OREGON WILD
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8 Nov 2010

TO: appeals-pacificnorthwest-regional-office@fs.fed.us

Subject: Oregon Wild objection to the Umpqua NF's FEIS for the D-Bug Hazard Reduction Timber Sale Project

Dear FS:

In accordance with 36 CFR §218 please accept the following objection from Oregon Wild concerning the D-Bug Hazard Reduction Timber Sale Project FEIS dated August 2010.

Oregon Wild will support a reasonable effort to reduce fuels around buildings and evacuation routes, however this project goes too far and does not properly harmonize the need for fuel reduction with the need to restore wildlife habitat, protect riparian areas, work with (instead of against) natural processes, and follow the forest plan. We would like to see this project modified to focus on the highest priority fuel treatments and to avoid or minimize adverse impacts from commercial logging in inventoried roadless areas, hundreds of meters distant from roads, native forests outside the WUI, and in riparian reserves and spotted owl habitat.

DOCUMENT TITLE: D-Bug Hazard Reduction Timber Sale Project Final Environmental Impact Statement.

PROJECT DESCRIPTION: Preferred Alternative 5 involves:

- 30-32.5 mmbf
- Variable density thinning on 3634 acres of lodgepole pine leaving 30-70 tpa (10% skips, and openings up to 40 acres)
- Commercial thinning on 1332 acres of lodgepole-mixed conifer leaving 50-200 tpa;
- Commercial thinning on 1500 acres of mixed conifer leaving 50-200 tpa;
- 42 acres of commercial treatment in the Mt Bailey IRA;
- 285 acres of lodgepole salvage logging
- 2096 acres of non-commercial fuel removal (329 acres in IRA);
- 2022 acres of potential biomass removal;

- 16 miles of old roads re-used (less than half obliterated afterwards);
- 8.1 miles of new temporary roads;
- 4.7 miles road renovation;
- 62 miles of road maintenance;
- 1,472 total acres of mixed conifer forest that provides spotted owl nesting, roosting, foraging habitat will be degraded to dispersal habitat , retaining 41% canopy cover (i.e., 1,140 acres of commercial logging and 332 acres of non-commercial logging); Logging will "take" 21 spotted owls
- 68 acres of commercial logging and 306 acres of non-commercial treatments extending up to 1,000 feet into the Mt Bailey IRA. Also, danger trees along approximately 2.4 miles of Road 4795 would be cut, sold and removed from the IRA.
- 1,061 acres of commercial logging and 5.6 miles of temp road in mixed conifer, suitable habitat for the Pacific fisher;
- 217 acres commercial logging more than 1,000 feet into "the triangle" — a potential wilderness area adjacent to Crater Lake NP; plus 16 acres of commercial logging in potential wilderness connected to Mt. Bailey; and 51 acres of commercial logging and 1.67 miles of new temp road in potential wilderness connected to the OCRA.
- 400 acres of commercial logging and 2.81 miles of new temporary roads in other proposed wilderness (not recognized by the FS) mostly SW and NE of Lemolo Junction;
- 283 acres of commercial logging in riparian reserves, including 112 acres in lodgepole and 170 acres in mixed conifer with 50-60 foot no-cut buffers on perennial streams. No buffers required on intermittent streams. The riparian reserve thinning prescriptions would be the same as in the adjacent uplands, including heavy thinning of the overstory in lodgepole. Canopy cover in the mixed conifer stands would be reduced from the 50-60 percent today, down to between 25 and 45 percent. 1092 feet of new temporary road construction (affecting 0.5 acres) in the riparian reserve would be necessary in order to access the treatments. Plus 81 acres of grapple piling and burning in riparian reserves.
- 500 acres of big game winter range would have cover reduced to 41%;
- 546 acres of optimal marten habitat downgraded (12% of the forestwide total);
- 564 acres of visual corridors along hwy138, and 114 acres along hwy 230, would be degraded by logging;
- LRMP amendments:
    - Weaken visual objectives and allow more logging along hwy 230 and hwy 138;
    - Weaken protection and allow more logging in MA-1 (e.g., lodgepole in the triangle);
    - Weaken protection and allow more logging in MA-2 around Diamond Lake and Lemolo Lake

PROJECT LOCATION: Diamond Lake Ranger District, Umpqua NF, Douglas County, Oregon. (stretching from the northern border of Crater Lake National Park to the

forests around Lemolo Reservoir, and from Mt Bailey east to the Oregon Cascades Recreation Area.

DATE OF DOCUMENT: August 2010.

RESPONSIBLE OFFICIAL: Clifford J. Dils, Forest Supervisor, Umpqua National Forest

SUGGESTED REMEDIES: Oregon Wild respectfully requests that the Forest Service issue a final decision which modifies the preferred alternative as follows —

