas Michael Power, Ph.D. Professor of Economics, University of Montana, was published on June 13, 2000 and was funded by a grant from the Wilburforce Foundation for The Wild Washington Campaign. The Wilburforce Foundation is a private, philanthropic foundation that funds environmental issues in the Western U.S. and Western Canada. Begun in 1991, the Foundation awards grants to nonprofit organizations that have programs operating in Alaska, the Yellowstone to Yukon region, British Columbia, Washington, Oregon, Nevada, Utah, Arizona or New Mexico.

As noted in the overview, this study analyzes the likely economic impacts of protecting all of Washington's roadless areas from roaded commercial development. The study concludes that local jobs won't suffer if timber harvest in roadless areas is restricted. Rational for this conclusion includes the statement: "Most of these roadless areas were never part of the commercial timber base. Very little harvest is planned for them."

DEIS page 3-195 notes "The Quartzite area did not qualify for analysis for potential wilderness designation during Roadless Area Review and Evaluation. Appendix L of the Forest Plan notes, '*The area near Betts Meadows does not meet the roadless area criteria*'". Since the Forest Plan was signed in 1988, all but 5% of the National Forest System Lands within the Quartzite project area have been considered part of the commercial timber base. Management prescriptions for these lands permit scheduled timber harvest.

Professor Power's economic study would be more relevant to situations on the Forest where roadless areas occur. Because of the lack of roadless areas in or adjacent to the Quartzite project area, his study has little relevance.

12) The value of the Quartzite roadless area to the proposed environmental education center near Quartzite was not considered.

Response

DEIS page 3-201 discusses the cumulative effects the alternatives would have on recreation opportunities. DEIS Appendix C, page 2, includes the Chewelah Peak Learning Center in the list of Reasonably Forseeable Future Actions considered by project cumulative effects analysis.

D.11 Wildlife

1) Alternative K would maintain the "unroaded" seclusion required by grizzly bears, wolves, lynx, and wolverine (DEIS p. 3-161). Even after the roads are closed in Alternative B, there will be an increase in penetration by ATV's and foot travel along the road beds for a 5-10 year period.

Response

We agree, which is one of the reasons that alternative K has been selected as the Forest Service's preferred alternative.

2) Movement in the direction of HRV for SS7 would improve the habitat for mule deer, white-headed woodpecker, blue grouse, and elk, which are less able to use other stand types such as SS4, 5, or 6, and are therefore being much reduced in numbers from HRV.

Response

Although habitat quality is just one of many factors that have influenced wildlife population levels over time, we agree that moving conditions back toward a natural range of variation (as stated in the DEIS, page 1-10) will provide more desirable conditions for these and other wildlife species in the area.

3) All logging roads should be seasonally closed (gated) in the spring to protect forest resources (roads and wildlife calving areas).

Response

Mitigation to close roads for protection of these resources has already been prescribed. Reference mitigation measures 20 and 70-73 in Chapter 2 of the DEIS.

4) Currently within the project area there are 3.8 miles/mile^2 of road. Roads fragment wildlife habitat, yet your proposed action does nothing to remedy this situation…it only makes matters worse.

Response

The preferred alternative closes 2 miles of existing road for a net reduction in road densities.

5) Your tentative decision to select the Existing Roads Alternative (K) appears to be based on the protection of the "unroaded" area. There is some justification shown in the wildlife analysis based on the impacts of open roads to the seclusion area and to the wildlife corridors. Although these impacts are real, they are short-term and will within the current management direction of the amended Colville Forest Plan. It is unclear why more restrictive standards are necessary for wildlife management in this area.

Response

We disagree that the effects of roads are "short-term". The effects of new road construction on wildlife, as well as other resources, are documented throughout the DEIS. The selection of Alternative K was based on a number of concerns, not just wildlife seclusion and travel corridors

6) The impacts of closed roads are over stated. Almost all justification of continued use of closed transportation systems is based on old data collected from road closures using gates or other ineffective

closure techniques. Even using this old data, the projected potential impacts to T&E species are within accepted levels of the USF&W Service, determined through the consultation process and within standards established by the Forest Plan (as amended).

Response

There is a substantial body of evidence and supporting documentation that roads, even though closed, will continue to influence and impact many resources, including wildlife habitat for many years. Effective elimination of motorized traffic to reduce impacts to wildlife is just one aspect of closed road management. Other concerns include the spread of noxious weeds, introduction of sediment to waterways, and soil compaction.

7) Since the Colville National Forest is unable to demonstrate it has maintained viable populations of old growth dependent species either at the project-specific level or forest-wide level-it has no business logging in any sort of habitat that could conceivably provide some habitat value for old growth species. The DEIS fails to disclose that the CNF has not monitored the population trends of its old growth MIS-including pine marten, pileated woodpecker, and the northern goshawk. Forest Plan Monitoring requires the annual monitoring of "Population trends of indicator species" and this monitoring information is to be reported every 5 years. Additionally, "Downward population trends" are the "threshold to initiate further action" but if you haven't monitored, you are unable to respond with "further action" as necessary.

The cumulative effects of carrying out multiple projects simultaneously across the Forest makes it imperative that population viability be assessed at least at the forestwide scale (Marcot and Murphy, 1992). It is also of paramount importance to monitor population trends (as mandated by the Forest Plan) during the implementation of the Forest Plan in order to validate the applied assumptions about long-term species persistence--i.e., population viability (Marcot and Murphy, 1992; Lacy and Clark, 1993).

