Oregon Natural Resources Council
PO Box 1648, Eugene OR 97440
541-344-0675, fax 541-343-0996
dh@onrc.org http://www.onrc.org/

27 July 2004

Reviewing Officer
Linda Goodman, Regional Forester
USDA Forest Service, R6
ATTN: 1570 Appeals/Objections
PO Box 3623
333 SW First Ave
Portland OR 97208-3623
appeals-pacificnorthwest-regional-office@fs.fed.us
comments-pacificnorthwest-fremont-winema@fs.fed.us

Subject: ONRC objections to the Winema National Forest's Ninemile HRFA EA

Dear Forest Service:

Pursuant to the Healthy Forest Restoration Act (HFRA), please accept the following objections from Oregon Natural Resources Council concerning the Winema National Forest's Ninemile Fuel Reduction Project Environmental Assessment dated June 2004. Our fears are coming true. The HFRA is being used and abused to exclude the public and promote heavy-handed logging where much lighter-on-the-and methods are preferable and effective. The Forest Service is going down a path of utter disregard for the public that they serve. Instead of building trust they are shutting the public out, ignoring sound science, and abusing their authority.

The proposed action involves:

- 83 total treatment units on 6961 acres
- 46 commercial logging units on 3461 acres
- 856 acres of old forest proposed for treatment
- 4-21" dbh trees removed
- 14.3 mmbf timber yield
- 12.8 miles of "temporary" road construction
- 472 acres of skid trails and landings
- 173 acres of landing burns
- 50 square foot basal area target
- yard tops attached fuel prescription
- [unknown] livestock grazing
- [unknown] yarding methods (assumed to be ground-based)

Forest Service failed to disclose the fact that removing trees up to 21 inches can increase fire hazard and conflict with the purpose and need.

In our scoping comments ONRC said:

> The Chiloquin RD's letter of January 27, 2004 states that the proposed Ninemile Timber sale "complements the Chiloquin Community Fuel Reduction Project." Thus, first and foremost, the Ninemile Timber Sale EA should acknowledge that in the May 3, 2002 Decision Notice and FONSI the Chiloquin Ranger District of the Winema National Forest (correctly) rejected an alternative that would have cut 4 million board feet of mature and old growth ponderosa pine up to 21 inches DBH (alternative 3) in the name of fire protection. This timber alternative was rejected in favor of an alternative that would instead limit conifer logging to 8" DBH, and which also included a "combination of treatments" for "mechanical brush treatment and underburning" (in many instances in the same units) "to achieve the desired reduction in fire hazard."
>
> While giving special consideration to local tribal concerns and other public input, the purpose of the project was "to lower the fire hazard around the community of Chiloquin." Page 3 of that EA stated: "Currently about 95% of the Chiloquin Community Fuels Reduction Project area is in a high hazard condition." Yet, in selecting the smaller diameter, alternative 2, the Winema National Forest concluded: that the 8" maximum DBH alternative (alternate 2) "best addressed" the "National Fire Plan to reduce fire hazard around communities at risk from wildfire." The Ranger wrote: "I have selected Alternative 2 because it will reduce high fuel loadings over a large-scale, high severity wildfire occurrence…It will reduce the high hazard fuel loading in the (4100 acre) analysis area and reduce the overall risk of stand replacement fire." In addition prescribed "burning and mechanical (brush) treatment (also part of Alternative 2) will increase the quantity and quality of forage by stimulating new shoot production, retaining a seed source, and provide a growing space for new plants in burned areas."
>
> In this context, ONRC and KSWC request that the Forest Service disclose the full environmental effects of the Ninemile Timber Sale proposal. As the proposed Ninemile Timber Sale and Natural Fuels Reduction Project likens itself to the Chiloquin Community Fuel Reduction Project, **please disclose the effects of any alternative that recommends removing trees over 8 inches in terms of reducing shade, reducing fuel moisture, increasing insolation, stimulating the growth of ladder fuels, increasing wind speed under the canopy, increasing the costs of future treatment of ladder fuels, and the overall consequences in terms of fire hazards**.

The Ninemile EA fails to describe how removal of trees 12-21 inches dbh will increase fire hazard. The NEPA document fails to acknowledge the paucity of scientific support

for commercial logging to reduce fuels and reduce fire effects and fails to recognize that logging often increases fine fuel loads while removing the large logs that are relatively less prone to burn. Thinning also increases wind and light penetration of the canopy and causes fuels to dry out which make them more prone to burn and increases the time it takes woody material to decompose. Removing medium trees also removes shade and resource competition that helps suppress the growth of small trees and brush known as "ladder fuels."

> Thinning opens stands to greater solar radiation and wind movement, resulting in warmer temperatures and drier fuels throughout the fire season. [T]his openness can encourage a surface fire to spread, …

USDA Forest Service; Influence of Forest Structure on Wildfire Behavior and the Severity of Its Effects, November 2003.
http://www.fs.fed.us/projects/hfi/2003/november/documents/forest-structure-wildfire.pdf

> Theoretically, fuel treatments have the potential to exacerbate fire behavior. Crown fuel reduction exposes surface fuels to increased solar radiation, which would be expected to lower fuel moisture content and promote production of fine herbaceous fuels. Surface fuels may also be exposed to intensified wind fields, accelerating both desiccation and heat transfer. Treatments that include prescribed burning will increase nutrient availability and further stimulate production of fuels with high surface-area-to-volume ratios. All these factors facilitate the combustion process, increase rates of heat release, and intensify surface fire behavior.
> …
> Thus, treatments that reduce canopy fuels increase and decrease fire hazard simultaneously. With little empirical evidence and an infant crown fire theory, fuel treatment practitioners have gambled that a reduction in crown fuels outweighs any increase in surface fire hazard….

Omi, P.N., and Martinson, E. J. 2002. Effect of fuels treatment on wildfire severity. Final report. Western Forest Fire Research Center. Submitted to the Joint Fire Science Program Governing Board
http://www.cnr.colostate.edu/frws/research/westfire/FinalReport.pdf

Consider these words from Mike Dombeck, former Chief of the Forest Service:

> "Some argue that more commercial timber harvest is needed to remove small-diameter trees and brush that are fueling our worst wildlands fires in the interior West. However, small-diameter trees and brush typically have little or no commercial value. To offset losses from their removal, a commercial operator would have to remove large, merchantable trees in the overstory. Overstory removal lets more light reach the forest floor, promoting vigorous forest regeneration. Where the overstory has been entirely removed, regeneration produces thickets of 2,000 to 10,000 small trees per acre, precisely the small diameter materials that are causing our worst fire problems. In fact, many large

fires in 2000 burned in previously logged areas laced with roads. It seems unlikely that commercial timber harvest can solve our forest health problems."

Mike Dombeck on Fires in 2001 - How Can We Reduce the Fire Danger in the Interior West (Fire Management Today, Winter 2001, page 11).

Request for Correction of Information

- **This Request for Correction of Information is Submitted Under USDA's Information Quality Guidelines.**

- **Requestor Contact Information**
  Doug Heiken, Oregon Natural Resources Council
  PO Box 11648, Eugene Oregon 97440;
  541-344-0675 voice; 541-343-0996 fax; dh@onrc.org.
- **Description of Information to Correct**
  Publication: Ninemile Fuel Reduction Project Environmental Assessment.
  Date of issuance or URL: June 2004.
  http://www.fs.fed.us/r6/winema/management/analyses/ninemile/index.shtml
  Description of the information for which a correction is being sought:
  - The Winema National Forest erroneously states as fact that the Ninemile EA will reduce fire hazard. The Environmental Assessment provides biased and incomplete information to reach this conclusion.
  - The EA asserts that the effect of the Ninemile project on wildlife will be beneficial without disclosing how snag associated species will be harmed.
  - The Ninemile EA (p 115) says that the soil effects of Ninemile will be les than other logging projects.

- **Explanation of Noncompliance with OMB and/or USDA Information Quality Guidelines** "Objectivity" is a measure of whether disseminated information is accurate, reliable, and unbiased and whether that information is presented in an accurate, clear, complete, and unbiased manner. "Utility" refers to the usefulness of the information for the intended audience's anticipated purposes. Clearly identify sources of uncertainty affecting data quality. Use sound analytical methods. Use reasonably reliable and reasonably timely data and information. Present the model or analysis logically so that the conclusions and recommendations are well supported. Clearly state the purpose of the exercise and the intended recipients.

  The following alleged facts violate the objectivity and/or utility measures:

  - The proposed action will remove trees up to 21 inches with the alleged intent to reduce fire hazard. The EA fails to disclose that removal of trees between 12 and 21 inches will in fact increase rather than decrease fire hazard.

> Thinning opens stands to greater solar radiation and wind movement, resulting in warmer temperatures and drier fuels throughout the fire season. [T]his openness can encourage a surface fire to spread, …

USDA Forest Service; Influence of Forest Structure on Wildfire Behavior and the Severity of Its Effects, November 2003. http://www.fs.fed.us/projects/hfi/2003/november/documents/forest-structure-wildfire.pdf

> Theoretically, fuel treatments have the potential to exacerbate fire behavior. Crown fuel reduction exposes surface fuels to increased solar radiation, which would be expected to lower fuel moisture content and promote production of fine herbaceous fuels. Surface fuels may also be exposed to intensified wind fields, accelerating both desiccation and heat transfer. Treatments that include prescribed burning will increase nutrient availability and further stimulate production of fuels with high surface-area-to-volume ratios. All these factors facilitate the combustion process, increase rates of heat release, and intensify surface fire behavior.
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> Thus, treatments that reduce canopy fuels increase and decrease fire hazard simultaneously. With little empirical evidence and an infant crown fire theory, fuel treatment practitioners have gambled that a reduction in crown fuels outweighs any increase in surface fire hazard….

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- The Ninemile EA (p 49) says that up to 30% of the harvest units with bitterbrush will be left as untreated bitterbrush patches and concludes that these patches "provide no appreciable fire hazard." (p 49). Bitterbrush is a dangerous ladder fuel. Bitterbrush is extremely flammable, especially when pine needle drape is present [Riegel & Busse, p. 3], which is the case in this project area. Its flammability, combined with its population density and height, make bitterbrush a significant potential ladder fuel. The Pacific Northwest Wildfire Coordinating Group, in a publication prepared for property owners near fire-susceptible forests, warns that, under optimal conditions, bitterbrush fires may spread at up to 8 1/2 miles per hour, with flame lengths of 55 feet, burning 5,900 acres in one hour [Living with Fire, p. 4]. This project will cause another effect related to bitterbrush. Ponderosa pine trees are known to lift water from deep soil layers closer to the surface where it becomes available to the roots of bitterbrush. See Brooks, J.R., Meinzer, F.C., Coulombe, R., and J. Gregg.

2002. Hydraulic Redistribution of soil water during summer drought in two contrasting Pacific northwest coniferous forests. Tree Physiology 22: 1107-1117. http://www.fs.fed.us/pnw/pubs/journals/treephysiol22-1107-2002.pdf The effect of this water redistribution is to reduce the drought stress experienced by bitterbrush. By removing the trees and leaving the brush, thinning will likely reduce the moisture content of the bitterbrush and increase its fuel hazard. The loss of hydraulic lift provided by the killed trees and the retention of drought stressed bitterbrush in fact poses a significant fire hazard that the EA fails to disclose. The EA therefore erroneously concludes that the treatments will effectively reduce fire hazard.

- The Ninemile EA (p 96) says the project will be beneficial to wildlife associated with snags, and that snags will be tallied (doesn't say when or how) and new snags will be created later, if needed. This violates NEPA and NFMA and OMB requirements for information quality. The EA fails to disclose the effect of logging on snags and down wood. Due to safety and operational constraints, logging virtually always results in a reduction in valuable and under-represented snag habitat. The Forest Service not only fails to disclose whether forest plan snag requirements will be met, but also fails to disclose that the forest plan Standards & Guidelines are based on outdated "potential population" methods that are now discredited. Before concluding that this project will be beneficial tosnag associated wildlife, the Forest Service must prepare a comprehensive NEPA document to disclose how logging that reduces snag habitat will provide for snag associated Management Indicator Species.
- The Ninemile EA's conclusion that soil impacts will be less than other logging projects is unsupported by the evidence. The south of Sprague Watershed Analysis appears to conclude that most timber sales involving ground-based logging resulted in soil impacts that exceed forest plan standards. As described in the Deschutes National Forest, Eyerly Fire DEIS, a typical dendritic system of yarding corridors can cause detrimental soil conditions across 14% of an activity area. Compaction from unavoidable off-trail travel adds 5% detrimental conditions. Burning fuel piles adds 2% (just the piles, not including machine use). All these cumulative soil impacts add up to OVER 21% detrimental soil conditions, and this is WITHOUT considering the road system, landings (which typically add 5%), and the machines that will be used to mow, masticate, crush and pile fuels, not to mention the effects of past logging and future retreatment. The assertions in the EA are erroneous.

See our comments below for supporting information on all these information quality issues.

- **Explanation of the Effect of the Alleged Error**
ONRC's use of the information: ONRC is trying to understand the environmental

impacts of a proposed federal action so that we can provide informed public comment on an Environmental Assessment, but the EA does not allow that.

How ONRC is affected by the error: ONRC is unable to effectively participate in the NEPA process without sound information and analysis. We are concerned that the decision-maker will approve logging of trees 12-21 inches dbh that will increase rather than decrease fire hazard.

- **Recommendation and Justification for How the Information Should Be Corrected**

  How the information should be corrected: Prepare a new NEPA document that is accurate and clear and informs the public and the decision-maker.

  Why the corrections should be made: Because NEPA requires federal agencies to rely upon "high quality" information and "accurate scientific analysis." 40 C.F.R. § 1500.1(b). The scientific information upon which an agency relies must be of "high quality because accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA." Idaho Sporting Congress v. Thomas, 137 F.3d 1146, 1151 (9th Cir. 1998) (internal quotations omitted); see also Portland Audubon Society v. Espy, 998 F.2d 699, 703 (9th Cir. 1993) (overturning decision which "rests on stale scientific evidence, incomplete discussion of environmental effects . . . and false assumptions")

  During ESA Section 7 consultation, the agency "shall use the best scientific and commercial data available." 16 U.S.C. § 1536(a)(2). "[T]he Federal agency requesting formal consultation," "shall provide the Service with the best scientific and commercial data available or which can be obtained during the consultation," to serve as the basis for the Fish and Wildlife Service's subsequent BO. 50 C.F.R. 402.14(d).

The EA does not accurately describe the affected environment. How big are the trees? How old are they? This information is not readily found in the EA.

The Forest Service failed to provide public comment on the Environmental Assessment.

The Forest Service fails to provide public comment on the EA in accordance with the section 104(g) of the HFRA and applicable NEPA regulations. These regulations require the Forest Service to provide public comment on HFRA NEPA documents.

The Forest Service overstepped its authority when they promulgated the rules for objections because the completely replace the Forest Service notice-comment-appeal regulations. HFRA section 105(a) authorizes the Forest Service to promulgate rules for objections, but this section does not give the Forest Service authority to dispose of public comment on EAs. Section 104(g) explicitly requires comment on EAs, so the objections rules promulgated under section 105(a) directly conflict with mandate in 104(g).

The Forest Service should allow public comment on draft EAs. Under the Forest Service system, the public has only two opportunities to influence the course and direction of implementation of HFRA fuel reduction projects: scoping and protest. The main problem is that scoping is too early in the process for the public to meaningfully participate and the protest period is too late in the process to meaningfully participate.

a. Scoping is too early, because the Forest Service has not yet clearly specified what the proposed action is, so it is hard for the public to comment on the unknown.

b. The protest is too late, because the agency has already committed itself to a coarse of action and is not responsive to public concerns.

The interim rules admonish groups like ONRC to "structure their participation so as to alert the local agency officials … of their positions and objections." §218.13 This must be a two-way street. The Forest Service must give the public an early and meaningful opportunity to influence the implementation of projects under the HFRA authority. Scoping is too early, and protest is too late. The Forest Service must structure its operations to more effectively involve the public by allowing public comments on draft EAs.

Luckily Congress agreed that NEPA should be followed and required the Forest Service to allow public comment on NEPA documents in HFRA § 104(g). If the Forest Service won't allow comment on EAs, the Forest Service should implement all HFRA projects using EISs that allow better public input on draft documents.

Provide meaningful public involvement at all stages of decision-making.