1. Protect the character of the Mt Bailey inventoried roadless area by converting the commercial treatments in the IRA (e.g. unit 8) to non-commercial treatments that reduce surface and ladder fuels while retaining the habitat structure provided by large wood; and
2. Protect the uninventoried roadless area and proposed Wilderness known as "the triangle" adjacent to Crater Lake National Park (which is also outside of the designated WUI) by eliminating treatments beyond hwy 230 and forest road 760 (e.g. units 65 and 68 must be eliminated or modified to remove only real hazard trees that threaten well-travelled roads); and
3. Protect uninventoried roadless areas and proposed Wilderness by dropping (or converting to non-commercial treatment) units 42, 65, 67, 68, 69, 71, 72, 73, 89, 101, 102, 103, 104, 107, 112, 113, 115, 117, 118, 120, 156, 162, 198, 213, 214, 244; and
4. Protect scenic quality and recreational values around Lemolo Lake by dropping (or converting to non-commercial treatment) units 160, 161, 162 ,164 & 197.
5. Better protect spotted owl habitat and riparian reserves (and visual quality objectives along Hwy 138) by modifying treatments in mixed conifer stands to retain ≥60% canopy closure and all fire-tolerant trees ≥20" dbh; and
6. Adjust treatments along Hwy 138 west of Lemolo Junction (outside the designated WUI boundary) by focusing the treatments to the area closest to roads (e.g. units 115, 118) which will better protect habitat and hopefully avoid the need for road construction; and
7. Modify the variable density thinning in lodgepole to leave openings no larger than 3 acres with 10-15 legacy trees/ acre (rather than the 40 acre openings contemplated in the FEIS); and
8. Better protect soils and hydrologic function by focusing on areas that can be treated from existing road and avoiding new road construction; or
9. Prepare a new EIS that fully complies with the requirements of NEPA and the CEQ regulations and addresses the specific concerns expressed in our statement of reasons below.

Sufficient narrative description of those aspects of the proposed authorized hazardous fuel reduction project addressed by the objection, specific issues related to the proposed authorized hazardous fuel reduction project, and suggested remedies that would resolve the objection:

Table of contents

The D-Bug Project does not meet the requirements of the Healthy Forest Restoration Act.

HFRA allows the FS to take certain shortcuts with public process but only if the project meets certain criteria such as: treating *hazardous* fuels, areas affected by insect *epidemics*, following the forest plan, and restoring old growth structure and composition. The FS failed to follow these requirements in this project. The D-Bug Project will remove large trees that are not hazardous fuels; this project will treat an insect outbreak (not an epidemic) that does not significantly threaten this ecosystem which evolved with insect outbreaks; the project will violate the forest plan in numerous ways; and this project will degrade rather than enhance old-growth structure and composition.

The D-Bug Project logs outside the WUI in areas that do not qualify for treatment under the HFRA. These areas include the triangle south of hwy 230, and the forests along hwy 138 west of Lemolo Junction. "Adjacent to the evacuation route" means treatments in close proximity to the roads, not the proposed 400 meter wide treatment zones along these highways.

HFRA authorized removal of hazardous fuels. It does not authorize removal of non-hazardous fuels. The D-Bug Project logs non-hazardous fuels, including large trees that do not pose a meaningful fire hazard. Retaining the large trees in fact may help reduce fire hazard by maintaining a cool, moist, less windy microclimate, and suppressing the growth of future surface and ladder fuels.

The D-Bug Project logs areas that are experiencing an insect *outbreak* which does not qualify as an insect *epidemic* under HFRA. The FS has arbitrarily and capriciously conflated the terms outbreak and epidemic in violation of Congressional intent. The HFRA Interim Field Guide says "Epidemic is synonymous with outbreak." http://www.fs.fed.us/projects/hfi/field-guide/web/page09.php but this is contrary to the scientific literature which makes a distinction between outbreaks and epidemics. An "epidemic" occurs when bark beetles kill more than 50% of maximum supportable basal area and leaf area in a few years. By merging these two terms, the FS has unlawfully expanded its authority to conduct harmful logging in violation of Congressional language and intent.

In response to public concerns that beetles and fire are natural processes that serve important goals in these forest types, the FEIS page A-78 says "The DEIS recognizes the important natural role of bark beetle in lodgepole and does not suggest that proposed treatments will impact bark beetle spread at large scales or otherwise interrupt this process." The FEIS also claims throughout the NEPA analysis that the proposed logging will control beetles, reduce fire effects, and therefore mitigate for loss of habitat caused by logging. (See e.g. the FEIS analysis concerning spotted owls, management indicator species, riparian reserves, etc.) The FS seems to want to have it both ways. The logging won't stop natural disturbance processes across the landscape, but logging impacts will be mitigated via modification of disturbance processes across the landscape.

The FEIS p 9 says "Activities proposed to reduce insect and disease outbreaks outside of WUIs do not need to comply with the large-tree component of HFRA." However, this exemption only applies where there is an insect epidemic, but this is not an epidemic. It is an insect outbreak, so the old growth and large tree language must be followed. The FEIS p 9 says "the Forest Supervisor of the Umpqua National Forest determined that the mountain pine beetle epidemic in the planning area and surrounding areas poses a significant threat to recreation resources and wildland-urban interface values." The Forest Supervisors finding is not found in the record, but there is a memo from Don Goheen (http://www.fs.fed.us/r6/umpqua/projects/projectdocs/d-bug-ts/det-mt-pine-beetle-epidemic-diamond-lake-rd.pdf) which says there is an epidemic but this two page document provides no data or analysis to support the assertion. In particular, HFRA

requires a finding that an epidemic exists in each stand to be treated but the FEIS does not show that the current level of mortality in each stand proposed for treatment represents a epidemic level of mortality.