Response

Monitoring Item #12 in the Monitoring Guide for the Colville National Forest addresses monitoring for old-growth dependent species. Monitoring item #13 addresses monitoring requirements for Management Indicator Species. The goal of monitoring item #12 is to "ensure that essential habitat is being provided..." The goal of monitoring item #13 is to "manage habitat in compliance with Forest-wide standards and guidelines…" Neither monitoring item requires "the annual monitoring of population trends" as indicated in the comment.

8) The Quartzite DEIS acknowledges "scant data on habitats" by lynx for denning (p. 3-128) therefore violating best available science as require by NEP A and site-specific information called by LCAS.

Response

The “scant data on habitats” citation refers to the relatively low number of lynx den sites that researchers have analyzed and from which they have drawn conclusions regarding denning habitat. The analysis of denning habitat is based on research outlined in Ecology and Conservation of Lynx in the United States (Ruggiero et al. 1999) and the Lynx Conservation Assessment and Strategy (Ruediger et al. 2000) and from conversations with lynx researchers in Canada and Montana (cited in analysis file).

References

Ruggiero, L. F., K. B. Aubry, S. W. Buskirk, G. M. Koehler, C. J. Krebs, K. S. McKelvey and J. R. Squires. 2000. Ecology and Conservation of Lynx in the United States. USDA Forest Service General Technical Report RMRS-GTR-30WWW. 480 pp.

Ruediger B., J. Claar, S. Mighton, B. Naney, T. Rinaldi, F. Wahl, N. Warren, D. Wenger, A. Williamson, L. Lewis, B. Holt, G. Patton, J. Trick, A. Vandehey, S. Gniadek. 2000. Canada Lynx Conservation Assessment and Strategy. Unpubl. Report, January 2000. USDA Forest Service, Northern Region. Missoula, MT. 199 pp.

9) The project DEIS provided to the public contained some discussion, but no detailed maps of such habitat characteristics within the LAU, and none outside the LAU, despite the very key role the maps provide in disclosing important habitat information to the decision maker and public. For the public to be informed of how LCAS objectives, standards and guidelines are being met in the Quartzite Project, then maps disclosing denning, foraging and unsuitable habitat is required. Within the project area, FS 4342 is a groomed snowmobiling route that bisects the LAU, but not map indicates where the foraging or denning habitat exactly exists, even though the area within the Quartzite project area supports about 400 acres of potential denning habitat (DEIS p. 3-129). We see no maps showing where the travel corridors are; therefore it is impossible for the reviewer or public to determine whether connectivity analysis has been conducted for this sale.

Response

The analysis file contains maps of the habitat within the LAU, and they are available to the public. The groomed snowmobile route is an open forest road during the denning period of lynx, not an operational snowmobile trail. The DEIS refers to a map developed by the Washington Department of Natural Resources that that shows major ridges or other areas that lynx might use as corridors for movement (p. 3-127). As stated in the DEIS, the cover on these ridges was examined to determine effects to connectivity habitat, which constituted the connectivity analysis (3-164).

10) The Quartzite DEIS never discusses habitat connectivity between LAUs or at any scale of analysis. The DEIS states no changes to vegetative structure that reduce lynx travel is planned, but we know that both federal and private logging in the area has and is impacting lynx travel.

Response

The DEIS contains both project-level (starts p. 3-164) and large-scale analysis (p. 3-167). Page 3-167 of the DEIS states, "The cumulative effects analysis area is the string of LAUs that run south from Canada, with the Chewelah LAU lying on the south end" (which means that connectivity concerns lie within and north of the Chewelah LAU). The following information was excerpted from the DEIS (p. 3-167):

"During Forest consultation after the USFWS listed the lynx as a threatened species, we examined all current and foreseeable projects on NFS land. Our analysis for each project considered past and current harvest on both federal and non-federal land…We based this analysis on the LCAS, which is recognized as the best available science concerning lynx management. We modified all projects that didn't follow the suggested management and on September 8, 2000, received USFWS concurrence that all existing and ongoing projects may affect but were not likely to adversely affect lynx…"

"Much of the industrial timberland has been heavily harvested in the past decade. Connectivity through some of these areas has been disrupted because regeneration harvests lap over corridors on ridges and

saddles. Because the current project will not eliminate any corridors, this project will not add to the cumulative negative effects to corridors."

11) The Colville NF has not taken any steps to remedy the failures of its Forest Plan monitoring for lynx, in fact virtually nothing in the DESI regarding monitoring, regarding road closure effectiveness, and habitat modifications.

Response

Although not specifically required by the Forest Plan Monitoring Guide, the Colville National Forest, in conjunction with the Washington Department of Fish and Wildlife and the Bureau of Land Management, has been actively monitoring for lynx presence throughout the Forest over the past several years, using both snow track surveys and hair snares. This monitoring is on going, and not project specific. Therefore it was not necessary to prescribe lynx monitoring specifically for the Quartzite project. Road closure effectiveness is also routinely monitored, and changes to lynx habitat are addressed in individual project analyses as part of the cumulative effects analysis.

12) The Colville NF has no quantitative Forest Plan Standard for maintaining old growth and has not maintained a comprehensive forest wide inventory of areas meeting the Northern Region's old growth criteria, so landscape scale viability based upon availability of denning habitat cannot be assumed.

Response

The Colville National Forest uses definitions of old growth based on the North Idaho Zone, which lies within the Northern Region. Lynx den in a variety of habitats, from slash piles left after logging to old growth, and the amount down wood is more important than the age of the overstory trees (Ecology and Conservation of Lynx in the United States, Ruggiero, 2000), so an inventory of old growth would not suffice to predict denning habitat amount, quality or location.