The Forest Service is required by NEPA to provide public comment on EAs. In spite of the Forest Service's attempts through the objection rules and the notice-comment-appeal rules, the courts have held that public comment is required for EAs. The HRFA did not change this. In fact, the HFRA § 104(g) explicitly requires the Forest Service to follow NEPA law and provide for comments on EAs.

Regardless of the new objection regulations and the notice-comment-appeal regulations at 36 CFR 215, which purport to give the Forest Service authority to provide comment on "proposed actions" and exclude public comment on draft EAs, the Forest Service has a separate and enforceable duty to follow the CEQ regulations which require that all federal agencies provide for public comment on Environmental Assessments.

40 CFR § 1501.2 states that: "Each agency shall:" … "(b) Identify environmental effects and values in adequate detail so they can be compared to economic and technical analyses. Environmental documents and appropriate analyses shall be circulated and reviewed at the same time…"

Environmental Document is defined at 40 CFR § 1508.10: ""Environmental document" includes the documents specified in § 1508.9 (environmental assessment)…"

40 CFR § 1506.6(a) also requires the Forest Service to "Make diligent efforts to involve the public in preparing and implementing their NEPA procedures." CEQ's 40 Questions

(Question 38) clarify this by stating, "Section 1506.6 requires agencies to involve the public in implementing their NEPA procedures, and this includes public involvement in the preparation of EAs and FONSIs."

Nothing in HFRA or 36 CFR § 215.1 to 215.22 states or implies that environmental documents shall no longer be circulated for review and comment to the extent practicable before decisions are made. The HFRA nor the regulations at 36 CFR § 215 do not trump or invalidate the Forest Service's obligations to comply with the CEQ's regulations implementing NEPA (40 CFR § 1500-1508). 40 CFR §1500.2, § 1501 and § 1506 set forth a broader mandate that the whole environmental document shall be circulated as early as practicable in the NEPA process for comment by interested parties, Agencies, and those who requested it before a decision is made.

The courts have consistently ruled on NEPA violations similar to this.

> "Regulations promulgated by the Council on Environmental Quality provide factors that agencies must consider in deciding whether to prepare an EIS and emphasize the importance of involving the public in NEPA evaluations. 40 C.F.R. §§ 1500.2, 1502.4(b). The public must be given an opportunity to comment on draft EAs and EISes, and public hearings are encouraged to facilitate input on the evaluation of proposed actions. See 40 C.F.R §§ 1503.1, 1506.6." Anderson v. Evans, 350 F.3d 815, 831 (9th Cir. 2002).
>
> "Citizens were deprived of the opportunity to comment on the USDA's EA and FONSI at all points in the rulemaking process. This deprivation violated their rights under the regulations implementing NEPA. See 40 C.F.R. § 1501.4(b) ('The agency shall involve the public, to the extent practicable, in preparing [EAs] . . . .'); id. § 1506.6 ('Agencies shall . . . make diligent efforts to involve the public in preparing and implementing their NEPA procedures[,] . . . provide public notice of . . . the availability of environmental documents so as to inform those persons . . . who may be interested or affected[,] [and] . . . solicit appropriate information from the public.'). But cf. Pogliani v. United States Army Corps of Eng'rs, 306 F.3d 1235, 1238-39 (2d Cir. 2002) (per curiam) (holding that environmental plaintiffs have no right to see and comment on EAs/FONSIs before they issue, unless 40 C.F.R. § 1501.4(e) applies).
>
> "We reject the USDA's dismissal of these regulatory requirements as 'hortatory.' Although it is true that 'an EA need not conform to all the requirements of an EIS,' S. Or. Citizens Against Toxic Sprays, Inc. v. Clark, 720 F.2d 1475, 1480 (9th Cir. 1983), this requirement does not mean that 40 C.F.R. §§ 1501.4(b) and 1506.6 are without substance. We have previously interpreted these regulations to mean that 'the public must be given an opportunity to comment on draft EAs and EISs.' Anderson v. Evans, 314 F.3d 1006, 1016 (9th Cir. 2002). The Second Circuit has held that § 1501.4 is satisfied when the agency 'conducted public hearings and received written comments on every draft environmental assessment [and] circulated for comment its Preliminary Analysis of the environmental

assessment,' even though it did not circulate for public comment a follow-up independent analysis it prepared in response to public comments. Town of Rye v. Skinner, 907 F.2d 23, 24 (2d Cir. 1990) (*per curiam*); see also Hanly v. Kleindienst, 471 F.2d 823, 836 (2d Cir. 1972) ('Before a preliminary or threshold determination of significance is made the responsible agency must give notice to the public of the proposed major federal action and an opportunity to submit relevant facts which might bear upon the agency's threshold decision.').

"Although we have not established a minimum level of public comment and participation required by the regulations governing the EA and FONSI process, we clearly have held that the regulations at issue must mean something. Cf. Hart v. McLucas, 535 F.2d 516, 519 (9th Cir. 1976) ('In the construction of administrative regulations . . ., it is presumed that every phrase serves a legitimate purpose . . . .'). It is evident, therefore, that a complete failure to involve or even inform the public about an agency's preparation of an EA and a FONSI, as was the case here, violates these regulations. This wholesale neglect of the regulations' mandatory inclusion of the public in the process results in a procedural injury. Moreover, it undermines the very purpose of NEPA, which is to 'ensure[ ] that federal agencies are informed of environmental consequences before making decisions and that the information is available to the public.' Okanogan Highlands Alliance v. Williams, 236 F.3d 468, 473 (9th Cir. 2000)."

Citizens for Better Forestry v. USDA, 341 F.3d 961, 970-71 (9th Cir. 2003). http://www.ca9.uscourts.gov/ca9/newopinions.nsf/D415F1D6386BB99B88256D8F0073C5C5/$file/0216009.pdf?openelement

NEPA requires federal agencies to, in the fullest extent possible, "[e]ncourage and facilitate public involvement in decisions which affect the quality of the human environment." 40 C.F.R. § 1500.2(d); see also National Park and Conservation Ass'n v. Federal Aviation Admin., 998 F.2d 1523, 1531 (10th Cir. 1993) ("Congress, through . . . NEPA, has determined that the public has a right to participate in actions affecting public lands."); Sierra Club v. Hodel, 848 F.2d 1068, 1093 (10th Cir. 1988) (NEPA "provides for broad-based participation" and requires "a cross-pollinization of views."). Specifically, NEPA's public participation regulations require the Forest Service to "(a) [m]ake diligent efforts to involve the public in preparing and implementing their NEPA procedures" and to "(b) [p]rovide public notice of NEPA-related hearings, public meetings, and the availability of environmental documents so as to inform those persons and agencies who may be interested or affected." 40 C.F.R. § 1506.6(b).

The Forest Service behavior is downright unfriendly to public involvement. What ever happened to "serving the people?"

The Forest Service's new objections regulations and the new notice-comment-appeal regulations both attempt to seriously undermine public participation because it fails to use of a consistent public involvement process that the public can understand and follow. The new regulations purport to allow Forest Service managers "flexibility," and managers are

interpreting that to mean they can use flexibility to be *inconsistent* and *surprise* the public and even *deprive* them of the opportunity to be effectively involved in the NEPA process.

For instance, the Forest Service is already interpreting the regulations so that public's only chance to comment on some projects will be after notice of the "proposed action" is published. The problem is that "proposed action" is not defined anywhere in the new regulations, and Forest Service managers can slip the notice of proposed action almost anywhere in the NEPA process, so that the public will not know when to expect it. If the public misses the notice of proposes action, they can be deprived of the ability to both appeal and litigate.

Another example, the Forest Service is prohibited from extending comment deadlines. This inflexibility can only be adverse to the principle of public involvement.

Another example of anti-public involvement is that the new regulations discourage or even prohibit the Forest Service from putting the deadlines for comments and objections in the published notices. I guess the Forest Service doesn't trust themselves to calculate the number. They might make a mistake and give the public too much time. Instead they will just let the public calculate it and if they make a mistake the Forest Service will exclude them from further participation.

Since the public may only have one chance to comment on a given "proposed action," or "objection" and since the notice of proposed action may not occur consistently in any particular phase of the NEPA process (e.g., the notice of proposed action may sometimes occur during scoping and sometimes as a comment on an Environmental Assessment), the Forest Service should refrain from using the term "proposed action" except in the notices of proposed action. The term "proposed action" is commonly used in contexts other than the notices which will only led to confusion among the public. Whenever scoping will be used as the main public comment opportunity the Forest Service must clearly alert the public to this aberration from the norm.

If paying your rent was like commenting on Forest Service projects—

- Each month your landlord would send you two bills for the full amount of your rent.
- Only one of the bills would need to be paid, but the landlord won't tell you which one it is.
- So you have to pay twice, or else you get evicted.
- Also, the due date for your rent check is never the same, and the landlord won't tell you the due date when he sends the bill, so you have to seek out the fine print of an obscure newspaper in another town to get the due date.
- If you miss the deadline you're homeless.

Public participation is also best when the public is well-informed and can have a real influence on decisions. Public involvement is essential at all stages of decision-making but it is essential at the stage of commenting on well-developed NEPA documents.

Scoping by itself is too early in the process. (The propose action is not yet well-developed so the public does not know what they are commenting on.) Protests and appeals by themselves are too late. (The agency has already made up its mind and the public's views will likely be dismissed.)

The Forest Service failed to consider the citizens' alternative.

The Healthy Forest Restoration Act requires the Forest Service to consider an additional alternative if one is suggested by the public. In this case ONRC, KSWC, and KFA all suggested alternatives that would treat ground an ladder fuels while protecting medium and large trees. The Forest Service unbelievably refused to consider this alternative because it would conflict with the purpose and need. There are several problems with this.

1. HFRA authority is only allowable for "authorized fuel reduction projects," which includes "appropriate tools." While commercial thinning is an "appropriate tool," commercial logging of larger trees that could in fact exacerbate fire hazard instead of reduce it cannot be used as an excuse to exclude consideration of alternatives that would get the job done better and with less environmental harm. According to the "Implementation Plan" "Appropriate Tools" is defined as "Methods for reducing hazardous fuels including prescribed fire, wildland fire use, and various mechanical methods such as crushing, tractor and hand piling, thinning (to produce commercial or pre-commercial products), and pruning. They are selected on a site-specific case and are ecologically appropriate and cost effective." http://www.fireplan.gov/reports/11-23-en.pdf "Appropriate tools," including commercial thinning, must be used to reduce not just any fuels, but only *hazardous* fuels. The medium sized trees that the Forest Service refuses to consider protecting are not hazardous an removing them could in fact make the fire hazard worse instead of better. Thinning must also be "ecologically appropriate." Retaining the medium-sized trees will certainly have fewer and less severe ecological consequences than thinning trees up to 21 inches.
2. In a January 28, 2004 Associated Press story By MATTHEW DALY, Mark Rey said: "With regard to mechanical thinning, those projects will be done with a singular objective: to improve the health of the forests," Rey said. "The amount of timber to be removed is incidental." Hey, if your bosses boss promises that HFRA authority will have a singular objective, then how can the Forest Service use commercial extraction as a reason to refuse to consider a citizens' alternative that meets the objective.
3. The EA (p 28) asserts that they cannot consider the citizens' alternatives because the LRMP requires that they extract commercial wood during this fuel reduction effort. The Forest Service misreads the LRMP. There is nothing in the LRMP requiring that every project on every acre of land allocated for timber production must produce fiber. This is akin to a claim that driving a passenger car is not allowed on logging roads that cross lands allocated to timber production because the car is not carrying logs to the mill. The law of the land is multiple use even on lands allocated for timber production. The Forest Service is *allowed* to cut commercial timber on these lands but nothing *prohibits* the Forest Service from conducting fuel reduction efforts without removal commercial logs.

4. The Forest Service has said repeatedly that this project is like the Chiloquin Community Fuels Reduction Project, so the Forest Service should be able to consider an alternative with a management prescription similar to the Chiloquin Project. The District Ranger in his decision to select Alternative 2 of the Chiloquin Community Fuels Reduction Project found:
    - Alternative 2 best addressed the mix of resource concerns identified in the area and still meet the purpose and need while addressing Tribal concerns.
    - Alternative 2 met the direction provided by the Winema Land and Resource Management Plan of 1990, as amended, and the intent of the National Fire Plan to reduce fire hazards around communities at risk from wildfire. Somehow the Forest Service was able to conduct the Chiloquin Community Fuels Reduction Project on lands allocated for timber production without violating the LRMP.
    - Alternative 2 would reduce high fuel loadings over a large area (68% of the project area), and reduce the risk of large-scale, high severity wildfire occurrence.
    - Alternative 2 would reduce the potential for tree mortality from insects and disease and improve big game forage.
    - Alternative 2 would increase the quality and quantity of forage by stimulating new shoot production, retaining a seed source, and provide growing space for new plants in burned areas.
5. The Forest Service can consider a citizens' alternative and still derive some commercial value from trees between 5 and 12 inches dbh.

Misapplication of science.

The Forest Service justifies the necessity of commercial logging by relying on Omi & Martinson 2002 to support the assertion that it is "important" to "thin the canopy." (EA p 47). However, the very study cited by the Forest Service (Omi & Martinson 2002) contradicts the Forest Service's assertion:

> … crown bulk density was not the fuel hazard variable most strongly correlated to fire severity at our study sites; in fact it was significantly correlated only to crown volume scorch. Instead, height to live crown, the variable that determines crown fire initiation rather than propagation (Van Wagner 1977), had the strongest correlation to fire severity in the areas we sampled. Like Pollet and Omi (2002), we also found the more common stand descriptors of stand density and basal area to be important factors. But especially crucial are variables that determine tree resistance to fire damage, such as diameter and height."

Omi, P.N., and Martinson, E. J. 2002. Effect of fuels treatment on wildfire severity. Final report. Western Forest Fire Research Center. Submitted to the Joint Fire Science Program Governing Board http://www.cnr.colostate.edu/frws/research/westfire/FinalReport.pdf

This study in no way tested the special contribution of "canopy thinning" to the effectiveness of fuel reduction. This study's assertion of the important of treating the

entire fuel profile is based on the fact that one of the 4 fires seemed to show that this was beneficial, but there are so many uncontrolled variables in these four fires that it is scientifically indefensible to base such an assertion on this one fire.

The Forest Service has no support for the assertion that canopy thinning is "important." This study has other problems as well. (1) it is based on only 4 fires, so the sample size is too small to derive reliable conclusions; (2) the data points were biased, because untreated sites tended to be steeper than the treated sites that were being compared, and fire tends to be more intense and are more likely to be "stand replacing" on steeper slopes, so the results of this study are biased against "no treatment;" (3) there were fire breaks such as roads, and railroads that separated the treated and untreated stands which can affect fire behavior and confound results; and (4) the study excluded the Thomas fire on the nearby Fremont NF where the treatments did not appear to have an affect on fire behavior.

The Omi & Martinson (2002) paper also offers a very important caveat that the Ninemile EA completely fails to consider:

> Theoretically, fuel treatments have the potential to exacerbate fire behavior. Crown fuel reduction exposes surface fuels to increased solar radiation, which would be expected to lower fuel moisture content and promote production of fine herbaceous fuels. Surface fuels may also be exposed to intensified wind fields, accelerating both desiccation and heat transfer. Treatments that include prescribed burning will increase nutrient availability and further stimulate production of fuels with high surface-area-to-volume ratios. All these factors facilitate the combustion process, increase rates of heat release, and intensify surface fire behavior.
>
> …
>
> Thus, treatments that reduce canopy fuels increase and decrease fire hazard simultaneously. With little empirical evidence and an infant crown fire theory, fuel treatment practitioners have gambled that a reduction in crown fuels outweighs any increase in surface fire hazard….

Omi, P.N., and Martinson, E. J. 2002. Effect of fuels treatment on wildfire severity. Final report. Western Forest Fire Research Center. Submitted to the Joint Fire Science Program Governing Board http://www.cnr.colostate.edu/frws/research/westfire/FinalReport.pdf
The management alternative suggested by ONRC, KSWC, and KFA would have focused on reducing small fuels and limited cutting trees over 12 inches thereby retaining more canopy and reducing the fire hazards described in this paper. The Forest Service rejected the alternatives proposed by conservation groups even though these alternatives would address the concern that thinning can make fire hazard worse, and consideration of this alternative would better inform the public and the decision-maker about the relative value of thinning the canopy.