The FEIS tries to make a case that the stands in the project area are *susceptible* to an insect epidemic (e.g. FEIS p A-106 "heavy thinning in stands with lodgepole overstores [sic] that are susceptible to mountain pine beetle mortality"), but the FEIS never makes the showing required by HFRA §102(a)(4) that an insect epidemic "exists" in the stands to be treated or in "immediately adjacent" stands. In fact, the D-Bug project involves 3,633 acres of logging in currently "uninfested" lodgepole pine (FEIS p 351) and many of those acres are likely outside of the WUI. This means that (1) the FS cannot use the HFRA beetle authority outside the WUI, and (2) any effort to address beetles in the WUI must meet the large tree and old growth restoration requirements in HFRA §§102(e) and (f). To justify using the insect epidemic loophole in HFRA, which allows removal of large trees and old growth structure and an exemption from section 102(e) and (f) the FS needs to conduct stand-by-stand determination that there is in fact an currently existing epidemic in each stand to be treated. The FS cannot claim that there is an epidemic somewhere in the project area and exempt every activity in the project area from the large tree retention requirement, when the stands to be treated are not part of the epidemic. The FEIS lacks an analysis of the "existence of an epidemic" in each stand to be treated or on "immediately adjacent land." HFRA §102(a)(4). This requires stand-by-stand analysis that is lacking. Don Goheen's determination of epidemic is really an analysis of the *susceptibility* of stands to insect attack. It does not show that the stands to be treated are in fact experiencing an epidemic or immediately adjacent to such stands as required by HFRA §102(a)(4).

Important considerations in making an epidemic finding include quantification of the propagation of the outbreak over space and time, percent mortality in each stand, and consequences. A few of these are given only the most cursory discussion and does not meet NEPA's mandate for accurate scientific information and analysis. The HFRA Interim Field Guide calls for more complete documentation in the NEPA process.

> "The analysis and documentation for threats from insects and disease under Section 102(a)(4) of the HFRA are intended to be integrated with the analysis and documentation done under current NEPA guidance and other relevant guidance. This documentation should be included in the NEPA documents normally prepared during project planning, the Decision Records or Records of Decision prepared before project implementation, or in the project file itself. Insect or disease risk-reduction projects carried out under the HFRA should document the factors considered and the methods used in making determinations. Where possible, the hazards and risks supporting any determination that a "significant threat" exists should be quantified. The short- and long-term effects of proposed treatments and the effects of taking no action should be described as provided for in the Judicial Review section."

http://www.fs.fed.us/projects/hfi/field-guide/web/page09.php The FEIS did not follow this guidance.

The finding of epidemic (and the entire NEPA process) assumes that beetles killed trees increase fuel hazard and fire hazard, but there is significant evidence to the contrary. Beetles are in fact thinning the forest, reducing canopy fuels, increasing the vigor of surviving trees, and reducing the threat of fire. We incorporate by reference all the comments and other materials that we have sent to the FS making this very point. Beetles are not a threat to National Forest resources, but rather a benefit, especially at the outbreak levels seen in recent years. The FS has been actively cleaning up beetles-killed trees in campgrounds and long paved roads for several years. This is really all that is needed.

The FEIS admits that beetles are in fact providing valuable ecological services, for example:

- FEIS p 278 ("thinning of the lodgepole pine overstory would approximate the loss of overstory trees from the mountain pine beetle infestation…").
- FEIS p 173 (".. very few stand proposed for treatment … have … high amounts of decadence components.").
- FEIS p 221 ("Surveys conducted in the D-Bug planning area indicate that there is currently about two percent log cover in both lodgepole and mixed conifer stands.").

So some beetle mortality would actually aid in the development of more complex late successional habitat that has all the characteristics of high quality owl habitat. Unfortunately, most of the FEIS effects analysis is based on an incorrect assumption that beetles are causing ecological harm.

The D-Bug Project logs habitat in such as way as to degrade rather than restore old growth structure and composition. HFRA requires that fuel reduction projects "fully maintain or contribute to restoration of the structure and composition of old growth stands …and retaining large trees that contribute to old growth structure." HFRA § 102(e)(2) and "focus[] largely on small diameter trees … and maximize[] the retention of large trees." HFRA §102(f). The Project is logging in many stands with large trees. The FEIS does not clearly protect the large trees with a diameter limit, nor does the FEIS explain how many large trees will be removed, to what extent old growth structure is being removed, and how the HFRA requirements are being met. Logging medium sized trees will reduce future recruitment of dead wood which will degrade the quality of current and future late successional habitat in violation of HFRA requirements.

The D-Bug Project will implement plan amendments which are not allowed under HFRA. The Act explicitly requires that HFRA project "shall be conducted consistent with the resource management plan…" HFRA §102(b). This language must mean that HFRA projects cannot include project-specific plan amendments, because NFMA (16 USC 1604(i)) already says that projects "shall be consistent with the land management plans." The canons of legislative interpretation disfavor the notion that Congress was being merely redundant. The new language must mean something new and additional to the existing language. They new language in HFRA was intended to ensure that HFRA projects were kept within known limits of existing plans. If the FS can amend the forest plan as part of an HFRA project, it would render section 102(b) meaningless, because any

conceivable plan inconsistency could be erased with a site specific plan amendment, which is just what is happening with this project.

The FEIS fails to accurately disclose and assess the effects of logging on roadless areas (both inventoried and uninventoried) and fails to show how the proposed logging will comply with the roadless rule, 36 CFR §294.

The D-Bug Project involves 68 acres of commercial logging and 306 acres of non-commercial treatments extending up to 1,000 feet into the Mt Bailey IRA which is protected by the roadless area conservation rule.

Under the roadless area conservation rule (RACR) logging is prohibited in inventoried roadless areas (IRAs) unless such logging "will maintain or improve one or more of the roadless area characteristics as defined in Sec. 294.11." Public comments asked for an analysis of the beneficial and adverse effects on each of the roadless characteristics (FEIS p A-111) but the FEIS failed to provide it. The FEIS does not specifically identify any roadless characteristics and disclose how they will be improved by logging. FEIS p 324 lists all of the roadless characteristics set forth in the roadless rule, but fails to specify any that would be improved by logging. FEIS p 329 gives a vague narrative about how fire would impair roadless values and the value of logging to limit the adverse effects of severe fire, but the analysis erroneously assumes that fires is controlled by fuels when in fact fires are controlled more by weather in this forest type. And it fails to recognize fire as a natural process beneficial to most roadless characteristics.