References

Ruggiero, L. F., K. B. Aubry, S. W. Buskirk, G. M. Koehler, C. J. Krebs, K. S. McKelvey and J. R. Squires. 2000. Ecology and Conservation of Lynx in the United States. USDA Forest Service General Technical Report RMRS-GTR-30WWW. 480 pp.

13) The lynx is a threatened species and steps should be taken to reduce mortality factors. Yet, none of the action alternatives would take steps to reduce snowmobile access. The DEIS fails to recognize the site specific impacts created by such snow compaction activities are a threat to lynx. It mentions that snowmobiles might create competition from other predators (bobcats and coyotes) facilitated by snow compaction from winter logging or increased snowmobile use, but stops short of an actual analysis. Snowmobile use is also disclosed in an unscientific manner. This fails to consider the increased access, and future snowmobile usage. We contend the analysis is faulty, because new snowmobiles and do travel through deep snow. Statements in the Lynx DEIS such as" this (motorized use) disturbance might have a temporary, negative effect to lynx movement" (p. 3-166) and "we expect that some snowmobilers that sled the 4342 FS road will travel out on the new roads" (p. 3-166), fail to recognize and analyze established science, specifically snowmobile and ORV impacts. Disclosure of more accurate information and an explanation on calculating RVD (recreation visitor days) would help the public understand user level and patterns over the past 8 years.

Response

None of the alternatives took steps to reduce snowmobile access because the best available science indicates that the current level of snowmobile use is low-to-moderate: 400 Recreation Visitor Days (1 RVD equals 12 hours of use) during the winter (DEIS pg. 3-129) and not a threat to lynx. Access would be increased temporarily on a new road until that road is obliterated after harvest activity, but snowmobile activity would not change much because though newer models of snowmobile can and do travel through deep snow, the areas will remain fairly treed and thus unattractive for "highmarking" and other hill climbing.

14) The DEIS fails to fully analyze and disclose cumulative effects for Canadian lynx. The Quartzite project only consider lynx habitat issues within the project area and LAU, ignoring the obvious fact that viability of lynx depends upon cumulative impacts and habitat conditions within a larger landscape context. The DEIS does not show the road system outside of the LAU, thereby violating the NEPA requirements for cumulative impacts analysis, as well as violating the language in the LCAS. Cumulative effects from ongoing logging and road construction are not considered, the DEIS states that private lands will not be considered lynx habitat. This makes no sense as lynx freely move within the entire LAU, and the checkerboard land inevitably offers habitat and connectivity areas, as well as increased mortality threats - one cannot separate the private land out of the equation.

Response

We designed the Lynx Analysis Unit (LAU) network to encompass the lynx habitat in the area (DEIS pg. 3-126). A cumulative effects analysis, based on the LCAS, was conducted on the LAUs contiguous with the Chewelah LAU (pg. 3-167). The analysis specifically addresses activities on private land: "Our analysis for each project considered pact and current harvest on both federal and non-federal land" (pg. 3-167).

15) Two "long term" mitigation measures outlined in Chapter Two are inadequate for lynx security especially given the history and dilemma of effective road closures on the District, this topic should have been discussed and analyzed more fully. In the same section, the DEIS acknowledges that "it is not possible to mitigate the short-term impacts of the road" for the Alternative F (DEIS p. 2-30). But there is no evaluation on the effects on lynx of the preferred Alternative K.

Response

The short-term impacts of the road cannot be mitigated and are addressed in the analysis. If constructed, this segment will be bermed, gated or otherwise blocked until timber harvest activity commences (DEIS pg. 2-26).

16) We see no information about the historic lynx populations in the project area or site-specific analysis of the mortality factors that the LCAS requires. We find this a remarkable statement in that all of the threatened and endangered species that are discussed have been clearly impacted by past management -yet more of the same management is somehow not going to impact their survival. We find the risk assessment procedure faulty and that it does not follow the requirements of the Forest Plan and ESA.

Response

There are no records of lynx occupying the Chewelah LAU (DEIS pg. 3-127). Some biologists thought that the LAU should not extend as far south as it does. Research outlined in the LCAS concludes that the western US, lynx mainly occupy spruce and subalpine fir habitats. Because this habitat type extends into the project area, we included it during mapping of the LAUs (pg. 3-126).

17) We request that additional information is disclosed regarding the habitat suitability of the additional acres being added to the MR units 01, 02, 04, 05 and 06 areas. What are the snag and downed wood levels within the additional acres? Crown closure?

Response

The DEIS discloses that all additional acreage consists of the "best habitat available" (DEIS at 3-135) or areas where "desired habitat features are more likely to be maintained over time" (DEIS at 3-138). This complies with Forest Plan direction and guidelines (4-38). Additional information on these areas is contained in the analysis files.

18) DEIS fails to disclose how many acres of MR 0l, 02, 04, 05 and 06 units will be affected by the proposed logging.

Response

As stated in the DEIS (3-137), none of these areas are affected by the proposed logging.

19) The DEIS discloses that all action alternatives "address" Forest Plan direction for providing suitable travel corridors between old-growth management units, but fails to disclose how the action alternatives meet the Forest Plan in this regard. Please indicate where travel corridors are and how they meet Forest Plan direction and how all alternatives will change or affect the corridors.

Response

See DEIS pages 3-139 and 3-140 for the map and discussion of travel corridors.