The Forest Service misidentified the boundary of the at-risk community. The Forest Service considers all the private land in the entire Sprague River Valley to be part of the at-risk community even though most of it is made up of uninhabited ranchlands. HFRA section 101(1) includes a definition of at-risk community which reveals Congressional

intent with regard to the logical boundaries for at risk communities: “a group of homes and other structures with basic infrastructure and services (such as utilities and collectively maintained transportation routes) within or adjacent to Federal land.” By including every fencepost on every ranch in the WUI, the Forest Service has abused its discretion and undermined congressional intent.

The housing density in the Sprague Valley is only 2-4 housing units per square kilometer. The Federal Resister lists “Sprague River Valley” as “at risk,” but Dockney Flats and Copperfield Draw located along tributaries cannot credibly be considered part of the Sprague River Valley and should be excluded from the WUI. According to the National Association of State Foresters, the values to be protected in the WUI include “the human and economic values associated with the community or landscape, such as homes, businesses, community infrastructure (e.g. water systems, utilities, transportation systems, critical care facilities, schools, manufacturing and industrial sites, etc.)…” http://www.fireplan.gov/reports/424-438-en.pdf. In the Sprague Valley, the Forest Service should be draw the 1.5 mile WUI around homes and schools, not remote fence posts on some ranch. The WUI maps here do not show this area to be a WUI at all. http://silvis.forest.wisc.edu/Library/WUI_state_download.asp?state=Oregon&abrev=OR

NEPA analysis failed to consider the fire risks associated with canopy reduction. The EA focuses it’s analysis on what happens when fire moves through the stand immediately after treatments are completed. The analysis does not consider what happens 10-20 years in the future when thinning has stimulated the growth of ladder fuels. The EA admits that thinning increases the “vigor” of the remaining stand (EA p 48) and admits that thinning will shift growth from conifers to shrubs (EA p 61) (but fails to consider the consequences of increased vigor of shrubs as ladder fuels) and the EA admits that the stands will need retreatment in 5-30 years (EA p 49) (but fails to explain the consequences when fire occurs in these treated stands in 10-20 years). The EA also says that increased stand vigor will reduce the probability of mortality form wildfire, but this is doubtful considering the fact that thinning can make fire hazards worse instead of better.

ONRC supports use of prescribed fire, and, if necessary, careful thinning and removal of small diameter material and flammable brush in ecologically appropriate locations in order to help restore fire regimes. We urge the agency to avoid road building and prioritize such activities in the wildland-urban interface.

We support efforts to limit the initiation and spread of crown fires through the reduction of fine surface fuels and (partial) treatment of ladder fuels to increase the crown base height, but we oppose efforts to heavily thin the overstory canopy in an effort control crown-to-crown fire spread. The most significant effect of this type of heavy thinning is to increase the warming and drying of ground fuels and to increase the growth of ladder fuels, both of which significantly detract of the risk reduction objectives and are expensive to treat. The NEPA analysis must address the complex effects of thinning including tendencies to reduce and increase fire hazard.

The NEPA document must address the fact that there is very little scientific support for aggressive thinning to reduce fire hazard. In fact, there is some scientific evidence that thinning can make the fuel hazard worse instead of better. Science still has a long way to go to be able to confidently predict the consequences of various combinations of thinning and other treatments. "Detailed site-specific data on anything beyond basic forest structure and fuel properties are rare, limiting our analytical capability to prescribe management actions to achieve desired conditions for altering fuels and fire hazard." Graham, Russell T.; McCaffrey, Sarah; Jain, Theresa B.(tech. eds.) 2004. Science basis for changing forest structure to modify wildfire behavior and severity. Gen. Tech. Rep. RMRS-GTR-120. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 43 p.
http://www.fs.fed.us/rm/pubs/rmrs_gtr120.html

> Thinning opens stands to greater solar radiation and wind movement, resulting in warmer temperatures and drier fuels throughout the fire season. [T]his openness can encourage a surface fire to spread, …

USDA Forest Service; Influence of Forest Structure on Wildfire Behavior and the Severity of Its Effects, November 2003.
http://www.fs.fed.us/projects/hfi/2003/november/documents/forest-structure-wildfire.pdf

> Theoretically, fuel treatments have the potential to exacerbate fire behavior. Crown fuel reduction exposes surface fuels to increased solar radiation, which would be expected to lower fuel moisture content and promote production of fine herbaceous fuels. Surface fuels may also be exposed to intensified wind fields, accelerating both desiccation and heat transfer. Treatments that include prescribed burning will increase nutrient availability and further stimulate production of fuels with high surface-area-to-volume ratios. All these factors facilitate the combustion process, increase rates of heat release, and intensify surface fire behavior.
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> …
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> Thus, treatments that reduce canopy fuels increase and decrease fire hazard simultaneously. With little empirical evidence and an infant crown fire theory, fuel treatment practitioners have gambled that a reduction in crown fuels outweighs any increase in surface fire hazard….

Omi, P.N., and Martinson, E. J. 2002. Effect of fuels treatment on wildfire severity. Final report. Western Forest Fire Research Center. Submitted to the Joint Fire Science Program Governing Board
http://www.cnr.colostate.edu/frws/research/westfire/FinalReport.pdf

EPA also recognizes that unmaintained fuel management zones can "increase the risk of fire as slopes are opened up to sunlight and undergrowth is stimulated." See EPA 2-18-04 comments on the Biscuit Fire Salvage Project.

The Forest Trust conducted a thorough literature review and found that:

- Although the assertion is frequently made that simply reducing tree density can reduce wildfire hazard, the scientific literature provides tenuous support for this hypothesis.
- The literature leaves little doubt, however, that fuel treatments can modify fire behavior. Thus**, factors other than tree density, such as the distance from the ground to the base of the tree crown, surface vegetation and dead materials play a key role. Research has not yet fully developed the relationship among these factors in changing fire behavior.**
- The specifics of how treatments are to be carried out and the relative effectiveness of alternative prescriptions in changing wildfire behavior are not supported by a significant consensus of scientific research at this point in time.
- Substantial evidence **supports the effectiveness of prescribed fire**, a treatment that addresses all of the factors mentioned above. Significantly, several empirical studies demonstrated the effectiveness of prescribed fire in altering wildfire behavior.
- By contrast, we found a limited number of papers on the effects of mechanical thinning alone on wildfire behavior. The most extensive research involved mathematical simulation of the impact of mechanical thinning on wildfire behavior. However, the results of this research are highly variable.
- A more limited number of studies addressed the effectiveness of a **combination of thinning and burning** in moderating wildfire behavior. The impacts varied, depending on the treatment of thinning slash prior to burning. Again, **crown base height appeared as important a factor as tree density. The research community is still building a scientific basis for this combination of treatments.**
- **The proposal that commercial logging can reduce the incidence of canopy fire was untested in the scientific literature. Commercial logging focuses on large diameter trees and does not address crown base height – the branches, seedlings and saplings which contribute so significantly to the "ladder effect" in wildfire behavior.**
- Much of the research on the effectiveness of fuel treatments uses dramatically different methodology, making a comparison of results difficult. To provide a basis for analysis, we structured our review of the literature into four general groupings: observations, case studies, simulation models and empirical studies. Empirical studies provide the strongest basis for evaluating treatments whereas personal observations are the least reliable.
- **We found the fewest studies in the most reliable class – empirical research. We found the greatest number of studies in the least reliable class of research – reports of personal observation. Several other reviews of the literature confirm this finding, stating that the**

evidence of the efficacy of fuel treatment for reducing wildfire damage is largely anecdotal.

- The **results of simulation studies are highly variable**, in terms of such factors as fire spread, intensity and the occurrence of spotting and crowning.
- Scientists recognize **that large scale prescribed burning and mechanical thinning are still experimental and may yet reveal unanticipated effects on biodiversity, wildlife populations and ecosystem function.**

Henry Carey and Martha Schumann. Modifying WildFire Behavior – The Effectiveness of Fuel Treatments — The Status of Our Knowledge. April 2003; http://www.theforesttrust.org/images/swcenter/pdf/WorkingPaper2.pdf This report also said:

> Stephens [1998. "Evaluation of the effects of silvicultural and fuels treatments on potential fire behaviour in Sierra Nevada mixed-conifer forests." *Forest Ecology and Management* 105(1):21-35.] used FARSITE to investigate the interaction between slash from logging and fire behavior. When silvicultural treatments were conducted without reducing slash, the simulated fire behavior appeared more extreme than in the area that had not been harvested at all.
> …
> We did not find any empirical studies that evaluated commercial harvesting as a means of altering fire behavior. … studies suggest that slash resulting from logging is a key factor in predicting subsequent fire risk and that removal of large diameter trees alone may contribute to increased fire severity.
> …
> A report prepared for Congress stated: "We do not presume that there is a broad scientific consensus surrounding appropriate methods or techniques for dealing with fuel build-up or agreement on the size of areas where, and the time frames when, such methods or techniques should be applied" (US GAO RCED-99-65. 1999:56). A research report by Omi and Martinson (2002:1) stated: "Evidence of fuel treatment efficacy for reducing wildfire damages is largely restricted to anecdotal observations and simulations."

Duke University issued an "expert advisory" May 24, 2004 with Professor Norm Christensen saying:

> "…the practice of suppressing wildfires has allowed debris to accumulate to dangerous levels on the forest floor."
>
> Indiscriminate logging aggravates the problem by thinning a fire-prone forest's canopy and littering its floor with sawdust and other combustible debris.
>
> "Loss of canopy increases wind speed and air temperatures and decreases humidity in the forest," Christensen notes. "As a result, ground fuel fires that break out can spread faster and farther than they would normally."

http://www.ascribe.org/cgi-bin/spew4th.pl?ascribeid=20040524.081406

The NEPA document fails to acknowledge the paucity of scientific support for commercial logging to reduce fuels and reduce fire effects and fails to recognize that logging often increases fine fuel loads while removing the large logs that are relatively less prone to burn. Thinning also increases wind and light penetration of the canopy and causes fuels to dry out which make them more prone to burn and increases the time it takes woody material to decompose. Removing medium and large trees also removes shade and resource competition that helps suppress the growth of small trees and brush known as “ladder fuels.”

In a challenge to a timber sale in the Sierra Nevada Mountains, U.S. District Judge Morrison C. England Jr. found on July 1, 2003 that John Muir Project and Earth Island Institute had made a strong case that logging slash could fuel future fires and that logging would harm wildlife habitat by increasing the risk of fire. A stay to halt the fuels reduction project was granted. Judge England issued a temporary restraining order (TRO) in Earth Island Institute v. USDA Civ. No. S-03-1242 MCE DAD (Eastern District of California 2003) because logging would create “extreme levels of flammable slash.”

Consider these words from Mike Dombeck, former Chief of the Forest Service:

> "Some argue that more commercial timber harvest is needed to remove small-diameter trees and brush that are fueling our worst wildlands fires in the interior West. However, small-diameter trees and brush typically have little or no commercial value. To offset losses from their removal, a commercial operator would have to remove large, merchantable trees in the overstory. Overstory removal lets more light reach the forest floor, promoting vigorous forest regeneration. Where the overstory has been entirely removed, regeneration produces thickets of 2,000 to 10,000 small trees per acre, precisely the small diameter materials that are causing our worst fire problems. In fact, many large fires in 2000 burned in previously logged areas laced with roads. It seems unlikely that commercial timber harvest can solve our forest health problems."

Dombeck on Fires in 2001 - How Can We Reduce the Fire Danger in the Interior West (Fire Management Today, Winter 2001, page 11).

As eloquently stated by Neil Lawrence:

> We're a long way from a model that accounts for the drying affect of insolation and increased wind penetration, the loss of water from run-off on machine compacted soil, the increased availability of residual fine fuels post-thinning, the morbidity and mortality associated with diseases and pests imported by logging equipment, and all the other real world phenomena that cut against the ivory tower view that large fuel structure and crown bulk density are the sole significant drivers of fire occurrence, intensity, and spread.

Tribal Forest Plan

The Forest Service should consider some of the information from The Klamath Tribes' proposed forest management plan (http://www.klamathtribes.org/forestplan.htm). In particular the uncertainty regarding how many small and medium trees need to be retained in order to achieve desired numbers and sizes of large pines in the future. Consider these January 2004 comments on the Tribal forest plan:

> The historic record reflected in Table 4 of the Tribes' proposed plan shows that the plan slightly under estimates the structural goals for large trees in complex forests. The large tree goal should be 13-20 tpa >21 inches, and 3-5 tpa >32 inches. A larger sample of complex native stands should be reviewed to more accurately understand the range of values and specify goals for large trees.
>
> We know that past logging has left us with too few big trees, and we know we want to restore complex forest with big trees. We also know that the historic density of small trees was highly variable (10-39 feet2 basal area; p 15). <u>But we do not understand rates and distribution of tree mortality, so we do not know how many small and medium trees to save today so that we end up with the "right" number of big trees later. Goals for medium sized trees may need to be specified,</u> although this is understandably difficult given that fire regimes have been altered, reference sites may not be available, and given our limited understanding of tree mortality rates. In stands that have few large trees and many smaller trees, the plan should explain how diameter limits less than 21 inches should be used to help restore complex forests. We must retain options by managing for variability. Effective adaptive management will be critical.
> …
> ONRC supports standards & guidelines that encourage natural regeneration and (if necessary) limited, patchy, low-density replanting (p 110). We also support the plan's intent to avoid homogenous or ubiquitous "park-like" stands across the landscape and the critical need to retain untreated patches of small trees and brush to provide for forest complexity, wildlife cover, long-term recruitment of trees and snags, etc. CAVEAT: We do not know the historic scale or frequency of these dense patches, so we do not really know the proper size or spacing. Available models are not suited to these heterogeneous conditions. How will adaptive management measure success/failure?

"Good" fire is possible and may be preferable to the ground disturbance of logging

The agency is not permitted to saddle the no action alternative with a worst case scenario in terms of future fire. The NEPA document describes the no-action alternative in terms of its inherent high risk of intense future fire, but the NEPA document lacks any recognition that during favorable conditions of weather and fuel moisture a low-severity or mixed-severity fire could occur in the project area and such as fire would likely accomplish much of what this project is attempting to accomplish without all the adverse consequences from ground disturbance. This shows a strong bias against the no-action alternative.

The agency's bias is further evidenced by the fact that the NEPA analysis fails to disclose that during extreme weather conditions (hot, dry, and windy) a canopy fire could easily kill the forests areas whether they are treated or not.

If the agency describes the effects of future fire, they must describe at least one scenario involving favorable fire weather: relatively high fuel moisture, relatively low wind speed, relatively low humidity, relatively low air temperature, etc. If the agency describes the effects of extreme fire behaviour them must disclose that even the treated stands will likely experience stand replacing fire during extreme fire weather conditions (hot dry, windy). The agency must also disclose that logging will at least temporarily increase some forms of hazardous fuels.

Don't abuse HFRA authority

1. Is this HFRA project part of a "Community Wildfire Protection Plan" per the Act? HFRA Sections 101, 103 & 104).
2. Is this HFRA project part of an "Annual Program of Work" per the Act? HFRA Section 103(a).
3. How will this HFRA project comply with the old growth and large tree statutory language in the Act? HFRA Section 102(e)(2).
4. What range of alternatives will be considered in the NEPA environmental documentation per the Act? HFRA Section 104(c).
5. Explain methodology for determining fire condition class and fire regime.

The HFRA says that old growth shall be fully maintained and restored by implementing the LRMP or RMP. Where plans do not "fully maintain and restore" old-growth, the Act (at §102(f)) requires that projects— "focus largely on small diameter trees, thinning, strategic fuel breaks, and prescribed fire," AND, to the extent consistent with fire resilient stands, "maximize the retention of large trees" appropriate to the forest type.

In a January 28, 2004 Associated Press story By MATTHEW DALY, Mark Rey said: "With regard to mechanical thinning, those projects will be done with a singular objective: to improve the health of the forests," Rey said. "The amount of timber to be removed is incidental."

K-V Uncertainty

The Deschutes National Forest "Wildlife Tree and Log Implementation Strategy" says "sometimes KV collections are less than expected or non-existent. … Some timber sales do not collect enough KV to implement non-required KV." (pp 13-14). The Forest Service has a NEPA obligation to disclose the risk of running out of K-V funds before they are done with the mitigation projects and other non-extractive fuel reduction projects identified in the proposed action. If the fuel reduction, mitigation, and restoration is not completed the NEPA analysis is no longer accurate and in fact it becomes misleading.