Under a separate requirement of the RACR the FS must show that logging will "maintain or restore the characteristics of ecosystem composition and structure, such as to reduce the risk of uncharacteristic wildfire effects, within the range of variability that would be expected to occur under natural disturbance regimes of the current climatic period;" and the FS makes this verbatim assertion, but the FEIS does provide supporting evidence to support this assertion. In fact, the cool east-facing flanks of Mt Bailey IRA where logging will occur, has a relatively short fire season, and a relatively long fire-return interval and would be expected to have patches of dense forest and a mixed severity fire regime. Current fuel and climate conditions do not substantially diverge from that condition. Somewhat dense forests and mixed-severity fire would not be uncharacteristic, so logging is not necessary to "maintain or restore the characteristics of ecosystem composition and structure." The FEIS lacks a site-specific analysis of the IRA logging units describing the characteristic fire regime and whether current fuel and climate conditions are clearly outside the range of expected fire severity for high Cascades mixed-conifer systems.

The FEIS says that "Appendix C of the LRMP also recognizes the increased fire hazard in this IRA due to the mountain pine beetle infestation (USDA, Forest Service, 1990) and decades of fire exclusion has exacerbated this hazard." This indicates that (1) beetles have been thinning this forest for decades and increasing the vigor of the remaining trees; (2) there has been time for small fuels to decay and decompose before being consumed by fire; (3) beetle outbreaks do not pose an imminent risk of run-away beetle mortality or

wildfire. The existence of a beetle outbreak on Mt Bailey since at least 1990 undermines the anti-beetle purpose and need for this project.

The Final RACR published in the Federal Register says project planning: "[W]ill consider how the cutting or removal of various size classes of trees would affect the potential for future development of the stand, and the characteristics and interrelationships of plant and animal communities associated with the site and the overall landscape." The FEIS fails to do this analysis. The FEIS needs to show that more habitat for species associated with canopy cover, large trees, and dead wood will be maintained if more medium and all large trees are retained for long-term recruitment. This analysis would show that it is preferable to use non-commercial logging methods to achieve objectives in the IRA.

The FEIS fails to accurately disclose and assess the ecological effects of logging on unique features of unroaded and roadless areas.

One of the most important values of unmanaged, unroaded areas is that they maintain natural processes of forest growth and mortality which means that unroaded areas exhibit more natural levels of snags and dead wood, whereas managed areas, where large number of tree are removed by commercial logging and where hazard tree are removed along roads, tend to have greatly diminished levels of snags and dead wood. For instance, Korol et al (2002) estimated that even if we apply enlightened forest management on federal lands in the Interior Columbia Basin for the next 100 years, we will still reach only 75% of the historic large snag abundance, and most of the increase in large snags will occur in roadless and wilderness areas. Jerome J. Korol, Miles A. Hemstrom, Wendel J. Hann, and Rebecca A. Gravenmier. 2002. Snags and Down Wood in the Interior Columbia Basin Ecosystem Management Project. Pacific NorthwestGTR-181. http://www.fs.fed.us/psw/publications/documents/gtr-181/049_Korol.pdf (*accessed* 11-8-2010). The FEIS failed to disclose the adverse effect on natural forest growth and mortality processes from this proposal to expand logging into unmanaged and unroaded areas 1,000 acres and greater, including those that are not inventoried.

The FEIS violates the LRMP with respect to commercial logging in lodgepole that is unsuitable for timber production. The FEIS tries to justify logging in unsuitable lodgepole by citing 16 USC 1604(g)(3)(B), however, this law is a directive to the Secretary of Agriculture about how to write rules for the development of forest plans. This section of law is not addressed to project level planning or decision-making so it does not provide any valid justification for the FS to commercially log lodgepole that was designated unsuitable in the forest plan. Section 1604 was presumably complied with when the forest plan was developed and the lodgepole was declared unsuitable. Now is not the appropriate time to reconsider.

The FEIS then cites 36 CFR 219.27(c), which purports to allow logging on unsuitable lands under some circumstances. However, this language has been superseded and no longer found in the Code of Federal Regulations. The FS cannot use outdated laws to justify logging the unsuitable lodgepole.

The FEIS fails to accurately disclose and assess the effects of logging on spotted owls (and fishers which use similar habitat).

1,472 total acres of mixed conifer forest that provides spotted owl nesting, roosting, foraging habitat (and suitable fisher habitat) will be degraded to dispersal habitat (i.e., 1,140 acres of commercial logging and 332 acres of non-commercial logging). Logging will "take" 21 spotted owls.

The FEIS (p 97) says that logging in mixed conifer that retains 60% canopy cover will retain spotted owl nesting, roosting, foraging functions, but this is not likely because nesting, roosting, foraging requires a multi-layered canopy, a complex understory, and lots of snags and dead wood. Compliance with FWS "treat and maintain" criteria requires retention of both canopy cover as well as the structures needed to support the biological functions of owls and their prey. Fuel reduction logging will not do that, so the FEIS vastly understates the true adverse impacts of logging on spotted owls.

The FEIS p 172 discusses risk reduction strategies for the East Cascades Province, but this project is located in the West Cascades Province which tend to be more moist and have a less frequent fire regime that are less likely to benefit from fuel treatments because the treated stands are unlikely to experience fire (and provide fire control benefits) during the relatively brief period that fuel treatments are effective.