20) DEIS fails to conclude through recent and up to date field surveys whether nesting barred owls currently exist in the designated MA -1 within the Quartzite Area. The last monitoring work for barred owls occurred 11 years ago, in 1991 which "yielded positive responses to calling" (DEIS p. 3-109). An up to date field survey needs to done to further identify nesting locations that would match the proposed 260 acre addition to MA -1 and to find if any locations occur outside the current and proposed additions to MA -1.

Response

The Forest Plan provides for barred owls through a network of MA-1 areas managed to retain or provide suitable nesting and foraging habitat. While up-to-the-minute information regarding current barred owl use of each area would be desirable, past monitoring has already shown that the maintenance of the conditions prescribed by the Forest Plan does provide suitable habitat for this species. Therefore, additional survey results (either positive or negative) would not alter these management objectives or prescriptions.

21) Under Region 6, the USFS listed the pacific western big-earned bat as a sensitive species and therefore should conduct an up to date survey. The last survey done was over 10 years ago (1988). The two old mine sites located in the project area contains potential habitat and could harbor some bats.

Response

As described on 3-171 of the DEIS, all alternatives were designed to avoid these known sites with potential habitat for roosting or hibernating big-eared bats. No impacts are anticipated on any bat colonies that may be utilizing these sites.

22) We are also concerned that the DEIS has not disclosed if a up to date and current field survey has been done in the Quartzite Area especially when the DEIS states that white-headed woodpecker "use this watershed" (DEIS p.3-113) and when the DEIS acknowledges that "activities in potential habitat may impact unknown nests" (p. 3-140).

Response

There is always the possibility that vegetation management or other activities will unintentionally impact nesting birds (see response to comment #26 below), but the intent, and anticipated result, of the proposed action is to improve habitat conditions for this species, and therefore maintain or improve white-headed woodpecker population levels.

23) In the Environmental Consequences section, the DEIS claims that more an alternative proposes to underbum and to commercial treatments the more "positive effects it has on white-headed woodpecker habitat" (DEIS p. 3-140). Please explain this rational, as commercial logging does not replicate underburning prescriptions.

Response

As stated in the DEIS, the treatments are designed to help restore habitat conditions (open understories and large ponderosa pine) preferred by white-headed woodpeckers by reducing understory densities through the removal of shrubs and shade-tolerant understory trees. Both commercial logging (as proposed) and underburning contribute to restoration of these conditions. The combination of logging and underburning has the potential to create the desired conditions over a shorter time-frame.

24) Cumulative effects are not disclosed for white-headed woodpecker.

Response

See DEIS at 3-141 & 3-142 for the discussion of cumulative effects with regard to white-headed woodpeckers.

25) The Quartzite DEIS fails to adopts ICBEMP's recommendations for goshawk, which is said to be the most up to date science, and fails to identify, discuss, protect or even analyze fledging areas. NEP A (Sec 1500.1 (b)) requires that up to date science be used for implementation of a federal project, then Quartzite DEIS fails to do that. Does the Preferred Alternative K propose to build or reconstruct any roads in the post-fledging area (PFA)? The preferred alternative will "maintain 50% canopy cover", therefore loose 50% canopy cover as well, which will "limit future goshawk nesting sites in the PFA" (DEIS p. 3-146). It is noted that goshawks are sensitive to disturbance, therefore any activity near the vicinity of any nesting site should be eliminated, versus mitigating for the inevitable negative affects from road building, thinning and prescribed fire. When was the last survey done for northern goshawk? How many attempts were made to relocate them? How many attempts have been made to relocate them outside the PFA? Cumulative effects are not disclosed for raptors and northern Goshawk.

Response

The alternatives were designed to comply with the Forest Plan (as amended) regarding goshawk and other raptors. Prescribed management activities (and mitigation measures) within the PFA follow that direction. Cumulative effects for goshawks and other raptors are discussed on gage 3-147of the DEIS. Information regarding surveys is found in the analysis files.

26) As far as we are aware, the CNF has not taken any steps to comply with Executive Order 13186 of January 10, 2001. This requires the FS to take steps to prevent the "take" of migratory birds and comply with the Migratory Bird Treaty Act. The Quartzite Project would likely result in the "take" of migratory birds due to logging activities' disturbance or destruction of nest sites. Please disclose how the CNF is acting in compliance with Executive Order 13186, both with the Quartzite Project and forestwide.

Response

The CNF is in full compliance with EO13186. The comment indicates some confusion regarding the definitions of "take" as applied in the Executive Order. The following excerpt from the EO will provide some clarification:

> *Sec. 2. Definitions. For purposes of this order:*
> *(a) "Take" means take as defined in 50 C.F.R. 10.12, and includes both "intentional" and "unintentional" take.*
> *(b) "Intentional take" means take that is the purpose of the activity in question.*
> *(c) "Unintentional take" means take that results from, but is not the purpose of, the activity in question.*

Therefore, "intentional take" of migratory birds is the deliberate capture and/or mortality of individual birds, such as may be required by some research studies. The unavoidable or accidental loss of individual birds as a result of timber harvest, prescribed burning, or other activities conducted or allowed by the Forest Service is called "unintentional take".

On the subject of "unintentional take", the EO requires the Forest service to:

> *(9) identify where unintentional take reasonably attributable to agency actions is having, or is likely to have, a measurable negative effect on migratory bird populations, focusing first on species of concern, priority habitats, and key risk factors. With respect to those actions so identified, the agency shall develop and use principles, standards, and practices that will lessen the amount of unintentional take, developing any such conservation efforts in cooperation with the Service. These principles, standards, and practices shall be regularly evaluated and revised to ensure that they are effective in lessening the detrimental effect of agency actions on migratory bird populations. The agency also shall inventory and monitor bird habitat and populations within the agency's capabilities and authorities to the extent feasible to facilitate decisions about the need for, and effectiveness of, conservation efforts;*

This requirement was also addressed in the DEIS (page 3-176-177).