Deficit Sale May Not Be Fully Implemented

This project may not receive any bids, or could be modified to make it more appealing to bidders by adding big trees or forgoing the removal of small trees. This would be a serious breach of the NEPA disclosure and purpose and need identified for this project. If more fire tolerant big trees are cut and fewer fire prone small trees are removed, then this project will not meet its stated purpose and need and the NEPA disclosure will be a sham. The EA must disclose this risk and its consequences. It would be better to admit that fuel reduction and restoration, if done right, will not pay for itself and must be supported by appropriated dollars.

Don't use salvage funds to cut green timber. The Forest Service gets to recycle receipts from cutting dead and dying trees. This leads to a direct conflict of interest because it encourages the Forest Service to use funds for dead trees to cut green trees because they get to keep the funds to do more timber sales. The Ninemile EA (p 13) says that there is an "increased possibility" of insects and wildfire, but does not claim, and cannot accurately claim, that there is an "imminent susceptibility" of tree death here.

Consider the Effects of Livestock Grazing on Forest Health

This project does nothing to address the threat that livestock grazing causes to forest health. There is virtually no point in trying to mechanically reduce tree density unless you deal with other underlying causes of overstocking, e.g. livestock grazing. The NEPA document describes the effects "on" range resources (e.g., fences and transitory range) but fails to disclose or analyze the effects "of" livestock on forest health and the desired future condition of vegetation composition.

Grazing reduces the density and vigor of grasses which usually outcompete tree seedlings, leading to dense stands of fire-prone small trees. Cows also decrease the abundance of fine fuels which are necessary to carry periodic, low intensity ground fires. This reduces the frequency of fires, but increases their severity. See Belsky, A.J., Blumenthal, D.M., "Effects of Livestock Grazing on Stand Dynamics and Soils in Upland Forest of the Interior West," Conservation Biology, 11(2), April 1997. http://www.onda.org/library/papers/standdynamics.pdf See also Wuerthner, George. Livestock Grazing and Fire. January, 2003. http://www.onda.org/library/papers/Livestock_Grazing_and_Fire.pdf

The NEPA document failed to address these issues and failed to consider alternative ways of avoiding these impacts by not grazing. The combination of fire suppression, past high-grading, and livestock grazing together caused the overstocked condition of the stands in the analysis area. Logging and prescribed fire will only partially address the problem. To be effective, livestock grazing must also be eliminated. Grazing and logging cause cumulative effects that must be considered together in one NEPA document.

Bitterbrush and fire

The EA (p 49) says that 30% of the harvest units will be left as untreated bitterbrush patches. This poses a significant fire hazard that the EA fails to disclose.

Plans for reducing or eliminating wildfire risks in Oregon must address bitterbrush, as it is highly flammable under many forest conditions, and is therefore a significant potential ladder fuel in wildfires [ ]. *Yet, at least in the public debate over wildfire prevention, bitterbrush has received relatively little attention compared to other potential fuels like immature trees. This needs to change.*

What is bitterbrush? Bitterbrush (P*urshia tridentata*), sometimes called antelope bitterbrush, is a woody shrub that provides deer cover and forage but can act as a hazardous "ladder fuel."

Why bitterbrush exists in abundance in Oregon's forests. Research evidence indicates that bitterbrush in Oregon forests presently exists in much higher abundance than pre-settlement levels, that is, prior to the arrival of European-descended settlers about 140 years ago [ ]. Bitterbrush now exists in relative abundance for three related but distinct reasons. First, disturbances to forests from timber harvesting activities (logging or thinning), introduced by early European-descended settlers and continued to the present day, created a more favorable environment for bitterbrush growth leading to increased density [Youngblood & Riegel, p. 2; Riegel & Busse, p 5]. Second, livestock grazing, particularly from 1880 through the early 1920s, greatly reduced the grass species which competed with bitterbrush for understory space, and further allowed bitterbrush to become well-established and flourish [Busse et al. 2000, p. 259]. Third, fire suppression and exclusion practices which began with the creation of the Forest Reserves in 1905 [Youngblood & Riegel, p 2] and continued through the late 20th century prevented the natural fire regime that would otherwise have limited bitterbrush populations through low-intensity fires [Clements and Young, 1997; Riegel & Busse, p. 4].

Bitterbrush is a dangerous ladder fuel. Bitterbrush is extremely flammable, especially when pine needle drape is present [Riegel & Busse, p. 3], which is often the case in Oregon's largely coniferous forests. Its flammability, combined with its population density and height, make bitterbrush a significant potential ladder fuel. The Pacific Northwest Wildfire Coordinating Group, in a publication prepared for property owners near fire-susceptible forests, warns that, under optimal conditions, bitterbrush fires may spread at up to 8 1/2 miles per hour, with flame lengths of 55 feet, burning 5,900 acres in one hour [Living with Fire, p. 4]. *While this doomsday scenario may not always apply, bitterbrush is nonetheless a crucial wildfire fuel.*

How bitterbrush should be dealt with in wildfire prevention efforts. Given bitterbrush's prevalence and flammability, wildfire prevention efforts in Oregon forests should logically give substantial attention to bitterbrush. Mowing and prescribed fire are the two most commonly used bitterbrush treatments [Riegel and Busse, p. 5]. Furthermore, as tree stand densities and overstory cover increase, bitterbrush abundance and productivity decrease [Riegel & Busse, p. 5; Barrett and Youngberg, 1965; McConnel and Smith, 1970]. Given that healthy, larger, older trees provide the greatest overstory cover and are themselves fire resistant [ ], allowing tree stands to become and remain mature is logically and empirically consistent with both controlling bitterbrush

and reducing fire hazards. Where wildfires and their prevention are concerns for community safety or forest health, and bitterbrush is present, research evidence suggests the best course of action is to control bitterbrush with mowing or prescribed fire while allowing tree stands to become, and remain, dense and mature.

Strictly Conserve Soil Resources.

The Ninemile EA fails to disclose the effects of road construction and ground-based logging on soil and water resources. The EA says the roads are temporary but that these stands will also require retreatment in as few as 10 years. Will these roads need to be reopened? The EA also fails to consider the cumulative effects of soils caused by past logging, grazing, roads, etc added to proposed and future roads, logging, yarding, mechanical fuel treatment, pile burning, OHVs etc. The soils can't take this much cumulative impact. It will violate the 20% detrimental soil standard.

The EA never analyzes whether the combined effect of the above will still comply with the 20% soil standard. The Forest Service failure to disclose enough information to determine compliance with soil standards is a NEPA violation. See the explanation of why this is a NEPA violation following this soils discussion.

The South-of-Sprague Watershed Analysis (Sept 1995) shows that there are likely to be serious soil impacts form this project, but the EA does not provide information to relieve these concerns says:

> **Has soil compaction increased and what impact has this had on vegetation?**
>
> No comprehensive study or intensive monitoring of soil compaction and vegetative impacts have been done within the SOS area. Based on the physical nature of the area's soils, an understanding of the compaction process, and some personal observations, it is safe to say management practices have caused an increase in the amount and severity of soil compaction within the assessment area. Whether this has been detrimental or not cannot be determined from available information. The SRI (Soil Resource Inventory for the Winema National Forest. Carlson, 1979) identifies and describes several different land types and complexes occurring within the area. Susceptibility of the soils to compaction during management activities are variable. The B-Group soils are rated as having low susceptibility, while the H-Group is rated as low through high, depending on the rock volume within the individual soil profile. It should be recognized that the SRI is a reconnaissance level soil survey and does not have the scale or detail to be employed on more intense planning levels. Therefore, it is conceivable that the compaction susceptibility, especially for the B-Group soils, may be understated. Evidence to support this statement is found in the soils monitoring program in progress on the Chemult
>
> Ranger District, north of SOS. Compaction monitoring on several hundred acres of similar soils (both A and B Groups) has established that compaction is present on every management area tested (mostly timber sales). Each timber sale monitored had some degree of severely compacted soils, most were between 10 and 50 per cent compacted and overall averaged about 30 percent severely compacted, not including roads.
>
> It appears that if ground-based machines were employed during harvest operations, soil compaction resulted. On most of the units monitored in Chemult, severe or detrimental compaction exceeded forest plan standards and guidelines for soil impacts. Further personal

> observation of limited areas within the watershed revealed areas with highly compacted soils, which appeared to be the result of machine operations during timber harvest.
>
> As stated previously, it is safe to assume that soil compaction has increased in response to management operations and that it has impacted vegetation to a certain unknown degree.

The National Forest Management Act and its implementing regulations mandate soil protection. NFMA requires the Forest Service to "ensure that timber will be harvested from National Forest System lands only where—soil, slope, or other watershed conditions will not be irreversibly damaged." *16 U.S.C. § 1604 (g)(3)(E)*. NFMA's implementing regulations state, "All management prescriptions shall … Conserve soil and water resources and not allow significant or permanent impairment of the productivity of the land." *36 C.F.R. § 219.27(a)(1)*.

According to the regional guidelines soils in 80% of an activity area must be maintained in a non-detrimental condition (i.e., non-compacted, non-displaced, non-burned, and non-puddled). Soils must be "maintained," not "mitigated" or "restored" to attain that objective. Mitigation should not be used as an excuse for violation of the regional soil guidelines.

The Forest Service policy to ignore detrimental effects to soil areas less than 5 feet wide and les than 100 square feet is arbitrary and capricious. Under this senseless policy many small areas could add up to significant detrimental soil conditions, yet not trigger any management concern whatsoever. This violates NFMA, and failure to disclose the true extent of DSC violates NEPA.

Scarification, ripping, and subsoiling does not alleviate the following negative impacts, therefore not completely mitigating:

- compaction of soil and alteration of the soil ecosystem;
- alteration of hydrology, water storage, flow, timing, from soil compaction;
- alteration or loss of native plant communities, and tendency to create conditions which favor noxious weeds or other non-native plants;
- disruption of soil foodweb and biotic communities that serve important soil functions and processes such as aeration, nutrient cycling,

Ripping and tilling can in fact increase the risk of soil movement, so ripping and tilling are not really mitigation, but just another cumulative harm to the soil resource.

Soil productivity must be zealously guarded in order to protect our forests for future generations. This project will cause unacceptable impacts to soil resources. Use of ground-based logging equipment almost always compacts soil causing reduced site productivity, drastically altered soil food web relationships, reduced infiltration, and increase surface runoff. Spring burning can also be very harmful to soil and the thousands of creatures that live all or part of their lives in the soil profile. The EA needs to consider these impacts and consider alternative ways to avoiding these impacts.

Ground-based logging causes higher incidences of root damage and scarring of residual trees (compared to skyline systems). Kellog, L., Han, H.S., Mayo, J., and J. Sissel, "Residual Stand Damage from Thinning— Young Stand Diversity Study," Cascade Center for Ecosystem Management.

Soil disturbance caused by logging, road building, skid trails, and pile burning also causes erosion that adversely impacts both soil and water resources. The existing level of soil disturbance has not been measured and disclosed in the EA so the Agency cannot say with any factual basis whether forest plan standards will be met. This is arbitrary and capricious. Existing soil impacts must be measured and future impacts estimated so that an adequate cumulative effects analysis can be prepared and included in a supplemental EIS.

In modern forestry, soils are chronically impacted yet very slow to recover leading to cumulative impacts. Cumulative soil impacts caused by this project and all past and future projects (including livestock grazing, roads, landings, fuel treatments, fires, OHVs etc) is also significant issue. See http://www.cof.orst.edu/cof/teach/for341/Cumulative%20Effects%20of%20Forestry%20on%20Soils/CHAPT6Soils.htm. An EIS is needed to address these significant soil issues.

See: http://www.subtleenergies.com/ormus/bmnfa/Soilcmts.htm

The cumulative effects of standard logging practices are likely to violate soil standards.

As described in the Deschutes National Forest, Eyerly Fire DEIS, a typical dendritic system of yarding corridors can cause detrimental soil conditions across 14% of an activity area. Compaction from off-trail travel adds 5% detrimental conditions. Burning fuel piles adds 2% (just the piles, not including machine use). All these cumulative soil impacts add up to OVER 21% detrimental soil conditions, and this is WITHOUT considering the road system, landings (which typically add 5%), and the machines often used to pile fuels, not to mention the effects of past logging. This is simply illegal and irresponsible.

Soil Quality Standards underestimate soil impacts.

Soil degradation occurs at thresholds that are not detected by the FS definition of "detrimental soil conditions" the NEPA analysis based on these criteria will underestimate the effects of management. NEPA requires the agency to disclose all soil impacts not just those that meet these crude criteria.

Detrimental soil conditions are described in the Soil Quality Standards as follows:

- Detrimental soil compaction in volcanic ash/pumice soils is an increase in soil bulk density of 20 percent or greater over the undisturbed level.
- Detrimental puddling occurs when the depth of ruts or imprints is six inches or greater.

- Detrimental displacement is the removal of more than 50 percent of the A horizon from an area greater than 100 square feet and at least 5 feet in width.
- Detrimental burn damage requires significant color change of the mineral soil surface to an oxidized reddish color, with the next one-half inch below blackened from organic matter charring as a result of heat conducted from the fire.
- Detrimental erosion requires visual evidence of surface loss over areas greater than 100 square feet, rills or gullies, and/or water quality degradation from sediment or nutrient enrichment."

It is obvious form reading this that the soils of the project area could be high impacted yet still not trigger concern under these definitions. For instance, a proposed harvest unit might be compacted over a wide area, but only increase bulk density by 18% instead of the magic 20%; or an area could be 50% displaced or eroded, but in areas less than 5 feet wide and or less than 100 square feet; or an area could be burned but not quite enough to "significantly" change the mineral soil color. And what about combinations of these things. What about some burned soil, some displaced soil, some compacted soil. The cumulative and synergistic effects of sub-threshold soil effects can be significant.

NEPA requires disclose of all effects. The bottom line is that there can be serious adverse soil effects that are not considered by the agencies arbitrary and capricious soil quality criteria.

Respect the soil foodweb.

In undisturbed ecosystems, the soil foodweb is a tightly coupled below-ground ecosystem that directly affects many above ground processes such as succession, plant establishment and growth, and erosion and water quality.

In a forest, this below-ground ecosystem is fed primarily by photosynthates exuded from the fine roots of trees. These photosynthates feed a plethora of bacteria and fungi species which feed thousands of arthropod and nematode species and so on. Each species fills a niche and represents both a sink and a source and of nutrients for other organisms. Logging will kill trees and cut off the supply of photosythate which forms the basis of this food web, so the tightly coupled nutrient retention systems will be disrupted, allowing nutrients to "leak" from the system.

Burning slash piles also kills the below ground ecosystem and soil compaction from road building and other heavy equipment kills or destroys habitat for many soil dwelling species and shifts the below ground ecosystem from aerobic to anaerobic.

The NEPA document fails to consider these significant effects.

Soil Foodweb Significance

The structure and function of the soil foodweb has been suggested as a prime indicator of ecosystem health (Coleman, et al. 1992; Klopatek, et al. 1993). Measurement of disrupted soil processes, decreased bacterial or fungal activity, decreased fungal or bacterial biomass, changes in the ratio of fungal to bacterial biomass relative to expected ratios for particular ecosystems, decreases in the number or diversity of protozoa, and a change in nematode numbers, nematode community structure or maturity index, can serve to indicate a problem long before the natural vegetation is lost or human health problems occur (Bongers, 1990; Klopatek et al. 1993).

Soil ecology has just begun to identify the importance of understanding soil foodweb structure and how it can control plant vegetation, and how, in turn, plant community structure affects soil organic matter quality, root exudates and therefore, alters soil foodweb structure. Since this field is relatively new, not all the relationships have been explored, nor is the fine-tuning within ecosystems well understood.