FEIS p 174 concludes that heavy thinning to 40% canopy cover in nesting, roosting, foraging habitat would increase stand resilience in the event of a wildfire and would therefore provide long-term benefits to spotted owls. This conclusion is based on an unquestioned (and invalid) assumption that wildfire is highly likely to affect these stands in the time that the fuel treatments are effective. Since the FS cannot know when or where wildfire will occur, projects like this will degrade habitat in some places that will not burn during the ~20 year period that treatments are effective. The FEIS fails to account for the fact that no once can predict fire, so many acres will be treated and not burn (and therefore be treated unnecessarily). This means that hundreds of acres of habitat will suffer the harms from logging without reaping the benefits of reduced fire behavior. From the perspective of the spotted owl, one might ask: "will it be better to have some high quality habitat in the near term (which might last 10-100 years) while we wait for the next stand replacing fire, or should I settle for immediate and long-lasting degradation of habitat that may persist as long as the agency continues to maintain artificially low-risk fuel profiles, and may in the end fail to control the high severity fire. In order to answer the fundamental question about the real risk to habitat the FS must show how likely it is that fire will occur in each stand to be treated. The FS has assumed incorrectly that fire is highly likely to occur in the first 20 years after treatment, then will under-value the high quality habitat that we have now, and over-valued the need for fuel reduction. The FEIS fails to address any of these critical issues related to quantitative comparative risk assessment. For a more careful framing of the issue, the FS needs to review Heiken, D. 2010. Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat. Oregon Wild. V 1.0. May 2010.

http://dl.dropbox.com/u/47741/Heiken%2C%20Log%20it%20to%20save%20it%20v.1.0.doc

FEIS p 174 says that logging will benefit spotted owls because logged stand will develop down wood levels more typical of a natural disturbance regime. This is incorrect. Owl prey prefer lots of snags and down wood. Logging will capture mortality and reduce the absolute amount of mortality recruited as well as delay recruitment of mortality. Spotted owls tend to use stands with high levels of snags and dead wood, but logged sites tend to have very low levels of snags and dead wood. See Table 25 below from the Cottage Grove District's Holland Moonsalt EA.

Table 25. Snags at 80% tolerance levels for NSO prey species

Species	80% Tolerance Level Number of 10 inch DBH snags per acre
Bushy-tailed wood rat	24
Douglas squirrel	19
Northern flying squirrel	19
	80% Tolerance Level Number of 20 inch DBH snags per acre
Northern flying squirrel	No Data
All Species	14

North et al (1999) concluded that "stands with 142 m^3/ha of intact snags and a high diversity of tree heights had medium or high foraging use by spotted owls. In these old-growth stands, biological legacies (e.g., large trees and snags) produced by past disturbance provide important forest structures associated with spotted owl foraging." North, Franklin, Carey, Forsman, Hamer. 1999. Forest Stand Structure of the Northern Spotted Owl's Foraging Habitat. For. Sci. 45(4):520-527. See also this online slideshow which shows the modeled effects of thinning on dead wood habitat. http://www.slideshare.net/dougoh/effects-of-logging-on-dead-wood-habitat "[H]abitat elements that support prey [include] (mistletoe, snags, down wood, forage lichens, truffles abundance)" NSO FRP p 114. Where owl prey base is diverse and abundant spotted owl home ranges tend to be smaller which is energetically advantageous and

enhances owl survival rates. Carey, A. 2004 Relationship of Prey and Forest Management. Appendix 5 pp 3-24, 3-25 *in* Courtney, SP; J A Blakesley. 2004. Scientific evaluation of the status of the Northern Spotted Owl. http://www.sei.org/owl/finalreport/finalreport.htm "Numerous patches of low foraging quality can have negative impacts on owl demography and behavior (Carey et al 1992)."

We raised concerns about significant new information about the spotted owl that were not considered in the 1994 FSEIS and have not been incorporated into programmatic NEPA analyses since then, but the FEIS p A-184 failed to respond.

> [comment] New and increasing threats to spotted owls (Barred owl competition, West Nile Virus, Sudden Oak Death, and increasing habitat loss from wildfires) were not fully considered in the 1994 SEIS for the NW Forest Plan, so the agencies cannot tier to that EIS.
>
> [response] Thank you for your comment. The threats listed with the exception for wildfire are beyond the scope of this analysis.

The FS has a duty to consider new information (regardless of the scale) when it has bearing on the decision. The FS cannot tier to 15 year old outdated NEPA analyses.

The FEIS fails to accurately disclose and assess the cumulative impacts of habitat loss due to logging, plus habitat that is rendered unavailable due to the invasion and occupancy of barred owls.

Our comments on the DEIS said "The invasion of the barred owl undermines a critical assumption underlying the Northwest Forest Plan - that spotted owl populations are closely related to the amount of available suitable habitat. Since significant areas of suitable habitat are occupied by barred owls, it now requires more habitat to reach spotted owl population goals." FEIS p A-179. The FEIS failed to respond to this concern.

The FEIS p 175-76 fails to adequately address the cumulative impacts of habitat rendered unavailable as a result of barred owls which occupy and defend suitable owl habitat, plus habitat degradation and loss caused by logging. Since both barred owls and logging have a similar effect in reducing the availability to suitable habitat for the spotted owl, there must be a careful analysis of cumulative impacts, as well as consideration of new mitigation measures, such as protecting additional owl habitat which will have the effect of increasing the chances that barred owls and spotted owls can co-exist, while decreasing the chances of competitive exclusion.