27) The DEIS fails to discuss summer habitat needs for elk pertaining to their summer range within the project area. Does the DEIS meet Forest Plan goal of 65% for elk summer range (Forest Plan Appendix B, Summer Range Elk Management Plan) and will it meet summer road density standards? Please, explain how the lifting of the winter road closure on Eagle Mountain will increase composite MA-6&8 road density during the summer? The DEIS fails to identify exactly where the cutting units will be and how much cover removed relevant to the location of MA 6 & 8.

Response

The CNF Forest Plan does not contain any goals or standards specific to forage, cover, or road density on elk summer range. Appendix B of the Forest Plan EIS is a description of the analysis process, not a summer range elk management plan.

28) The greatest threat to ungulate populations is the ever-increasing network of roads that continue to be used by fall hunters. The construction and subsequent use of roads are the most important disturbance factors used to calculate elk habitat evaluation. Nowhere in the DEIS does the Forest Service identify the exiting road network within the project area. How many miles/sq. miles exist? We are requesting that the road density analysis be conducted again, taking into account the percentage of "closed" roads that have~ user-created illegal access. Since this problem is not easy to eliminate in certain cases, the occurrences of closed roads being illegal used by any type of motorized vehicle usage must be included in analysis towards efforts to meet Forest Plan Standards.

Response

The existing road network is discussed in the Quartzite Roads analysis (analysis files). Road density figures presented for big game winter range include both system and non-system (user-created) roads. If a road is not considered "effectively closed" (complete elimination of motorized traffic), it is not considered to be a closed road in winter range habitat assessments.

29) The Forest Service is knowingly allowing the spread of noxious weeds already in the winter range areas via logging activities, therefore decreasing the abundance of forbs and grasses and forage quality. Mitigation efforts of emphasizing prevention, early-treatment and correction are laughable since the best way to prevent the spread of noxious weeds is not to engage in such activities.

Response

Noxious weeds spread through a wide variety of vectors, including recreational activities, wildlife and livestock movements, wind and water, as well as Forest Service and private land vegetation management activities. Even if all FS vegetation management activities were discontinued, noxious weeds would continue to establish themselves and spread. The Forest Service believes that a program involving both active prevention and early treatment (as prescribed by the mitigation measures in the DEIS) is the most effective way to address noxious weed problems.

30) Just last month, July 18th 2002, a radio-collared grizzly bear was spotted by local residents at the confluence of Cottonwood Creek and Grouse Creek. A field visit by Idaho Fish and Game confirmed that the bear sighting was indeed a grizzly bear from Idaho' Kalispel Basin. A formal consultation with the US Fish and Wildlife is required before the FEIS and ROD is issued on the Quartzite Management Project, otherwise the FS would be in direct violation of the Endangered Species Act. The determination of effects of the proposed action "may affect but are not likely to adversely affect" grizzly bears may change, since the DEIS was issued to the public prior to the grizzly bear sighting.

Response

The potential for a grizzly bear to occur in the project area was recognized in the DEIS (3-125) and was a factor in the subsequent effects analysis. However, the mere presence of a grizzly bear (or any other listed species) does not automatically require formal consultation with USFWS. Formal consultation is required only when proposed activities "may adversely affect" listed species. In August 2002 (see memo in analysis files) the District Wildlife Biologist reviewed the original findings of the Biological Assessment and DEIS, and determined that no change was required in the original determination (project activities are not likely to

adversely affect grizzly bears) resulting from the presence of this individual bear, which has since left the project area for destinations further east, across the Pend Oreille River.

31) While the DEIS repeatedly claims that habitat for MIS and TES species may be adversely affected by logging in the Quartzite PPA, the long term effects will be positive due to the promotion of LOS. However, the DEIS contains no support for the assumption that the promotion of LOS structure will result in an increase in old growth habitat which will be utilized by old-growth dependent species. Furthermore, the DEIS does not explain what old growth dependent species will use for habitat while we wait for the stands logged under the banner of "LOS promotion" to become LOS stands.

Response

The Quartzite area already contains several LOS habitat units (see DEIS at 3-108 thru 3-112). No logging is proposed in any LOS habitat units, and linkages of suitable habitat will be maintained between these units. The Forest Service has the expectation that these existing habitat units will continue to be used by old-growth dependent wildlife species.

32) The DEIS does not disclose which logging units occur in which MIS habitat units or corridors. The DEIS does not disclose which logging units occur directly adjacent to the habitat units, which have the potential of creating islands out of the habitat units. The DEIS does not disclose how these logging units and the associated silvicultural prescriptions will improve or degrade habitat or corridors.

Response

The DEIS (3-135) states that no logging will occur within the pileated woodpecker habitat units, the pine marten habitat units, or the MA-1 area. These are the only "habitat units" established for any MIS under the Forest Plan. The DEIS also states (3-139) that connectivity between these units will be maintained in accordance with Forest Plan (as amended) direction. If connectivity is maintained, none of these units can become "islands" as a result of proposed management activities.

33) The DEIS indicates that an additional 260 acres will be "managed as barred owl habitat," and another 123 acres would be managed as barred owl forage, "thus insuring Forest Plan consistency." However, there is no discussion of the suitability of the additional acreage for habitat and forage.