Regardless, some relationships between ecosystem productivity, soil organisms, soil foodweb structure and plant community structure and dynamics are known, and can be extremely important determinants of ecosystem processes (Ingham and Thies, 1995). Alteration of the soil foodweb structure can result in sites which cannot be regenerated to conifers, even with 20 years of regeneration efforts (Perry, 1988; Colinas et al, 1993). Work in intensely disturbed forested ecosystems suggests that alteration of soil foodweb structure can alter the direction of succession. By managing foodweb structure appropriately, early stages of succession can be prolonged, or deleted (Allen and Allen, 1993). Initial data indicates that replacement of grassland with forest in normal successional sequences requires alteration of soil foodweb structure from a bacterial-dominated foodweb in grasslands to a fungal-dominated foodweb in forests (Ingham, E. et al, 1986 a, b; 1991; Ingham and Thies, 1995).
…
…Without doubt, plant establishment, survival and successional processes are influenced by these soil organisms

Soil processes are important for maintaining normal nutrient cycling in all ecosystems (Coleman et al., 1985; Dindal 1990; Ingham, E. et al. 1986a, b). Plant growth is dependent on the microbial immobilization and soil foodweb interactions to mineralize nutrients. In undisturbed ecosystems, the processes of immobilization and mineralization are tightly coupled to plant growth but following disturbance, this coupling may be lost or reduced. Nutrients may be no longer retained within the system, causing problems for systems into which nutrients move (Ingham and Coleman, 1984; Hendrix et al. 1986; Nannipieri et al. 1990). Measurement of disrupted processes may allow determination of a problem long before normal cycling processes are altered, before the natural vegetation is lost, or human health problems occur. By monitoring soil organism

dynamics, we can perhaps detect detrimental ecosystem changes and possibly prevent further degradation.

Immobilization of nutrients in soil, i.e., retention of carbon, nitrogen, phosphorus, and many micronutrients in the horizons of soil from which plants obtain their nutrients, is a process performed by bacteria and fungi. Without these organisms present and functioning, nutrients are not retained by soil, and the ecosystem undergoes degradation. Thus, to assess the ability of an ecosystem to retain nutrients, the decomposed portion of the ecosystem, i.e., active and total fungal biomass, and active bacterial biomass must be assessed.

Ingham, Elaine, The Soil Foodweb: It's Importance in Ecosystem Health
http://www.rain.org/~sals/ingham.html

Soil is full of **beneficial soil organisms** profoundly affecting forest site productivity; for example, **mycorrhizal fungi** (fungi that form a close and mutually beneficial relation with the roots of plants) and **nitrogen-fixing organisms** (specialized soil microbes that change atmospheric nitrogen into chemical forms usable by plants) These organisms capture and take in nutrients and water, protect roots against diseases, and promote soil structure. Severe disturbance, such as intense fire or the piling and removing of surface organic matter, can reduce or eliminate beneficial soil organisms (Amaranthus et al., 1990) Impacts on these beneficial organisms is minimized when forest practices emphasize retention of organic matter and rapid regeneration...Myocrrhizal fungi, essential for plant nutrient and water uptake, also are most prevalent near the soil surface. Site preparation activities...can displace surface soil and organic layers thereby decreasing tree growth between rows of slash."

Little is known about the effects of soil erosion from deforested areas, but the density and diversity of mycorrhizal inocula are reduced.

Amaranthus, M.P.; Molina R.; and Trappe J. M. 1990. Long-term forest productivity and the living soil. Chapter 3. In Perry D.A. ed. Maintaining Long-term Forest Productivity in the Pacific Northwest Forest Ecosystem. Timber Press. Portland, OR 97208.

Disclosure Of Compliance With Substantive Requirements

NEPA requires disclosure of information necessary to determine compliance with legal requirements such as the Endangered Species Act, Clean Water Act, National Forest Management Act, and applicable Forest Plan Standards & Guidelines. See 40 CFR 15087.27(b)(10) and NW Indian Cemetery Protective Association v. Peterson, 795 F2d 688 (9th Circ 1986).

The Office of General Counsel agrees that project level analysis must document “Project Compliance With Other Laws.”

> In addition to consistency with the LRMP each project must be in compliance with NEPA, CWA, CAA and other laws. Simply being consistent with the LRMP does not fulfill the site-specific requirements of Federal law. Project level analysis is to "determine findings for NFMA, to ensure compliance with NEPA, and to meet other appropriate laws and regulations." Forest Service Land and Resource Management Planning, FSM 1920 and Forest Service Handbook 1909.12, 5.31. 53 Fed. Reg. 26807, 26836 (July 15, 1988).

OGC, "Forest Plan and Project Level Decisionmaking— Overview of Forest Planning and Project Level Decisionmaking,"
http://www.fs.fed.us/forum/nepa/decisionm/p4.html#14

The CEQ NEPA regulations also require an analysis of legal requirements in order to determine whether an action may cause significant impacts on the environment. 40 CFR §1508.27(b)(10) ("*Significantly*, as used in NEPA, requires considerations of both context and intensity: … The following should be considered in evaluating intensity: … Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment." *Emphasis added.*) SAS v. Mosely 798 F.Supp. 1473 (W.D. Wash. May 1992) ("The FEIS has thus mentioned what appears to be a major consequence of the plan jeopardy to other species that live in the old growth forests without explaining the magnitude of the risk or attempting to justify a potential abandonment of conservation duties imposed by law. An EIS devoid of this information does not meet the requirements of NEPA." *Emphasis added.*)

The Forest Service NEPA Handbook also requires that Decision Notices explain complete[ly] and comprehensive[ly]" how the NEPA decision complies with applicable legal requirements including the LRMP land allocations and Standards & Guidelines.

> FSH 1909.15 Chapter 40, 43.21 - **Format and Content**
> Decision notices document the conclusions drawn and the decision(s) made based on the analysis in the EA. Decision notices should conform to the following format and content. While sections may be combined or rearranged in the interest of clarity and brevity, the information needs to be complete and comprehensive.
> …
> 6. Findings required by other laws and regulations. Include any findings required by any other laws which apply to the decision being made. Cite the project record or environmental analysis document that contains the information being used to support the findings. Describe how the decision is consistent with applicable laws and regulations. For example, findings regarding consistency with the forest plan (allocation, and standards and guidelines), suitability for timber production, and vegetation management criteria required by the National Forest Management Act and 36 CFR part 219. (emphasis added)

http://www.fs.fed.us/im/directives/fsh/1909.15/1909.15_40.doc

See also, Judge King's October 2003 Decision in ONRC Action v. U.S. Forest Service, CV. 03-613-KI ("The underlying EAs for the timber sales at issue did not properly frame the Forest Service's survey and manage duties, they did not analyze a range of alternatives based upon these duties, they did not evaluate completed surveys, they did

not demonstrate that the Forest Service had all of the proper information before it before allowing logging, and they did not provide for public influence over the decisions. For all of these reasons, the underlying EAs are legally deficient." *Emphasis added.*)
http://www.onrc.org/press/ONRCv.USFS.pdf

And also Judge Hogan's ruling in Klamath Siskiyou Wildlands Center v. Boody (#03-3124-CO, May 18, 2004) where he held "plaintiffs have raised a serious question as to whether BLM violated NEPA in failing to disclose sufficient information in the EA to confirm compliance with … the RMP." (Order at page 18).

Avoid Creating Conditions Which Spread Weeds

On Earthday 2003 Chief Dale Bosworth said that more attention needs to be paid to beating back invasive species.

Opening up the canopy and disturbing the soil through road building and logging as proposed in this project could spread non-native weeds far and wide. The invasive weed sites in the analysis area and along all log and gravel haul routes should be fully inventoried and documented as part of the NEPA process for this project . In the absence of valid and complete weed survey information, harvest and road and fuel treatment activities planned as part of this project might exacerbate the problem instead of contain it.

We find it highly unlikely that conducting ground disturbing activities over so many acres of this planning are will not make the weed problems worse instead of better. These weeds are "a slow motion explosion" that should not be taken lightly. It is often better to just close roads and avoid ground disturbing activities while sending crews in to do hand-pulling of weed infestations as necessary.

Consider how weeds were addressed in the MIDDLE NORTH UMPQUA WATERSHED ANALYSIS; Version 1.0, January 2001; North Umpqua Ranger District, Umpqua National Forest; Chapter 4, pages 88-89.
http://www.fs.fed.us/r6/umpqua/planning/watershed_analysis/mid_n_ump/mid_n_ump_wa.html

Aggressive Species

There are many aggressive non-native plant species that compromise the ecology of the area and may threaten native communities besides those listed as "noxious". For the most part, these are pioneer species that occupy disturbed areas in great numbers. In some cases the invasive ability of these plants rivals those listed as noxious, but they are either already so firmly established that eradication efforts have not been effective or their ecological threat has not been recognized. Three species of particular concern are cat's ear daisy (Hypocharis radiata), dogtail hedgehog grass (Cynosurus echinatus), and ox-eye daisy (Leucanthemum vulgare). All of these species are commonly transported along roads. Dogtail

hedgehog grass is quite likely the most common grass species in the watershed. It dominates nearly all dry meadows that were grazed in the past and provides stiff competition to recolonization by native species. None of these species are easily eradicated.

Arguments are often made that non-native species will die out over time as the vegetation moves from open clear-cut to forested conditions. To some extent this is true. Pioneer plant populations decline in the shaded conditions that increase as the seral stages progress. However, non-native seed banks remain in the soil and plants continue reproducing and spreading from and to recently disturbed areas. How this disruption of early seral processes affects the long-term viability of native pioneer plants and the species that depend on them is unknown. The extent of the detrimental effect on the composition of later seral herbaceous communities is, for the most part, also unknown.

Non-native plants impact rare plants by causing physical displacement, loss of nutrient availability, changes in environmental parameters (e.g., water, light, and temperature) and through the interruption of crucial relationships with other species. The extent of this type of disturbance to populations of rare plants is not known. Neither the exact nature of the damage to the rare plants resulting from the presence of non-native plant species nor its extent is known in the Middle North Umpqua Watershed. Based on observed situations, it is reasonable to assume the trend has been negative.

Besides the plant species immediately replaced by non-native invasion, the most highly affected species may be insects involved in pollination. Native plants have established relationships with native pollinators. The decrease in plant diversity caused by non-native encroachment can cause displacement or loss of pollinators. Orchids may be particularly at risk, since they often are dependent on a single pollinator.

In addition to affecting pollinators, the replacement of native plants by non-natives affects both the structure and food production provided to wildlife by native plants. These changes are not necessarily negative. For instance, Himalayan blackberry provides extensive habitat and food for certain species. The net loss or gain to wildlife in the analysis area has not been ascertained, but is likely to be negative.

Riparian areas in the watershed are also being impacted by non-native species. One mode of introduction of these plants is the road system within the watershed. Vehicles traveling these roads pick up non-native seed and deposit it along their way. These non-natives establish and produce more seed that is then transported downstream along waterways. The best current example of this action in the watershed is meadow knapweed (Centaurea pratensis). The species was planted in the 1960s for erosion control despite its ability to spread rapidly. It now is common along the North Umpqua and tributary streams near the roads it was

planted on. It will likely soon become the dominant riparian herb species. It is actively displacing such species as chatterbox orchid (Epipactis gigantea), great northern aster (Aster modestus) and willows (Salix spp.). Meadow knapweed produces an extensive root system that is capable of rapidly occupying and stabilizing sand and gravel bars. Besides limiting habitat for native plant species, it is likely to affect the ecology of the river system.

Both upland and riparian areas are at risk from Scotch broom and Portuguese broom. These species have demonstrated the ability to change patterns of succession. They dominate disturbed sites and form dense thickets that exclude other species from becoming established. They contain highly flammable oils, are very fire prone, and burn intensely. The plants produce copious amounts of seed that can lay dormant in the soil for decades, then sprout quickly after fire, producing a single species brush field that precludes the establishment of other native species.

Please comply with Executive Order 13112 of February 3, 1999 which provides:

(a) Each Federal agency whose actions may affect the status of invasive species shall, to the extent practicable and permitted by law,

(1) identify such actions;

(2) subject to the availability of appropriations, and within Administration budgetary limits, use relevant programs and authorities to: (i) prevent the introduction of invasive species; (ii) detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; (iii) monitor invasive species populations accurately and reliably; (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded; (v) conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species; and (vi) promote public education on invasive species and the means to address them; and

(3) not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

http://www.invasivespecies.gov/laws/execorder.shtml

Recognize the Many Values of Snags, Decayed Wood And Associated Functions And Species

The Ninemile EA says that snags will be tallied and created later if needed. This violates NEPA and NFMA. The EA violates NEPA by failing to disclose the effect of logging on snags and down wood. Logging virtually always results in a reduction in valuable and under-represented snag habitat. Future snag creation as described in the EA is a *connected action* and would be directly connected to this logging project. The LRMP has snag Standards & Guidelines that must be followed pursuant to NFMA but the Forest Service not only fails to disclose whether those snag requirements will be met, but also fails to disclose that the LRMP is based on outdated "potential population" methods that are now discredited. The Forest Service must prepare a comprehensive NEPA document to disclose how it will meet NFMA requirements (for snag associated MIS species) in the future.

In a dynamic ecosystem life may be fleeting but the snags and logs that survive disturbance provide very critical temporal links from one stand to the next. Under natural conditions, a forest hands down a large legacy of living and dead material from one stand to another even after an intense disturbance. See Jerry Franklin et al 2000. Threads of Continuity. Conservation Biology in Practice 1(1) pp9-16. See also: William F. Laudenslayer, Jr., Patrick J. Shea, Bradley E. Valentine, C. Phillip Weatherspoon, and Thomas E. Lisle *Technical Coordinators.* Proceedings of the Symposium on the Ecology and Management of Dead Wood in Western Forests. PSW-GTR-181. http://www.fs.fed.us/psw/publications/documents/gtr-181/

Harvest of large trees, whether they are alive or dead, removes large material that is normally handed down from one stand to the next. The loss of this material has serious adverse consequences for wildlife, hydrology, soil, etc. These legacies are often described as "lifeboats" that allow species to persist in post-disturbance forests and/or return more rapidly to post-disturbance forests. Given cumulative loss of habitat and ecological functions over the last century, how many lifeboats can we take off the ship when threatened and endangered species and sensitive species are at stake? The NEPA analysis must account for all the values provided by snags and down wood and the effect of removing these legacy structures.

Bats, martens, woodpeckers, bears, amphibians, invertebrates, and many other species are dependant upon snags and down wood. Snags and down wood also serve several crucial ecosystem functions related to site productivity, nutrient storage & cycling, hydrology, geomorphology, disturbance, and habitat (terrestrial, riparian and aquatic). Current direction for protecting and providing snags and down wood tend sot be focused on a small subset of the full spectrum of values provided and does not ensure the continued operation of these ecosystem functions or meet the complete lifecycle needs of the many species associated with this unique and valuable habitat component. Please consider all the many values of snags and down wood presented in Rose, C.L., Marcot, B.G., Mellen, T.K., Ohmann, J.L., Waddell, K.L., Lindely, D.L., and B. Schrieber. 2001. Decaying Wood in Pacific Northwest Forests: Concepts and Tools for Habitat Management,

Chapter 24 *in* ***Wildlife-Habitat Relationships in Oregon and Washington*** (Johnson, D. H. and T. A. O'Neil. OSU Press. 2001)
http://www.nwhi.org/nhi/whrow/chapter24cwb.pdf

Introduction

Decaying wood has become a major conservation issue in managed forest ecosystems.[16, 64, 69a, 149, 201] Of particular interest to wildlife scientists, foresters, and managers are the roles of wood decay in the diversity and distribution of native fauna, and ecosystem processes. Numerous wildlife functions are attributed to decaying wood as a source of food, nutrients, and cover for organisms at numerous trophic levels.[231, 232, 234, 346, 369] Principles of long- term productivity and sustainable forestry include decaying wood as a key feature of productive and resilient ecosystems.[10, 229, 291, 293, 386] In addition to a growing appreciation of the aesthetic, spiritual, and recreational values of forests, society increasingly recognizes ecosystem services of forests as resource .capital. with tangible economic value to humansy, such as air and water quality, flood control, and climate modification.[15, 262, 290]

The ecological importance of decaying wood is especially evident in coniferous forests of the Pacific Northwest. In this region, the abundance of large decaying wood is a defining feature of forest ecosystems, and a key factor in ecosystem diversity and productivity.[127] … Large accumulations of decaying wood provide wildlife habitat and influence basic ecosystem processes such as soil development and productivity, nutrient immobilization and mineralization, and nitrogen fixation.[85, 115, 218, 233] …
…
Since the publication of Thomas et al.[369] and Brown,[48] new research has indicated that more snags and large down wood are needed to provide for the needs of fish, wildlife, and other ecosystem functions than was previously recommended by forest management guidelines in Washington and Oregon. For example, the density of cavity trees selected and used by cavity-nesters is higher than provided for in current management guidelines.[53, 102] …
…
Ecological Functions of Decaying Wood
…
Recent significant advancements have defined wildlife species-specific relationships with particular characteristics and components of decaying trees, both standing and fallen,[56, 95, 185, 284, 351, 373, 386, 402] and implications for management.[13, 68, 223, 226, 250, 327] …
…
Hollow trees larger than 20 inches (51 cm) in diameter at breast height (dbh) are the most valuable for denning, shelter, roosting, and hunting by a wide range of animals.[7], **…**
…
… In the Interior Columbia Basin, grand fir and western larch form the best hollow trees for wildlife uses. …
…
Recent studies have provided valuable insight on wildlife uses of snags (dead trees).[21, 56, 314, 402] Snags provide essential habitat features for many wildlife species (Figure 6). The abundance of cavity-using species is directly related to the presence or absence of suitable cavity trees. Habitat suitability for cavity-users is influenced by the size (diameter and height), abundance, density, distribution, species, and decay characteristics of snags.[307] In addition, the structural condition of surrounding vegetation determines foraging opportunities.[402]

The Habitat Elements matrix on the CD-ROM with this book lists a total of 96 wildlife species associated with snags in forest (93 species) or grassland /shrubland (47 species) environments. Most of these species use snags in both environments. In forests, this includes 4 amphibian, 63 bird, and 26 mammal species. Additionally, 51 wildlife species are associated with tree cavities, 45 with dead parts of live trees, 33 with remnant or legacy trees (which may have dead parts), 28 with hollow living trees, 21 with bark crevices, and 18 with trees having mistletoe or witch's brooms. Habitat uses include nesting, roosting, preening, foraging, perching, courtship, drumming, and hibernating (Figure 7).