The FEIS fails to consider significant new information since 1994 including the invasion of barred owls which have established a foothold in virtually the entire range of the spotted owl. The barred owl has overlapping habitat preferences and dietary preferences, and now occupies and defends hundreds of thousands of acres of suitable owl habitat rendering it unavailable for spotted owls. This means that existing suitable owl habitat is even more important than contemplated in 1994, and the need for conservation of that suitable owl habitat is more important than realized in 1994. The FEIS failed to consider the critical need to protect additional owl habitat in order to increase the chances that spotted owls and barred owls can co-exist instead of competitively exclude each other.

The NWFP does not account for the effects of barred owls which compete with spotted owls and exclude spotted owls from otherwise suitable habitat. The barred owl is barely mentioned in the 1994 SEIS. The invasion of the barred owl undermines a critical assumption underlying the Northwest Forest Plan - that spotted owl populations are closely related to the amount of available suitable habitat. Since significant areas of suitable habitat are occupied by barred owls, our plans to conserve the spotted owl now require more habitat to reach spotted owl population goals. Based on well-established ecological principles (e.g., species-areas relationships) the agencies need to protect more suitable habitat to increase the likelihood that these two owl species can co-exist and decrease the likelihood of competitive exclusion. This is corroborated by FWS' Final Recovery Plan for the Northern Spotted Owl, May 2008, which recommends protection of "substantially all of the older and more structurally complex multi-layered conifer forest outside of MOCAs" in westside provinces (as well as on non-federal lands). See Recovery Action 32 (2008 FRP p 34). This recovery action is intended to reduce competitive pressures between spotted and barred owls, so FWS has finally admitted that habitat can help assure co-existence of the competing owls and the FS and BLM need to follow suit with NEPA analysis to determine how much extra habitat is enough.

A well-known axiom of the species-area relationship from island biogeography holds that as habitat area increases, the number of cohabiting species also increases. See especially, Part III - Competition in a Spatial World *in* Tilman, D. and P. Karieva, Eds. 1997. Spatial Ecology: The Role of Space in Population Dynamics and Interspecific Interactions. Monographs in Population Biology, Princeton University Press. 368 pp.

> "The major causes of population and species extinction worldwide are habitat loss and interactions among species. … [O]ther things being equal, we could expect large habitat patches to have populations with a lower risk of extinction than populations in small patches. … More generally, the relationship between patch size and extinction risk provides a key rule of thumb for conservation: other things being equal it is better to conserve a large than a small patch of habitat or to preserve as much of a particular patch as possible. … [T]here are likely to be many complementary reasons why large patches have populations with low risk of extinction. "

Oscar E. Gaggiotti and Ilkka Hanski. 2004. Chapter 14 - Mechanisms of Population Extinction. *In* Ecology, Genetics, and Evolution of Metapopulations. Elsevier. 2004. http://www.eeb.cornell.edu/sdv2/Readings/Gaggiotti&Hanski.pdf From these ecological foundations, one can see that the barred owl, by invading, occupying suitable habitat and excluding spotted owls, has reduced the effective size of the reserves that were established in 1994, and thereby reduces the potential population of spotted owls. Extinction risk is increased by this loss of habitat and smaller population. If we provide more suitable habitat, the population potential increases, and the risk of extinction decreases. The most rational way to respond is to protect remaining suitable habitat, expand and restore the reserve system to provide more suitable habitat to increase the likelihood that the two owl species can co-exist.[1] This project violates those principles by

[1] Put another way, when threatened with extinction, "the best defense is a strong offense" that is, species are more likely to persist if they have a large, well-distributed population size and if we minimize all

removing and reducing habitat, thus aggravating the conflicts between spotted owls and barred owls.

This view is corroborated by owl biologist David Wiens who was interviewed on the Lehrer NewsHour. He said: "The more habitat you protect, the more you're going to alleviate the competitive pressure between the species. Rather than reducing it and increasing the competitive pressure between these two species, we need to provide as much habitat as possible for them." DAVID WIENS. NewsHour interview. "Biologists Struggle to Save the Spotted Owl." December 18, 2007. http://www.pbs.org/newshour/bb/science/july-dec07/owl_12-18.html Robert Anthony agrees, "If you start cutting habitat for either bird, you just increase competitive pressure." Welch, Craig. 2009. The Spotted Owl's New Nemesis. Smithsonian Magazine. January 2009. http://www.smithsonianmag.com/science-nature/The-Spotted-Owls-New-Nemesis.html?c=y&page=2

The FEIS fails to accurately disclose and assess the effects of logging on riparian reserves.

The D-Bug Project includes 283 acres of commercial logging in riparian reserves, including 112 acres in lodgepole and 170 acres in mixed conifer with 50-60 foot no-cut buffers on perennial streams, and no specified buffers on intermittent streams. The riparian reserve thinning prescriptions would be the same as in the adjacent uplands, including heavy thinning of the overstory in lodgepole. Canopy cover in the mixed conifer stands would be reduced from the 50-60 percent today, down to between 25 and 45 percent. 1092 feet of new temporary road construction (affecting 0.5 acres) in the riparian reserve would be necessary in order to access the treatments. Plus 81 acres of grapple piling and burning in riparian reserves. The FEIS fails to show how all these activities would comply with the Aquatic Conservation Strategy (ACS).

The FEIS lacks a map showing the location of logging in riparian reserves. The FEIS also lacks a site specific analysis of the stream characteristics in the areas to be logged. What is the stream temperature, what is the stream gradient, how steep are the slopes to be logged near streams, what are the channel characteristics, what is the current vegetation structure, what will the forest be like after logging, what kind of equipment will be used, which intermittent streams will get buffers, which ones won't, what site specific mitigation will be applied? In order to make informed comments and make an informed decision, the public and the decision-maker need all this information to be disclosed in the FEIS, but it's not there.