Response

The DEIS (3-135) states that the selected core area provides the best available habitat. To state that the additional foraging area is "insuring Forest Plan consistency", implies that the area meets the guidelines established in the Forest Plan (4-70).

34) The DEIS states that the down log retention requirement insures pileated woodpecker forage habitat within these harvest areas." Without meaningful monitoring, how can the Forest Service know whether the requirement is meeting the objective?

Response

Timber sale contracts incorporate these requirements and inspections occur before contractors are released from their contractual obligations. This monitoring of timber sale contract requirements confirms that pileated woodpecker forage habitat requirements are met.

35) In speaking to the cumulative effects on this species, the DEIS suggests that current and future activities will have less negative effect on the pileated woodpecker than past activities, but does not directly address the cumulative effect the current proposal will have on this species.

Response

DEIS pg. 3-135 states "the incremental effects of the alternatives when added to other past present and reasonably foreseeable future actions were considered for barred owl…"

36) The DEIS fails to discuss the impacts on marten that will result from extensive opening of the canopy in many of the proposed logging units containing SS6 structure. The DEIS suggests that because reductions in habitat would occur in units outside of marten habitat units, there would be no threat to marten habitat. This assumption is based on the notion that marten are only using habitat designated for them by the Forest Service. Cumulative impacts need to include not only analysis of impacts within FS-designated habitat area, but across the entire PPA.

Response

The DEIS (3-137 and3-138) discloses effects to SS6 outside designated marten habitat units. There is no assumption that marten do not occur outside designated marten habitat units. As stated in the DEIS (3-137), stands outside these habitat units are not essential to meet Forest Plan habitat objectives for marten.

37) There is an inadequate discussion as to the legitimacy of adjusting boundaries of pine marten units and why such alteration is necessary. No discussion of the quality of the new habitat acres as compared to those in the original units. No discussion of whether the boundary adjustments are necessary in order to accommodate logging units. Why wasn't appropriate habitat chosen when the pine marten units were first set aside? Where is the confidence in a wildlife management strategy that moves around habitat units anytime they get in the way of a timber sale?

Response

Marten and other old-growth habitat units were established under the Forest Plan with the provision that these units would be ground-checked and verified over time, and that some adjustments would be necessary. The modifications proposed in the DEIS are part of this process. The DEIS (3-138 states "these boundary adjustments are designed to increase the area that coincides with reference SS6 strongholds, where desired habitat features are more likely to be maintained over time."

Large tree, multi-storied, closed-canopy cover types support good marten habitat. All six of the original habitat units were evaluated and rated for these conditions. The table in the DEIS (3-112) displays this evaluation. The table on page 3-139 displays closed-canopy cover type evaluations for the three habitat units that would be adjusted by the action alternatives.

The interdisciplinary team took their responsibility seriously, and designed habitat adjustments that provide the best habitat now and into the future. By recognizing the principles of disturbance ecology the team selected areas where aspect, topography, proximity to riparian areas and vegetation types coalesce to produce desired habitat conditions that persist over time.

38) Once again, the conclusions that there will be improvement in white-headed woodpecker habitat are based on the unsupported notion that promoting old growth structure will improve old growth habitat.

Response

Old-growth habitat is defined by the presence of old-growth structural elements (large trees, downed logs, etc.). Improving one leads to improvements in the other.

39) The DEIS does not provide information regarding Forest Plan requirements for snow-intercept cover and thermal cover and whether those requirements are being met in the PPA. The DEIS fails to disclose how Forest Plan Standards are being met Forest wide (or even District wide) for maintaining thermal and snow intercept thermal cover for elk winter range. The DEIS fails to discuss whether canopy closure is currently a limiting factor for ungulate species of concern in proposed treatment areas. Without information on existing condition and distribution of cover and forage, the public is unable to evaluate existing conditions and potential effects of this proposal.

Response

See DEIS (3-142 thru 3-144). Winter range conditions Forest or District wide are outside the scope of this analysis. The analysis tiers to the Forest Plan, which documents winter range habitat conditions as a limiting factor for big game winter range, and discusses effects of the alternatives on meeting Forest Plan standards and guidelines.

40) The cumulative effects analysis goshawk contains no direct statement of detrimental effects to goshawk, despite earlier comments that logging has an adverse effect on accipiter nesting habitat and the statement on page 3-146 which acknowledges that thinning could limit future goshawk nesting sites in the PFA.

Response

Effects to goshawk , and other raptors, are evaluated with respect to the Forest Plan standard (4-40) to manage the (known) nest sites and surrounding areas to insure their continued usefulness to the species. The DEIS (3-145 thru 3-147) displays expected effects with respect to the known goshawk nests.

41) Is mitigation proposed for the "greatly reduced" blue grouse habitat? Such a reduction is of particular concerns considering the fact that recent monitoring reports indicate that monitoring for these species is totally inadequate. As such, the Colville NF cannot assure the public that population viability of MIS is being met on the Forest wide level as required by the Forest Plan.

Response

The context of the quote is omitted. The DEIS (3-148) states "Pre-Forest Plan regeneration harvest in all watersheds greatly reduced blue grouse habitat by removing large ponderosa pine or Douglas-fir, especially mistletoe-infested Douglas-fir, on open, dry, south-facing slopes." Habitat strategies incorporated into the Forest Plan, considered the effects of pre-forest plan regeneration harvest on blue grouse habitat. Monitoring of blue grouse populations is conducted by the Washington Department of Fish and Wildlife. Their 2001 Game Status and Trend Report states that "current population levels [of forest grouse, including blue grouse] are considered healthy and sufficient to meet hunter demand.