Of the 93 wildlife species associated with snags in forest environments, 21 are associated with hard snags (Stages 1 and 2), 20 with moderately decayed snags (Stage 3), and 6 with soft snags (Stages 4-5) in the five-stage classification system. According to the matrixes,188 most snag-using wildlife species are associated with snags >14.2 inches (36 cm) diameter at breast height (dbh), and about a third of these species use snags >29.1 inches (74 cm) dbh.

This query of the Habitat Elements matrix illustrates the breadth of updated information about wildlife and snag habitat relations. Research results have expanded the number and variety of decaying wood categories over what was previously presented in Thomas[366] and Brown.[48]

…

. Down Woody Material (logs). Down wood affords a diversity of habitat functions for wildlife, including foraging sites, hiding and thermal cover, denning, nesting, travel corridors, and vantage points for predator avoidance.[56, 64, 230] Larger down wood (diameter and length) generally has more potential uses as wildlife habitat. Large diameter logs, especially hollow ones are used by vertebrates for hiding and denning structures.[214, 230] …

…

Long term Productivity

… Processes that sustain the long- term productivity of ecosystems have become the centerpiece of new directives in ecosystem management and sustainable forestry.[78, 229, 291, 320] Given the key role of decaying wood in long-term productivity of forest ecosystems in the Pacific Northwest,[122, 169, 261, 302] the topic should remain of keen interest to scientists and managers during the coming decade.[149] … functions of decaying wood directly linked to long-term productivity, include[e] influences on the frequency and severity of disturbances such as fire, disease, and insect outbreaks.5, 6, 133, 137

Nutrient Cycling and Soil Fertility. Decaying wood has been likened to a savings account for nutrients and organic matter,[376] and has also been described as a short-term sink, but a long-term source of nutrients in forest ecosystems.[164] …

… Substantial amounts of nitrogen are returned to the soil from coarse wood inputs, yet even where annual rates of wood input are high, 4 to 15 times more nitrogen is returned to the forest floor from foliage than from large wood.[164] …

… The low nutrient content in wood, small mass of tree boles relative to foliar litterfall, and slow rates of wood decay suggest that large wood plays a minor role in forest nutrition.[18, 159, 162] After large scale disturbance such as fire and blowdown, however, the

large nutrient pool stored in woody structures of trees (bole, branches, twigs, roots) becomes available to the regrowing forest. Large down wood may thus be an ample source of nutrients throughout secondary succession.[281]
…
Recent studies indicate that wood may release nutrients more rapidly than previously thought through a variety of decay mechanisms mediated by means other than microbial decomposers, i.e. fungal sporocarps, mycorrhizae and roots, leaching, fragmentation, and insects.[107, 158, 159, 162, 339, 405] …

Soil is the foundation of the forest ecosystem.[68, 348] … On the H. J. Andrews Experimental Forest of western Oregon, 20-30% of the soil volume consists of decaying wood dispersed throughout a matrix of litter and duff.[294] Because wood is a relatively inert substance, it may help to stabilize pools of organic matter in forests by slowing soil processes and buffering against rapid changes in soil chemistry. …
…
… Numerous studies have demonstrated that losses in soil productivity often are closely linked to losses in soil organic matter.[298]
…

Mass Wasting and Surface Erosion. … Large wood helps to anchor snowpacks, limit the extent of snow avalanches, and may even stabilize debris flows, depending on the depth of the unstable area.[125, 356, 358] … By covering soil surfaces and dissipating energy in flowing and splashing water, logs and other forms of coarse wood significantly reduce erosion.[357] Large trees lying along contours reduce erosion by forming a barrier to creeping and raveling soils, especially on steep terrain. Material deposited on the upslope side of fallen logs absorbs moisture and creates favorable substrates for plants that stabilize soil and reduce runoff.[230]

Stand Regeneration and Ecosystem Succession. Decomposing wood serves as a superior seed bed for some plants because of accumulated nutrients and water, accelerated soil development, reduced erosion, and lower competition from mosses and herbs.[160, 376] In the Pacific Northwest, decaying wood influences forest succession by serving as nursery sites for shade-tolerant species such as western hemlock, the climax species in moist Douglas- fir habitat.[80, 123, 160, 163, 244] Wood that covers the forest floor also modifies plant establishment by inhibiting plant growth, and by altering physical, microclimatic, and biological properties of the underlying soil. For example, elevated levels of nitrogen fixation in *Ceanothus velutinus* and red alder[35, 88] have been reported under old logs.

Streams and Riparian Forests. Long-term productivity in streams and riparian areas is closely linked to nutrient inputs, to attributes of channel morphology, and to flow dynamics created by decaying wood.[144, 233, 360] …

Large wood is the principal factor determining the productivity of aquatic habitats in low- and mid-order forested streams.[262] Large wood stabilizes small streams by dissipating energy, protecting streambanks, regulating the distribution and temporal stability of fast-water erosional areas and slow-water depositional sites, shaping channel morphology by routing sediment and water, and by providing substrate for biological activity.361 The influence of large wood on energy dissipation in streams influences virtually all aspects of ecological processes in aquatic environments, and is responsible for much of the habitat diversity in stream and riparian ecosystems.[262, 376]

Key Ecological Functions of Wildlife Species Associated With Decaying Wood

…

Various symbiotic relations can be described for the 96 snag-associated species. Sixteen species are primary cavity excavators and 35 are secondary cavity users; 8 are primary burrow excavators and 11 are secondary burrow users; 5 are primary terrestrial runway excavators and 6 are secondary runway users. Nine snag-associated species create nesting or denning structures and 8 use created structures. Sixteen species might influence vertebrate population dynamics and 22 might influence invertebrate population dynamics. Snag-associated species also contribute to dispersal of other organisms including seeds and fruits (21 snag-associated wildlife species perform this function), invertebrates (8 species), plants (8 species), fungi (2 species), and lichens (1 species). Six snag-associated species can improve soil structure and aeration through digging, 2 species fragment standing wood, and 2 species fragment down wood. One snag-associated species creates snags, and at least 1 can alter vegetation structure and succession through herbivory.

…

… both snag- and down wood-associated wildlife more or less equally participate in dispersal of seeds and fruits (although the particular species they disperse may differ); however, snag- associated wildlife play a greater role in dispersal of invertebrates and plants, and down wood-associated wildlife play a greater role in dispersal of fungi and lichens. Down wood-associated species might contribute more to improving soil structure and aeration through digging, and to fragmenting wood. This is one example of the far greater differentiating power afforded by a well-constructed set of matrixes than was previously available in Thomas [366] and Brown.[48] …

…

Fire Suppression. In the eastern Cascades and through much of the intermountain area, extensive forest insect and disease problems have resulted from decades of fire suppression in combination with selective harvesting of pines.[177, 194, 236, 401, 403] An analysis of landscape dynamics in the Interior Columbia River Basin[302, 379] revealed that fire suppression resulted in a decreased abundance of large- diameter trees, and caused fuel accumulations that predisposed forests to stand-replacement fires**.** As mentioned previously, more intense fires not only consume more wood, but can inhibit wood decay by reducing nitrogen availability (and other elements) through volatilization and leaching, especially for wood in close association with the soil.[245] Wood decay in post-fire regenerating forests also may be exacerbated by a decline in symbiotic nitrogen-fixing plant species in stands subject to prolonged fire suppression.[169]

…

Management Considerations Management Ramifications of Snag and Down Wood Abundance

…

… The apparent dearth of large snags in Ponderosa pine may mean lower suitability for the 54 wildlife species associated with large snags (20+ in or 51+ cm dbh) in that wildlife habitat. Intensive forest management activities that have decreased the density of large snags in early forest successional stages (sapling/pole and small tree stages) may have had adverse impacts on the 61 associated wildlife species (Figure 12). Similarly, the lesser amount of large down wood in early forest successional stages may not provide as well for the 24 associated wildlife species. Such results suggest the continuing need for specific management guidelines to provide large standing and down dead wood in all successional stages.

…

Depletion of Large Wood. The loss of large wood structures has numerous potential impacts on ecological functions of forests, although available information is inadequate for a definitive assessment. The lack of large logs on steep slopes can decrease water percolation into soil, impair slope stability, accelerate soil erosion and sediment input to streams, and increase nutrient losses in litter.[164, 358, 359, 360, 361] Some data support a linkage between intensive management (especially depletion of decaying wood) and reduced forest biomass productivity, particularly on less productive sites. Lower productivity is attributed to nutrient losses from managed forests, reduced nutrient availability in older stands, and decreased nutrient storage, particularly in the soil.[272, 383, 384] Depletion of soil organic matter has been cited as a primary factor contributing to declining forest productivity and biodiversity in the Pacific Northwest and elsewhere.[17, 137, 198, 199, 228, 292, 293, 298, 299]

…

Riparian Forests. … Far-reaching effects of the absence of large wood structures in streams include: 1) simplification of channel morphology, 2) increased bank erosion, 3) increased sediment export and decreased nutrient retention, 4) loss of habitats associated with diversity in cover, hydrologic patterns, and sediment retention.[33, 144, 262] In coastal environments and estuaries, the loss of large wood may disrupt trophic webs and alter coastal sediment dynamics.[233]

…

Lessons Learned During the Last Fifteen Years

…

Several major lessons have been learned in the period 1979-1999 that have tested critical assumptions of these earlier management advisory models:

- Calculations of numbers of snags required by woodpeckers based on assessing their .biological potential. (that is, summing numbers of snags used per pair, accounting for unused snags, and extrapolating snag numbers based on population density) is a flawed technique. Empirical studies are suggesting that snag numbers in areas used and selected by some wildlife species are far higher than those calculated by this technique.[226]
- Setting a goal of 40% of habitat capability for primary excavators, mainly woodpeckers,[369] is likely to be insufficient for maintaining viable populations.
- Numbers and sizes (dbh) of snags used and selected by secondary cavity-nesters often exceed those of primary cavity excavators.
- Clumping of snags and down wood may be a natural pattern, and clumps may be selected by some species, so that providing only even distributions may be insufficient to meet all species needs.
- Other forms of decaying wood, including hollow trees, natural tree cavities, peeling bark, and dead parts of live trees, as well as fungi and mistletoe associated with wood decay, all provide resources for wildlife, and should be considered along with snags and down wood in management guidelines.
- The ecological roles played by wildlife associated with decaying wood extend well beyond those structures per se, and can be significant factors influencing community diversity and ecosystem processes.

We have also learned that managing forests with decay processes should be done as part of a broader management approach to stand development, with attention paid to retaining legacies of large trees and decaying wood from original or prior stands. Further lessons have been learned in the area of technical and operational developments; some of these are discussed below.

…

… Studies suggest that wood habitat structures function best for wildlife when they are broadly distributed as well as occurring in locally- dense clumps, such as with scattered snag or down wood patches. …

…

… A new modeling tool named DecAID is available to assist with this task. DecAID (as in .decayed. or .decay aid.) is a new Decayed Wood Advisory Model being developed to address some of the recent lessons learned.226, 247 DecAID is based on a thorough review of literature, available research and inventory data, and expert judgment. It broadens the paradigm for wildlife species and habitat assessment by considering the key ecological functions of wildlife (see below) as well as the ecosystem context of wood decay in terms of secondary effects on forest productivity, fire, pest insects, and diseases.

…

The manager will be able to use DecAID for advice on the following topics by first specifying wildlife habitat, structural stage, and statistical (confidence) level: 1) wildlife species associated with particular sizes and densities of snags and down wood, or, conversely, the sizes and densities required to meet specified wildlife management objectives, at three levels of confidence; 2) the array of key ecological functions of wildlife associated with decaying wood; 3) the recent-historic and current range of natural conditions of snags and fallen trees; 4) advice on fire risk assessment and mitigation; 5) advice on the roles of insects and diseases associated with various amounts of decaying wood; 6) and the influence of the abundance of decaying wood on ecosystem processes and productivity.

…

Management Tools and Opportunities

…

… In young stands, Franklin[122] recommends that management should:

1. Aggressively create stands of mixed composition to maintain habitat for a broad array of species (and to achieve diversity in quality and timing of nutrient inputs to streams).
2. Delay the process of early canopy closure (wide spacings, pre-commercial thinning etc.).
3. Provide for adequate amounts and a continuous supply of large wood, including snags and down logs, for maintaining structural diversity in forests and streams and maintaining all other ecosystem processes associated with wood.

The basic theme of these revisions of intensive forestry practices is to retain the higher levels of complexity found in natural forests, and in so doing, to protect processes and structures that retain future options for ecosystem management. …

…

… Retention of snags provides numerous habitat benefits.[154, 239, 402] However, safety and liability issues associated with snag retention have posed an operational barrier to management objectives for structural retention. Two approaches useful in reducing hazards associated with snags are: 1) to cluster snags in patches rather than wide dispersal, and 2) to create snags from green trees after cutting.[122]

… Managers must also consider the temporal dimension to decaying wood, to ensure that sufficient sufficient snag and down wood densities are provided through time. …

Live (Green) Tree Retention. Retention of living trees on cutover areas is one form of structural retention that can provide for future recruitment of snags and down wood …

> Green trees function as a refugium of biodiversity in forests. For example, many species of invertebrate fauna in soil, stem, and canopy habitats of old-growth forests do not disperse well, and thus, do not readily recolonize clear-cut areas.[207, 326] The same concept holds for many mycorrhizae-forming fungal species.[293] Added benefits of green tree retention include moderated microclimates of the cutover area, which may increase seedling survival, reduce additional losses of biodiversity on stressed sites,[293] and facilitate movement of organisms through cutover patches of the landscape. Green trees retained across harvest cycles can also be used to grow very large trees for either ecologic or economic goals. …

Green tree retention offers many benefits to wildlife. For example, the higher structural diversity in young stands that contain legacy trees from previous stands provides much improved habitat values to late successional species such as the northern spotted owl, as well as other vertebrates that use late-successional stands for some elements of their life history.[69, 122, 314] Such stands may provide wildlife habitat as early as age 70-80 years rather than 200-300 years, the approximate time interval required for old-growth conditions to develop after secondary succession. …

…

Summary of Management Recommendations

The information presented in this chapter emphasizes several properties of decaying wood in forest ecosystems: (1) each structure formed by decaying wood helps support a different functional web in the ecosystem; (2) no one decaying wood structure supports all functions equally; and (3) all decaying wood habitats together support the widest array of ecological functions and associated wildlife species. The CD-ROM with this book in combination with the DecAid model provides managers with a powerful tool that makes it possible to assess the degree of .full functionality. of ecosystems as supported by the various decaying wood structures, and which functions are strengthened, diminished, or lost through alternative silvicultural management practices.