The FEIS lacks an analysis of how the project complies with each Aquatic Conservation Strategy (ACS) objective and a comparison to the no action alternative. Logging in riparian reserves will remove the very features of riparian reserves that help meet ACS objectives, including canopy cover, large trees, and other trees that will someday grow and be recruited as dead wood.

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manageable threats. Dunham, Jason. 2008. Bull trout habitat requirements and factors most at risk from climate change. http://www.fs.fed.us/rm/boise/AWAE/projects/bull_trout/bt_Dunham.html

The D-Bug Project fails to adhere to the NWFP which requires that fuel treatments minimize impacts to vegetation. NWFP S&G FM-1. "Design fuel treatments to meet Aquatic Conservation Strategy objectives, and to minimize disturbance of riparian ground cover and vegetation [and] recognize the role of fire in ecosystem function..."

The FEIS fails to disclose whether logging would comply with the NWFP by "maintain[ing] and restor[ing]" riparian and aquatic conditions and by "not retard[ing]" attainment of ACS objectives. Instead of saying that riparian management would maintain and not retard ACS objectives, the FEIS p 278 says "the various thinning and fuel prescriptions applied to the riparian reserve land allocation are not expected to exert unusual or extraordinary impacts to riparian forest conditions." This is not the test for compliance with the ACS, so it does not help the public or the decision-maker understand the impacts of the project relative to the relevant management standards. The "usual" and "ordinary" impacts of logging on riparian reserves will not "maintain" riparian conditions.

The FEIS (p 285) asserts that "Less tree density & less crown closure" and "Lessened snag and down wood recruitment process" and reduced understory vegetation are all "beneficial" to riparian and aquatic objectives. This turns the science behind the NWFP Aquatic Conservation Strategy on its head. The vast weight of scientific evidence indicates that riparian and aquatic objective are best met with higher canopy cover and more biomass accumulation, including dense trees of all pool-forming size classes and a diverse understory. Pool-forming trees include all those that can fall across a channel, so it includes many small and medium sized trees along intermittent channels, but logging will remove these trees.

The FEIS repeats the common misconception that logging is beneficial to future recruitment of large wood, but available evidence indicates otherwise. In fact, thinning both reduces and delays recruitment of snags, first by removing trees that would otherwise suffer suppression mortality thus reducing the pool of potential recruitment trees, and second by increasing stand vigor and postponing overall mortality. See this online slideshow which shows the modeled effects of thinning on dead wood habitat. http://www.slideshare.net/dougoh/effects-of-logging-on-dead-wood-habitat Dead wood structure is one of the most important features of healthy streams. Probably the most significant impact of logging is the removal of trees that form the recruitment pool for future dead wood. The FEIS fails to provide a clear analysis of the effects of logging on dead wood recruitment. See Roni, Philip, Timothy J. Beechie, Robert E. Bilby, Frank E. Leonetti, Michael M. Pollock, And George R. Pess. 2002. A Review of Stream Restoration Techniques and a Hierarchical Strategy for Prioritizing Restoration in Pacific Northwest Watersheds. *North American Journal of Fisheries Management* 22:1–20, 2002 American Fisheries Society 2002 http://yosemite.epa.gov/R10/ECOCOMM.NSF/adea00f56cb8903f88256ab6007a3a6f/a10e063e194cecbb88256c0900743686/$FILE/Ronietal2002.pdf "Beechie et al. (2000) provided guidance for determining when thinning is appropriate and when it will result in a loss of near-term recruitment of LWD that may create fish habitat." Beechie found that

> "The models predict that thinning of the riparian forest does not increase recruitment of pool-forming LWD where the trees are already large enough to form pools in the adjacent channel and that thinning reduces the availability of adequately sized wood. … The models predict that thinning of the riparian forest will not increase recruitment of pool-forming LWD on any channel less than 15 or 20 m wide.")

Beechie, T., S. Bolton, G. Pess, R. Bilby, and P. Kennard. 2000. Modeling Recovery Rates and Pathways for Woody Debris Recruitment in Northwestern Washington Streams. North American Journal of Fisheries Management. 20:436–452. http://afs.allenpress.com/perlserv/?request=get-abstract&doi=10.1577%2F1548-8675(2000)020%3C0436%3AMRRAPF%3E2.3.CO%3B2

The FEIS claims fire resiliency benefits from treating riparian reserve, but the FEIS fails to show whether landscape fire resiliency can be provided by treating forests outside of riparian reserves. The FEIS also fails to show that logging will best meet ACS objectives over the long term given the fact that the adverse effects of logging are certain, while the adverse effects of fire are speculative (may occur in the distant future and/or in distant locations). To corroborate the assertion that logging is beneficial to ACS objectives requires a rigorous analysis of the relative probability of wildfire vs. logging. The FEIS has no such analysis, and instead asks the public to accept unsupported assertions. The FEIS lacks a proper analysis of relative risks of fire and logging as described for instance, here: Heiken, D. 2010. Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat. Oregon Wild. V 1.0. May 2010. http://dl.dropbox.com/u/47741/Heiken%2C%20Log%20it%20to%20save%20it%20v.1.0.doc

The FEIS relies on watershed analysis recommendations that have not gone through NEPA review and comment. Several recommendations are untested, such as the need to log riparian reserves to re-establish large conifers. Recent quantitative analysis appears to refute that assertion. Unlogged forest produce not only more wood, but more large wood. Heiken, D. 2010. Heiken D. 2010. Dead Wood Response to Thinning: Some examples from modeling work. http://www.slideshare.net/dougoh/effects-of-logging-on-dead-wood-habitat

Also, the FEIS also cherry picks certain parts of the watershed analysis recommendations to include in the FEIS and fails to recite other relevant recommendations. Such as the recommendation to modify fuels using primarily prescribed fire in order to meet the ACS requirement to minimize soil and vegetation disturbance (Upper Clearwater WA p 123); the recommendation to address beetle concerns with individual tree culturing by maintaining basal area around "individual pines" at 120-150 ft2/ac (UCWA p 124); and the recommendation that "Riparian reserves that have not been managed should remain unmanaged …" (UCWA p 132).