42) The DEIS makes numerous references to the steps involved in conducting a Biological Evaluation, but fails to state which species BE's were actually completed for. No summaries of the findings of the BE's are included in the DEIS. Have BE's for TES species been completed as required? Are the statements in the DEIS regarding likelihood of adverse effects based on findings in the BE's?

Response

Biological Evaluations are conducted for federally listed (threatened or endangered) species and Forest Service Sensitive species. Consultation with the U.S. Fish and Wildlife Service is conducted when proposed actions "may affect" a federally listed species. A summary of the findings of the Biological Evaluation is presented in the discussion on each federally listed and sensitive species in the DEIS (pages 3-158 thru 3-176). Findings are presented in bold-faced type. The Quartzite biological evaluation was completed and sent to the USFWS on 3/18/2002 and their concurrence was received on 7/3/2002. The Biological Evaluation and the USFWS concurrence letter are both found in the analysis files.

43) Has the Forest Service conducted surveys to determine that eagles are not using the area for roosting? The statement that "they have not been observed," does not necessarily indicate that formal surveys have been conducted.

Response

If surveys had been conducted, the results would have been presented. Under the Biological Evaluation process, formal surveys are not necessarily required. The DEIS states (3-124) that the area does not contain good quality roosting habitat or a significant roost site, but acknowledges that there is a potential for bald eagles to be affected by management activities, hence the "may affect, but not likely to adversely affect" determination presented in the Biological Evaluation and page 3-158 of the DEIS.

44) The statement, "Even though treatments may affect specific areas in terms of usefulness for travel, there are many other stands that would provide potential movement corridors," does not adequately address the importance of travel corridors to grizzlies.

Response

The statement recognizes the importance of travel corridors and the DEIS (and Biological Evaluation) displays effects of the alternatives on potential grizzly bear movements through the project area. Further explanation of their importance was not considered necessary.

45) The statement that grizzly bear seclusion habitat effects during logging activities would be negligible "because sight distance would be fairly short" does not address the noise created by logging activities.

Response

The DEIS discussion on seclusion (3-159) takes a long-term habitat suitability perspective by discussing the effects of vegetative changes resulting from timber harvest as they relate to grizzly bear sightability (and therefore seclusion) by all Forest users. Although we agree that the noise of logging activities can disturb or displace grizzly bears (and other wildlife), the effects of logging noise were not emphasized because the area is within Management Situation 5 (DEIS 3-161) and not managed specifically to provide for grizzly bear habitat.

46) The potential importance of the area to transient wolves in downplayed in the analysis. Wolves are known to travel great distances, and, based on sightings in the PPA, the PPA may be playing an important role in wolf travel.

Response

The DEIS (3-163 and 3-163) recognizes the potential for wolves to travel through the area, but does not document any sightings within the planning area as indicated by this comment.

47) The DEIS fails to discuss or take into account the impacts of snowmobiles on lynx and other species. In particular, there is no discussion of the impacts of snowmobile trails in providing access to lynx winter habitat. The DEIS does not discuss the significant increase in the popularity of snowmobiling and how this increase will add to the cumulative impacts on lynx and other wildlife. While the DEIS discusses snowmobile trail density, the density is not quantified. In addition, snowmobiles, because of advances in design, are capable of off-road travel. The FS lack of monitoring of snowmobile use precludes accurate knowledge of actual snowmobile use in the PPA. This represents a critical lack of information given the fact that the LAU is both divided and bordered by routes popular with snowmobilers, one of which is being "upgraded," which will likely increase snowmobile use.

Response

See the response to comment #13 in this section.

48) The DEIS states that "many … harvest units and prescribed fire units have been have been proposed in the non-lynx habitat in the Quartzite section of the LAU," and then states that the logging will, therefore, not affect lynx. If these portions of the LAU are of no consequence to lynx, then why were they included in the LAU in the first place? Why is there no discussion of the function of the role of non-lynx habitat in an LAU in order to provide the public a basis upon which to evaluate the impacts of the proposed logging in these non-habitat areas?

Response

The LAU borders were outlined using the best available information for plant associations or biophysical environments. The LAUs cover a large area, little of which had site-specific information. Because of this we took a cautious approach to ensure that we had included all potential lynx habitat, which caused us to include areas that would not support lynx habitat. During project planning we more closely examine the habitat within the LAU boundaries to remove from consideration those areas that will not support lynx habitat (non-lynx habitat) (FEIS page 3-126).

49) The very last statement of the analysis of impacts to lynx states, "lynx may occupy the Quartzite Watershed Management Project planning area," yet the entire analysis is based largely on the position that lynx will not be affected because the logging units within the LAU are non-lynx habitat. Obviously, lynx are under no obligation to exist only within the boundaries of an LAU, and impacts to this threatened species should more fully analyze the potential impacts to the species outside of LAU's.

Response

The LCAS indicates that in the western US, primary vegetation that lynx tend to occupy consists of cool or cold biophysical environments that would support Engelmann spruce and/or subalpine fir as the climax habitat (lodgepole pine or other species might occupy the site). The LAU encompasses these areas (p. 3-126). The LCAS also states that dry forest types do not provide lynx habitat. These areas lie outside of the LAU boundary, or if they are within the LAU boundary are mostly identified as "non-lynx habitat" (p. 3-126). The analysis is not based on the position that logging units within the LAU are in non-lynx habitat: it states that in some alternatives, both roads and logging units lie within lynx habitat in the LAU (p. 3-164). Though surveys in the LAU did not record lynx (p. 3-127), it is not possible to conclude with 100% certainty that lynx do not occupy the LAU. Therefore, it is not possible, with harvest activities in lynx habitat in the LAU, to ensure a "no effect" call.