Lessons for managers are:

…

2. Emphasize retention of wood legacies, and secondarily promote restoration where legacies are deficient to meet stated objectives. The decline of species associated with late-successional forest structures, as well as the prolonged time needed to produce wood legacies, suggests that it is both ecologically and economically advantageous to retain legacy structures across harvest cycles wherever possible, rather than attempt to restore structures that have been depleted. This is especially obvious for slow-growing tree species and very large wood structures. …

…

Operational Considerations

…

… OSHA revised the federal Logging Standard (29 CFR 1910.266) in 1995, to clarify its intent that danger trees may be avoided, rather than being removed or felled.[72a] A danger tree is any standing tree (live or dead) that poses a hazard to workers, from unstable conditions such as deterioration, damage, or lean. The revised rule allows some discretion in determining the hazard area around a danger tree, by ....allowing work to commence within two tree lengths of a marked danger tree, provided that the employer demonstrates that a shorter distance will not create a hazard for an employee..(OSHA Logging Preamble, Section V). Determining a safe working distance requires a case-by-case ....evaluation of various factors such as, but not limited to, the size of the danger tree,

> how secure it is, its condition, the slope of the work area, and the presence of other employees in the area. …
> …
> Concerns frequently arise where high public use creates a risk of third party liability. Considerations include the proximity of reserve trees to roads, trails, campgrounds, ski areas, and other recreation areas and public access points. Methods for addressing these concerns include signage and clear delineation of potential hazard areas, fencing and other barriers to discourage public access, snag height reduction and use of setbacks to minimize exposure.

The bottom line is that current management at both the plan and project level does not reflect all this new information about the value of abundant snags and down wood. The agency must avoid any reduction of existing or future large snags and logs (including as part of this project) until the applicable management plans are rewritten to update the snag retention standards. See also PNW Research Station, "Dead and Dying Trees: Essential for Life in the Forest," Science Findings, Nov. 1999 (http://www.fs.fed.us/pnw/sciencef/scifi20.pdf) ("Management implications: Current direction for providing wildlife habitat on public forest lands does not reflect findings from research since 1979; more snags and dead wood structures are required for foraging, denning, nesting, and roosting than previously thought.") See also:
Jennifer M. Weikel and John P. Hayes, HABITAT USE BY SNAG-ASSOCIATED SPECIES: A BIBLIOGRAPHY FOR SPECIES OCCURRING IN OREGON AND WASHINGTON, Research Contribution 33 April 2001, http://www.fsl.orst.edu/cfer/snags/bibliography.pdf; and DecAID, the Decayed Wood Advisor for Managing Snags, Partially Dead Trees, and Down Wood for Biodiversity in Forests of Washington and Oregon, http://wwwnotes.fs.fed.us:81/pnw/DecAID/DecAID.nsf

NOTES on DecAID:

1. Before relying on DecAID, the agency must prepare a comprehensive NEPA analysis to consider alternative ways of ensuring viability of all species dependent upon snags and dead wood. While it is true that the "potential population" or "habitat capability" method is no longer considered scientifically valid, the agency has not yet considered a full range of alternative methods to replace the habitat capability method mandated in the forest plans.
2. Blind reliance on DecAID is inappropriate. DecAID does not pick the management objective. The agency must specify the management objective based on RMP objectives for the land allocation or based on natural "range of variation." Since large snags are outside the natural range of variability across the landscape, the agency must retain all large snags to start moving the landscape toward the natural range of variability, or the agency must carefully justify in the NEPA analysis every large snag it proposes to remove. See Jerome J. Korol, Miles A. Hemstrom, Wendel J. Hann, and Rebecca A. Gravenmier. *Snags and Down Wood in the Interior Columbia Basin Ecosystem Management Project.* PNW-GTR-181. http://www.fs.fed.us/psw/publications/documents/gtr-181/049_Korol.pdf This paper estimates that even if we apply enlightened forest management on federal lands for the next 100 years, we will still reach only 75%

of the historic large snag abundance measured across the interior Columbia Basin, and most of the increase in large snags will occur in roadless and wilderness areas.

3. Be sure to use the DecAID tool appropriately. The agency must address the dynamics of snag habitat over time, by accounting for snag fall rates and snag recruitment rates which are not accounted for in the DecAID advisor. The agency often misuses the DecAID decision support tool. The agency relies on DecAID to analyze impacts on snag dependent species, but the agency fails to recognize that

> "DecAID is NOT: … a snag and down wood decay simulator or recruitment model [or] a wildlife population simulator or analysis of wildlife population viability. … Because DecAID is not a time-dynamic simulator … it does not account for potential temporal changes in vegetation and other environmental conditions, … DecAID could be consulted to review potential conditions at specific time intervals and for a specific set of conditions, but dynamic changes in forest and landscape conditions would have to be modeled or evaluated outside the confines of the DecAID Advisor."

Marcot, B. G., K. Mellen, J. L. Ohmann, K. L. Waddell, E. A. Willhite, B. B. Hostetler, S. A. Livingston, C. Ogden, and T. Dreisbach. In prep. "DecAID -- work in progress on a decayed wood advisor for Washington and Oregon forests." Research Note PNW-RN-XXX. USDA Forest Service, Pacific Northwest Region, Portland OR. (pre-print)
http://wwwnotes.fs.fed.us:81/pnw/DecAID/DecAID.nsf/HomePageLinks/44C813BC574BDFCC88256B3E006C63DF

4. The recommendations from DecAID may be too low to support viable populations of wildlife associated with dead wood, because anthropogenic factors that tend to reduce snags (e.g., firewood cutting, hazard tree felling, fire suppression, and salvage logging) may have biased the baseline data that DecAID relies upon to describe "natural" conditions. See Kim Mellen, Bruce G. Marcot, Janet L. Ohmann, Karen L. Waddell, Elizabeth A. Willhite, Bruce B. Hostetler, Susan A. Livingston, and Cay Ogden. *DecAID: A Decaying Wood Advisory Model for Oregon and Washington* in PNW-GTR-181, *citing* Harrod, Richy J.; Gaines, William L.; Hartl, William E.; Camp, Ann. 1998. *Estimating historical snag density in dry forests east of the Cascade Range.* PNW-GTR-428.
http://www.fs.fed.us/pnw/pubs/gtr_428.pdf
5. DecAID is still an untested new tool. The agencies must conduct effectiveness monitoring to determine whether the snag and down wood retention recommendations in the DecAID advisor will meet management objectives for wildlife and other resource values.
6. DecAID must be used with extreme caution in post-fire landscapes because the data supporting DecAID does not include natural post-fire landscapes. ("The inventory data likely do not represent recent post-fire conditions very well … young stands originating after recent wildfire are not well represented because they are an extremely small proportion of the current landscape … The dead wood summaries cannot be assumed to apply to areas that are not represented in

the inventory data." "DecAID caveats" http://wwwnotes.fs.fed.us:81/pnw/DecAID/DecAID.nsf).

7. DecAID relies on a wide range of sources in the literature, some of which recommend much higher levels of snag retention than reflected in the advisor. The agency NEPA analysis should disclose the published literature with higher levels of snag and wood retention and discuss their potential relevance for the project. ("the agency must disclose responsible opposing scientific opinion and indicate its response in the text of the final statement itself. 40 C.F.R. § 1502.9(b)." Center for Biological Diversity v. United States Forest Service, No. 02-16481 (9th Cir., Nov. 18, 2003).)
8. DecAID tolerance levels need careful explanation. These tolerance levels are very difficult to put in terms that are understandable by the general public, but if the Forest Service is going to use this tool they must make it understandable. The NEPA analysis should provide cumulative species curves for each habitat type and each forest structural stage and should explain the studies and publications that support the data points on the curves. What kind of habitat were the studies located in? What was the management history of the site? Was the study investigated nesting/denning, or roosting and foraging too?
9. DecAID does not account for the unique habitat features associated with snags. DecAID primarily just counts snags and assumes that all snags of approximately the same size have equal habitat value, but this fails to account for the fact that certain types of snags and dead wood features are unique, such as: hardwood snags, hollow trees and logs, different decay classes, etc. The NEPA analysis must account for these features and the agency should disproportionately retain dead wood likely to serve these unique habitat functions.
10. DecAID authors caution that "it is imperative, however, to not average snag and down wood densities and sizes across too broad an area, such as across entire watersheds, leaving large areas within watersheds with snags or down wood elements that are too scare or too small" Kim Mellen, Bruce G. Marcot, Janet L. Ohmann, Karen L. Waddell, Elizabeth A. Willhite, Bruce B. Hostetler, Susan A. Livingston, and Cay Ogden. *DecAID: A Decaying Wood Advisory Model for Oregon and Washington* in PNW-GTR-181. http://www.fs.fed.us/psw/publications/documents/gtr-181/042_MellenDec.pdf While we agree that snags and won wood must not be averaged over wide areas, we also must emphasize that snags and down wood are far below historic levels on non-federal lands, so in order to ensure viable populations of wildlife and avoid trends toward ESA listing, federal lands must be managed to compensate for the lack of down wood on non-federal lands.
11. DecAID appears to be based on the idea that the habitat needs of certain key wildlife species represent the best determinant of how much dead wood to retain, and this may in fact be true, but DecAID should also include cumulative curves for other ecological functions provided by dead wood, including: site productivity, nutrient storage and release, erosion control, sediment storage, water storage, water infiltration and percolation, post-fire micro-site maintenance, biological substrate, thermal mass, etc. How much dead wood is needed for thee functions.

Considering Snags in the NEPA document

Snags should be carefully inventoried by species, size, decay status, quality, and location during project planning, and they should be treated as "special habitats" and given special protection during project planning and implementation (i.e. keep workers out of the vicinity of snags so that OSHA doesn't order them cut). For instance, the May 2001 Wolf Vegetation Management Project on the Wallowa-Whitman National Forest includes a mitigation measure protecting trees from being harvested if they are near hazardous snags >15 inches dbh. The NEPA document does not adequately address the need to protect and provide snag habitat.

The snag retention requirements in the applicable management plan Standards & Guidelines for this project fail to retain enough snags to provide habitat for viable populations of cavity dependent species. Since snags have a patchy spatial distribution, surveys to determine snag abundance require very large sample sizes relative to other general vegetation surveys. This was not recognized until relatively recently, so most past surveys conducted to determine natural snag abundance have therefore grossly underestimated the true abundance of snags. This has lead the Agency to underestimate the number of snags necessary to protect species. This new information must be disclosed and documented in a EIS and it requires a forest plan amendment.

Snag retention standards overestimate habitat capability

The traditional snag habitat model used by the agency based on THOMAS, J. W., TECHNICAL EDITOR. 1979. Wildlife habitats in managed forests-the Blue Mountains of Oregon and Washington. U.S. Dep. Agric. Agric. Handb. No. 553. 512pp; CLINE, S. P., A. B. BERG, AND H. M. WIGHT. 1980. Snag characteristics and dynamics in Douglas-fir forests, western Oregon. J. Wildl. Manage. 44:773786; NEITRO, W. A., V. W. BINKLEY, S. P. CLINE, R. W. MANNAN, B. G. MARCOT, D. TAYLOR, AND F. F. WAGNER. 1985. Snags. Pages 129-169 *in* E. R. Brown, tech. ed. Management of wildlife and fish habitats in forests of western Oregon and Washington. U.S. Dep. Agric. For. Serv. Publ. R6F& WL-192-1985 vastly overestimates habitat capability because it fails to consider important factors such as:

1. the model does not explicitly consider snag height so some snags may be too short for some species;
2. rates of snag fall rates over time;
3. snag recruitment rates over time;
4. use of space by each species;
5. the need for roosting structures as well as nesting structures;
6. recent data on species needs from the Cascades and Blue Mountains has not been incorporated into the model
7. Numbers and sizes (dbh) of snags used and selected by secondary cavity-nesters often exceed those of primary cavity excavators.
8. the fact that snags should be retained in clumps AND dispersed to meet various species needs and ecological functions.

Ohmann, McComb, & Zumrawi; SNAG ABUNDANCE FOR PRIMARY CAVITY-NESTING BIRDS ON NONFEDERAL FOREST LANDS IN OREGON AND WASHINGTON; *Wildl. Soc. Bull. 22:607-620,* 1994 http://www.fs.fed.us/pnw/pubs/journals/ohmann-snagabundance.pdf; Rose, C.L., Marcot, B.G., Mellen, T.K., Ohmann, J.L., Waddell, K.L., Lindely, D.L., and B. Schrieber. 2001. Decaying Wood in Pacific Northwest Forests: Concepts and Tools for Habitat Management, Chapter 24 *in* ***Wildlife-Habitat Relationships in Oregon and Washington*** (Johnson, D. H. and T. A. O'Neil. OSU Press. 2001) http://www.nwhi.org/nhi/whrow/chapter24cwb.pdf Schulz, Joyce, Terri T., Linda A. A spatial application of a marten habitat model. 1992, Wildl Soc. Bulletin 20:74-83.

The agency's analysis of snag retention and habitat for cavity dependent species is faulty at both a programmatic level and at a project level. The agency must defer any decision on this project until it reviews all the available new information and amends its management plan standards to provide adequate snags for wildlife and all other ecosystem functions.

New information on Pileated Woodpeckers indicates Standards & Guidelines are Inadequate.

Pileated woodpeckers play a unique role in the forest ecosystem

a. They excavate cavities in trees that are later used by numerous other species not just for nesting, but also for roosting and foraging.
b. Their excavations accelerate wood decomposition, nutrient cycling, and fungi dispesal. Kerry L. Farris, Martin J. Huss And Steve Zack. The Role Of Foraging Woodpeckers In The Decomposition Of Ponderosa Pine Snags. The Condor 106:50–59. The Cooper Ornithological Society 2004. http://www.sabp.net/woodpeckers&spores.pdf
c. The pileated woodpecker's ability to excavate large cavities in relatively sound trees that are in the early stages of heart wood decay, means that the resulting cavity trees may provide uniquely long-lasting habitat.
d. The combined foraging activities of pileated woodpeckers and all the species they assist tend to mediate insect outbreaks.

The NEPA analysis failed to consider significant new information on pileated woodpeckers including:

a. Pileated woodpeckers need more and larger roosting trees than nesting trees. They may use only one nesting tree in a year, they may use 7 ore more roosting trees.
b. West of the Cascades, pileated woodpeckers tend to prefer nesting in decadent trees rather than snags.
c. West of the Cascades, standing snags are important foraging sites because down wood may be too wet to harbor carpenter ants (the favored foods of the pileated woodpecker).
d. West of the Cascades, Pacific silver fir is often used for nesting (but not roosting).
e. West of the Cascades, western redcedar is often used for roosting (but not nesting).

Determining pileated woodpeckers population potential based on nesting sites alone will not provide adequate habitat for viable populations of this species. This new information is not recognized in current management requirements at the plan or project level. The EIS must address this new scientific information. See *Science Findings* Issue 57 (October 2003) Coming home to roost: the pileated woodpecker as ecosystem engineer, by Keith Aubry, and Catherine Raley http://www.fs.fed.us/pnw/sciencef/scifi57.pdf

Avoid Conflicts between Snags and Safety by Keeping Workers Out of the Hazard Zone. The agency must do away with the caveat that they will protect snags "except where they create a safety hazard." This is based on a false choice between snags and safety. The agency can just buffer snags from activities that involve workers, then all ecologically important snags can be protected. The agency must consider this as an alternative to their proposed "management by caveat." An example of this was the Umpqua National Forest, Cottage Grove Ranger District's 2001 decision to burn a picnic table near Moon Falls in order to avoid placing the public in a hazardous situation with respect to a nearby snag. Similarly, the agency here should save the snags by avoiding the activity in the hazard zone around the snags.

The NEPA analysis must at least disclose how many large snags will be protected vs. felled for safety under the preferred alternative.

Projects With Significant Effects Require An EIS.

The scale of this project is large and will cause significant effects including detrimental changes to soil and water quality, destruction of uninventoried roadless characteristics, killing of mature and old-growth forests, loss of wildlife habitat, etc.

This project also has many conflicting and competing objectives and outcomes that complicate the analysis and require an EIS. These include:

- the soil effects, water quality effects, and invasive weed effects of the combination of road decommissioning and road construction.
- The complex positive and negative effects of logging and roads and fire on wildlife habitat, fuels and fire risk/fire hazard, and forest insects/disease/pathogens.
- Related activities such as off-road vehicles, livestock grazing and firewood poaching will also conflict with the proposed action and may be exacerbated by new roads which open access to poachers (reducing snag and down wood habitat) and off-road vehicles (causes erosion and spreads weeds), canopy removal which promotes growth of forage and modifies livestock use (modify fuel and fire behavior).

This project proposes a wide variety of actions that can have both positive and negative effects over a variety of temporal and geographic scales. The NEPA document does not adequately consider these significant complexities and an EIS is needed to properly consider, analyze, and disclose these complex issues.

If this project were simplified to remove the commercial logging and road building, these conflicting and complicating factors would be greatly reduced and an EA might be more appropriate.

This project is also controversial which indicates its significance. Public Citizen v. Dept. of Transportation, 316 F.3d 1002, 1027 (9th Cir. 2003). http://www.ca9.uscourts.gov/ca9/newopinions.nsf/564D4A580B7317BE88256CB0000D6EA2/$file/0270986.pdf

This project will have significant effects because it will adversely affect listed species. The "no jeopardy" finding by FWS does not eliminate the probability that this projects will in fact be significant.

> The … "no jeopardy" opinion by FWS under the ESA is not equivalent to a finding of no potential impact under NEPA. The "no jeopardy" opinion says that routine training would not likely jeopardize the continued existence of endangered species, provided certain safeguards are implemented. A FONSI, by contrast, must be based on a review of the potential for significant impact, including impact short of extinction. Clearly, there can be a significant impact on a species even if its existence is not jeopardized. …

Malama MAKUA v. Donald H. RUMSFELD, 163 F.Supp2d 1202. (D. Hawai'i). July 16, 2001.

Don't tier to the outdated forest plan

Certain areas of the forest were allocated to commodity production in the LRMP, but since the LRMP was approved the regional forester has had to adopt several regional plan amendments in order to increase protection for species associated with old forests and aquatic environments (e.g., eastside screens, PACFISH, INFISH). Other significant policy changes have been made outside of the plan amendment process, such as the Lynx Conservation Assessment and Strategy (LCAS), the National Fire Plan, the Healthy Forest Initiative, etc.

The regional forester has also produced voluminous science reports as part of the ICBEMP process which made clear that large scale restoration is needed on eastside forests. This restoration will have some short-term negative effects on species that rely on old forests and streams. Many species of fish and wildlife have limited capacity to absorb more disturbance. The needed restoration efforts will take up all the available "disturbance space," leaving no room for commodity production such as commercial logging or grazing. Project-level NEPA analyses that combine commodity production and restoration must be deferred until the forest plans are amended to address the significant issue of cumulative effects. The Forest Service cannot rely on the outdated LRMP and especially the management allocations related to timber production.

Avoid Roadbuilding Please

> Nothing is worse for sensitive wildlife than a road. Over the last few decades, studies in a variety of terrestrial and aquatic ecosystems have demonstrated that many of the most pervasive threats to biological diversity - habitat destruction and fragmentation, edge effects, exotic species invasions, pollution, and overhunting - are aggravated by roads. Roads have been implicated as mortality sinks for animals ranging from snakes to wolves; as displacement factors affecting animal distribution and movement patterns; as population fragmenting factors; as sources of sediments that clog streams and destroy fisheries; as sources of deleterious edge effects; and as access corridors that encourage development, logging and poaching of rare plants and animals. Road-building in National Forests and other public lands threatens the existence of de facto wilderness and the species that depend on wilderness.

Noss, Reed; The Ecological Effects of Roads;
http://www.wildrockies.org/WildCPR/reports/ECO-EFFECTS-ROADS.html

See also NRDC Report: "End of the Road: The Adverse Ecological Impacts of Roads and Logging: A Compilation of Independently Reviewed Research" (1999) which discusses the fact that roads:
1. Harm Wildlife
2. Spread Tree Diseases and Bark Beetles
3. Promote Insect Infestations
4. Cause Invasion by Harmful Non-native Plant and Animal Species
5. Damage Soil Resources and Tree Growth
6. Adversely Impact Aquatic Ecosystems

The agency lacks the funds to maintain existing roads, so it is arbitrary and capricious to build more. In Oregon alone, there are over 70,000 miles of national forest roads with more than a half billion dollars of deferred maintenance needs. Over 100 million dollars of that maintenance need is considered "critical." From 1998 to 2002, the Forest Service subsidized road construction to the tune of almost $40,000,000.00 See Road Wrecked: Why the $10 Billion Forest Service Road Maintenance Backlog Is Bad for Taxpayers, Taxpayers for Common Sense. March 2004.
http://www.taxpayer.net/forest/roadwrecked/

The Forest Service has reported that forest roads have negative effects on water quality, fires, wildlife habitat, invasion by exotic species, and local economies. USDA Forest Service, "Forest Roads: A Synthesis of Scientific Information," Pacific Northwest Research Station, General Technical Report PNW-GTR-509. May, 2001. Page 4.

ROADS CAUSE MORE FIRES and BIGGER FIRES

According to the Forest Service:

- The number of large fires are dramatically higher in areas that are already roaded than in inventoried roadless areas. USDA Forest Service, Roadless Area Conservation Final Environmental Impact Statement, Volume 1. November, 2000. Page 3-115.
- Human-caused wildland fire is nearly five times more likely to occur on essentially roaded lands than on essentially unroaded lands. USDA Forest Service,

Roadless Area Conservation Final Environmental Impact Statement, Volume 1. November, 2000. Page 3-116.

- According to independent scientists: Based on an objective study over 15 years, large wildfires are more likely to occur and to burn to greater extents in areas outside of roadless areas. Eastman, Jill C., John R.G. Townshend, Christopher O. Justice, Robert Sohlberg, and Compton J. Tucker. "Roadless Areas and Forest Fires in the Western United States." May 29, 2002: American Geographical Union Spring Meeting.

ROADS POLLUTE CLEAN DRINKING WATER

According to the Forest Service:

- Road construction and timber harvest can result in measurable reductions in water quality. USDA Forest Service, Roadless Area Conservation Final Environmental Impact Statement, Volume 1. November, 2000. Page 3-49.
- More than 60 million people in 3,400 communities in 33 states rely on national forests for their drinking water.

ROADS INCREASE THE SPREAD OF NON-NATIVE ORGANISMS

According to independent scientists, the spread of both native and exotic pests and pathogens in many forest systems can be linked to the ready travel corridors provided by extensive road networks.

- Trees at forest edges created by roads had 2.4 times more gypsy moth egg masses than trees in the forest interior. Bellinger, R.G., F. W. Ravlin and M.L. McManus. "Forest Edge Effects and Their Influence on Gypsy Moth (Lepidoptera: Lymantriidae) Egg Mass Distribution." 1989. Environmental Entomology. 18: 840-843.
- Forest edges have been found to be source populations for tent caterpillars. Roland, J. "Large-Scale Forest Fragmentation Increases the Duration of Tent Caterpillar Outbreak." 1993. Oecologia 93:25-30.

Temporary Roads

For the semi-permanent roads that will be tilled, BLM's own soils scientist has little faith in the restorative value of this technique. He says: "What I have seen so far have been nothing more than modified rock rippers and little lateral fracture of the soil occurs and the extent of de-compacting is very limited." Coos Bay BLM, Big Creek Analysis file, section F, Soils Report. page 4.

The agency assumes that temporary and semi-permanent new roads will have no effect because they are temporary. The agency has shown no scientific evidence for this assumption. In fact, scientific research has shown exactly the opposite. Effectiveness of Road Ripping in Restoring Infiltration Capacity of Forest Roads. Charles H. Luce, USDA Forest Service Intermountain Research Station, 1221 S. Main, Moscow, ID 83843. September 1996. Restoration Ecology, Vol. 5, No. 3. page 268.

Research results, published in *Restoration Ecology*, shows there is nothing temporary about temporary roads, and that ripping out a road is NOT equal to never building a road to begin with. The saturated hydraulic conductivity of a ripped road following three

rainfall events was significantly greater than that of the road surface before ripping... most saturated hydraulic conductivities after the third rainfall event on a ripped road were in the range of 22 to 35 mm/hr for the belt series and 7 to 25 mm/hr for the granitics. These conductivities are modest compared to the saturated hydraulic conductivity of a lightly disturbed forest soil of 60 to 80 mm/hr." id. Even this poor showing of restoring pre-road hydrologic effects worsened with repeated rainfall. "Hydraulic conductivity values for the ripped treatment on the granitic soil decreased about 50% with added rainfall (p(K1=K2)=0.0015). This corresponded to field observations of soil settlement and large clods of soil created by the fracture of the road surface dissolving under the rainfall... The saturated hydraulic conductivity of the ripped belt series soils also dropped from its initial value. Initially, and for much of the first event, the ripped plots on the belt series soil showed no runoff. During these periods, run-off from higher areas flowed to low areas and into macropores.... Erosion of fine sediment and small gravel eventually clogged these macropores... Anecdotal observations of roads ripped in earlier years revealed that after one winter, the surfaces were nearly as solid and dense as the original road surfaces." Id. Even though ripped roads increase water infiltration over un-ripped roads, it does not restore the forest to a pre-road condition. "These increases do not represent "hydrologic recovery" for the treated areas, however, and a risk of erosion and concentration of water into unstable areas still exists." Luce, C.H., 1997. Effectiveness of Road Ripping in Restoring Infiltration Capacity of Forest Roads, Restoration Ecology; 5(3):265-270. http://www.fs.fed.us/rm/boise/teams/soils/People/luce.htm

Mature And Old Growth Forests Must Be Protected

Regionally we are outside the natural range of variability for old forests. There is a significant regional deficit of late-successional and old growth forests, and until that deficit is addressed the agency should focus on restoration instead of commodity extraction. Please see ONRC scoping comments for a detailed rationale for conserving the last remaining ancient forests of the northwest.

The legacy of past clearcutting, high grading, salvage, livestock grazing, fire suppression and road building, have pushed the eastside forest ecosystems far beyond the natural range of variability for mature and old-growth forests. The eastside forests and BLM districts lack any completed NEPA document that fully accounts for this fact. Until the forest plan and RMPs are properly amended to account for all the new information and cumulative effects, all the remaining medium and large trees should be retained.

We object to the removal of trees up to 21 inches in diameter, especially here where past logging has severely reduced the large tree component. Trees up to 21 inches dbh can be old and quite valuable for the forest ecosystem. In order to conserve forest values that have been severely degraded over many decades of forest mismanagement on the eastside, the Forest Service must protect all available large trees, especially those that are naturally fire tolerant such as Ponderosa pine, larch, sugar pine, white pine, lodgepole pine, and Douglas fir. Large trees also contribute to the canopy that helps retain moisture and shade and thereby reduces fuel desiccation and fire danger. Large trees also perform

hydraulic lift whereby deep roots of large trees bring water up from deep soil horizons and during the night and make it available to plant communities with shallower root systems.

Old growth is defined by ICBEMP as:

1. Large trees for species and site.
2. Wide variation in tree sizes and spacing.
3. Accumulations of large-size dead standing and fallen trees that are high relative to earlier stages.
4. Decadence in the form of broken or deformed tops or bole and root decay.
5. Multiple canopy layers.
6. Canopy gaps and understory patchiness.

http://www.icbemp.gov/pdfs/sdeis/Volume2/Appendix17a.pdf

Wildlife Concerns

Species Viability Concerns

The Ninemile EA fails to explain how the project will affect American marten, a Management Indicator Species for the Winema National Forest. Marten prefer high levels of cover and large amounts of large woody debris. Both of these forest features will be adversely affected by the proposed action yet, the Forest Service has not conducted monitoring studies necessary to allow the Forest Service to understand whether the current population of marten is viable and whether the proposed action will significantly affect the population.

USDA policy does not allow the Forest Service to take actions that would cause trends toward listing species under the Endangered Species Act. Relevant policy directs the Forest Service to: “1. Manage ‘habitats for all existing native and desired non-native plants, fish, and wildlife species in order to maintain at least viable populations of such species.’ 2. Habitat must be provided for the number and distribution reproductive individuals to ensure the continued existence of a species generally throughout its current geographic range." FSM 2620.1 and USDA Department Regulation 9500-4 (August 22, 1983. Forest Service objectives are to “provide a sound base of information to support management decision-making affecting wildlife and fish, including endangered, threatened, and sensitive animal and plant species, and their habitats.” FSM 2620.2. Forest Service policy is to “use management indicators to address . . . species habitat through all planning levels.” FSM 2620.3. The USDA also requires that the Forest Service “avoid actions which may cause a species to become threatened or endangered.” DR 9500-4(3)(d).

The Forest Service has a choice to either monitor actual populations of Management Indicator Species, OR thy must develop and rigorously validate habitat models that allow the Forest Service to use habitat as a proxy for populations of these species. We object to the use of proxy-on-proxy approach to wildlife management where the agency uses crude

and unverified habitat modeling rather than actual population surveys as a means to ensure the viability of Management Indicator Species ("MIS"). We are not aware of any forest in the Pacific northwest that is using a credible and validated habitat model for MIS. If the Forest Service is not monitoring MIS populations directly, please explain in detail the model the Forest Service is using to correlate populations and habitat.

MIS are chosen to represent a suite of other species, but then MIS populations are not even monitored as required by NFMA and the LRMP. NFMA and its implementing regulations require the forest service to manage forests for viable populations of native vertebrate and desired non-native species. Diversity is assessed by identifying MIS, monitoring MIS, gathering inventory data on MIS, and analyzing the impacts of logging (and other management activities) on MIS, because MIS are an indicator of the overall diversity of the forest. *36 CFR § 219.19 et seq.* NFMA regulation 219.19 requires that, "fish and wildlife habitat shall be managed to maintain viable population of existing native and desired non-native vertebrate species in the planning area." Further, the Forest Service Manual states the agency must manage "habitats for all existing native and desired nonnative plants, fish, and wildlife species in order to maintain at least viable populations of such species." *FSM at 2670.12.* In order to maintain viable populations of wildlife, "habitat must be provided to support, at least, a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area." *36 CFR § 219.19.*

NFMA, its implementing regulations, and subsequent case law require the Forest Service to know what the viable populations of MIS located in the project area are before management prescriptions are applied. However, the NEPA document and the underlying specialist reports never explain what the population levels are for the MIS. This is despite the fact MIS habitat will be negatively affected by this project.

The 9th Circuit also does not approve of the "proxy on proxy" approach favored by the Forest Service where indicator species are chosen to represent a suite of other species but then the indicator species populations are not even monitored— instead the agency monitors habitat levels that may or may not reflect populations levels. The Forest Service must refrain from destroying habitat until they have completed population monitoring and documented viable populations of native species. See
Idaho Sporting Congress and Alliance for the Wild Rockies v. Rittenhouse
http://www.ca9.uscourts.gov/ca9/newopinions.nsf/D6B0EF3C12752B5588256C360081AA9E/$file/0135403.pdf?openelement

The 10th Circuit just recently affirmed the Forest Service's duty to quantitatively measure changes in MIS populations and not just habitat trends. UEC v. Bosworth, 10th Circ. June 23, 2004 (http://www.kscourts.org/ca10/cases/2004/06/03-4080.htm):

> In keeping with the reasoning of the Eleventh Circuit and the district courts of this circuit, we conclude that § 219.19 requires the Forest Service to use actual, quantitative population data to effectuate its MIS monitoring obligations. Section 219.19 mandates that as part of forest planning, "[f]ish and wildlife habitat shall

> be managed to maintain viable populations of existing native and desired nonnative vertebrate species." Further, forest management "[p]lanning alternatives shall be stated and evaluated in terms of both amount and quality of habitat and of animal population trends of the management indicator species," § 219.19(a)(2); similarly, "[p]opulation trends of the management indicator species will be monitored and relationships to habitat changes determined," § 219.19(a)(6). Plainly the regulations require that the Forest Service monitor population trends of the MIS in order to evaluate the effects of forest management activities on the MIS and the viability of desired fish and wildlife populations in the forest more generally.

Determining effects on species viability requires consideration of cumulative effects on species populations, including identification of risk factors, species limiting factors, current threats, the relative contribution of private lands and federal lands to species conservation, monitoring results that elucidate the effectiveness of proposed management actions, and disclosure and response to diverse views, adverse opinions, and inconsistent data.

Sincerely,

/s/

Doug Heiken