50) The Colville Forest should be amending or revising the Forest Plan to incorporate conservation measures that would reduce or eliminate the identified adverse effects to lynx. The Lynx BA's determination, means that Colville NF Forest Plan implementation is a "taking" of lynx, and makes Section 7 formal consultation

on the Forest Plan mandatory, before actions such as the Quartzite Project are approved. See Pacific Rivers Council v. Thomas, 30 F.3d 1050 (9th Cir. 1994) (affirming that ESA § 7 consultation must be completed before ongoing agency actions impacting protected species may continue). Such "taking" as is occurring under the Forest Plan can only be authorized with an incidental take statement, issued as part of a Biological Opinion during Section 7 consultation. The Colville NF must incorporate terms and conditions from the programmatic BO into a Forest Plan amendment or revision before projects affecting lynx habitat, such as the Quartzite Project, can be authorized.

Response

Direction regarding amending or revising Forest Plans to address lynx habitat considerations is contained in the Canada Lynx Conservation Agreement (CA) signed by the U.S. Forest Service and the U. S. Fish and Wildlife Service (USFWS) February 7, 2000. Because the Colville National Forest is starting the Forest Plan revision process, the direction from the Regional Office in Portland was to address lynx conservation during that revision, and not do a specific Forest Plan amendment.

In the interim, the Colville National Forest has been given an updated Biological Opinion on the existing Forest Plan from USFWS; we are applying the guidelines provided by the Lynx Conservation Assessment and Strategy; and all projects- including the Quartzite project - receive consultation from the U.S. Fish and Wildlife Service. Through this consultation, it has been determined that there are no anticipated adverse effects, and no "take" of Canada lynx is anticipated, therefore an incidental take statement is neither required nor appropriate.

51) The statement on page 3-169 that "wolverine might be affected by corridor widths, but this should not preclude wolverine from using a corridor is both vague and unsubstantiated.

Response

Wolverine move through and occupy a wide variety of habitat types, from wet and heavily forested to dry and very open. Their abundance seems related to prey abundance (Gardner 1985, Banci 1987, Demarchi et al. 1990, Banci 1994). Few studies have examined the effects of timber harvest on wolverine, though Hornocker and Hash (1981) found no difference between wolverine movements, habitat use, or behavior in wolverines that inhabited logged vs. unlogged habitats in their study site. They do not appear to shun open areas: in Washington wolverines have been found in sagebrush and in Oregon on the south side of the Columbia River, across which they presumably swam. In Idaho wolverines commonly crossed natural openings and areas with little overstory such as burned areas, meadows, alpine areas (Copeland 1996). Based on the above, on a local scale, corridor width is not an issue affecting wolverine movements.

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52) The DEIS fails to fully set forth or discuss the CNF old growth standard and compliance with the CNF Forest plan standard for old growth and old growth species and habitat protection and does not in fact demonstrate compliance with that standard.

Response

Old-growth habitats, and the species that use those habitats, are discussed in the DEIS beginning on page 3-108 (affected environment) and 3-134 (environmental consequences). These sections discuss the applicable Forest Plan old-growth standards and guidelines and how the proposed alternatives relate to them.

53) The CNF has never conducted a forest-wide inventory of old growth forest and old growth species habitat. According to an CNF response to a FOIA request regarding forest wide inventories for old growth habitat, "There is no forest wide record of areas managed to provide old growth MIS habitat that do not meet minimum old growth criteria." (dated April 20, 2000) The Project would adversely affect old growth species in the CNF by further reducing potential old growth and replacement old growth habitat without knowledge of the adequacy of existing old growth habitat forestwide.

Response

The DEIS (page 3-135) clearly states that 1) no alternative proposes to harvest old growth, and 2) no alternative proposes harvest in the pileated woodpecker habitat unit, the MA-1 core area or the marten habitat units, and 3) stands outside pileated woodpecker habitat units and the MA-1 area are not essential to meet the Forest Plan habitat objectives for barred owl, the old growth Management Indicator Species. The proposed activities meet Forest Plan standards and guidelines for old-growth habitat management. Disclosure of Forest-wide levels of old growth was not essential to the analysis.

54) The DEIS's basis for logging to "save" the forest from predicted insect infestation, and therefore maintain habitat for old growth species is not supported by any scientific research. The DEIS claims it is fostering the development of old growth characteristics by thinning, yet it cites no science to support such a claim. Instead, the Quartzite project would "thin" and therefore reduce the amount of down wood recruitment.

Response

The proposed thinning harvests are designed to accelerate and improve the growth of remaining trees, therefore producing large trees, a critical structural component of old-growth habitat, within shorter timeframes than would naturally occur. Years of silvicultural experience has proven this to be possible. As these stands develop over time, downed wood recruitment will continue.

55) The DEIS contains no discussion of the increased penetration of the roadless area that would occur as a result of the logging units located adjacent to roads surrounding the roadless area. This impact was, therefore, not included in the cumulative effects analysis or the portions of the DEIS that discuss the impacts on species that depend upon seclusion habitat.

Response

Seclusion habitat, and the way it is affected by the project alternatives, is discussed and defined on pages 3-159 thru 3-162 of the DEIS.