The FS failed to make the Watershed Analyses available to the public in a timely manner in violation of the NEPA mandate to "Make environmental impact statements, the comments received, and any underlying documents available to the public…" 40 CFR 1506.

The FEIS erroneously asserts that the adverse effects of logging in riparian reserves would be limited to small wood. FEIS 280: "Thinning the mixed conifer stands under the action alternatives would lower snag and down wood recruitment rates compared to Alternative 1 by removing trees that would die from suppression mortality or from pine beetles. The majority of the snag recruitment loss from the low thinning in mixed conifer would be from smaller-sized trees because suppression mortality typically kills smaller, suppressed trees rather than the larger dominant trees. The lodgepole thinning would occur in the overstory, and would remove trees that would become snags and down wood recruitment to the riparian forest floor and streams. ...” This gives an incomplete and misleading picture of the effects of logging on wood recruitment in riparian reserves. First, all sizes classes of wood are important to riparian habitat. Large wood may be most important, but smaller wood is also important and pool-forming wood can be smaller than 20” dbh. Second, the FEIS makes an assertion about the “majority” of small wood, but fails to disclose the effects on the “minority” of large wood. In fact, the FEIS ignores the significant effect of logging on recruitment of large wood. The analysis fails to recognize that this project does not have a diameter limit and many large trees will be removed, AND unthinned stands continue to grow and the trees become larger over time, AND unthinned stands have a much larger pool from which to recruit future coarse wood over time, AND unthinned stand retain the mortality processes that recruit more wood over time. Logging will undoubtedly fail to maintain large wood objectives and will likely retard attainment of large wood objectives but the FEIS fails to disclose this.

Logging would clearly retard attainment of ACS objectives compared to the no logging alternative, as explained in the FEIS p 278 the no logging alternative would provide important riparian values that would be degraded under the logging alternatives —

> "Under no action, the dead and toppling overstory lodgepole pine would add shade, habitat structures, and moisture retention to the forest floor that would be removed or interrupted under the action alternatives. During logging, the understory vegetation would be crushed, knocked down, and killed. Also, the fuel treatments such as mastication, grapple piling, hand piling, and chipping would further clear understory vegetation. This understory effect would also occur in mixed conifer understories where logging activities and fuel treatments would promote warmer, drier conditions in the forest of riparian reserves compared to Alternative 1. … Both the thinning and fuel reduction treatments under both action alternatives would also lower the rate of litter input to streams and the riparian forest floor which represents important nutrient cycling and food bases for aquatic and terrestrial organisms. This thinning effect may lower local populations of dependant [sic] aquatic organisms. Such effects would gradually subside over a period of 30 to 40 years.”

The FEIS essentially admits that logging will harm riparian and aquatic values in violation of the ACS. FEIS p 280: "the effects from these temporary roads would be realized for several decades, because these unproductive soils are generally not resilient to impacts. As such, the adverse effects to riparian forest conditions, such as loss of habitat, site productivity, and potential weed introductions, are expected to continue for at least a decade following temporary road building/obliteration." And FEIS p 280: “The

effects of this snag and down wood recruitment loss include the loss of habitat for aquatic and terrestrial species that depend on these habitat structures. ... In the context of the riparian reserve network of Diamond Lake, Lemolo Lake, and Upper Clearwater watersheds, this amount of potential recruitment loss is inconsequential." The FEIS admits that logging would have negative effect on ACS objectives thus retarding attainment in violation of the NWPF. The FEIS cannot dismiss the site-specific adverse effects of logging as "inconsequential." The NWFP ACS ended the practice of allowing sacrifice zones in riparian reserves. The ACS requires that objectives be met at all spatial scales, including the site scale.

The FEIS says that logging will help create desired forest characteristics and thus meet TM-1c, however a close reading of the standard indicates that logging is only allowed to acquire desired vegetation characteristics needed to attain ACS objectives. FEIS p 280: "The action alternatives in the mixed conifer stands would result in long-term beneficial effects to riparian forest structure and composition with increased fire resiliency and improved stand structural characteristics that more closely approximate the natural disturbance regime compared to more closed stand conditions under Alternative 1. ... " The "desired characteristics" contemplated in the standard are NOT those related to fire and fuels, but rather those characteristics related to aquatic and riparian objectives. None of the ACS objectives mention the need for fuel reduction or fire control to meet aquatic objectives, but they do mention coarse wood and thermal regulation which are better provided by unlogged forests (or more lightly logged forests). Furthermore, the standards & guidelines for fuel treatments in riparian reserves (FM-1, ROD p C-35) urge that vegetation disturbance be minimized and a recognition of "the role of fire in ecosystem function." This not a recommendation urging fuel reduction and fire control, but rather a recommendation to protect vegetation and allow fire to play its natural role in the system.

FEIS p 280: "Over time, the commercial thinning of the mixed conifer riparian stands would result in stands that are more likely to attain the characteristics of late seral forests compared to Alternative 1, thus meeting desired conditions for riparian reserves." Again, TM-1c says that logging is only allowed to acquire desired vegetation characteristics "needed to attain ACS objectives." The FEIS fails to support its assertions by disclosing the desired canopy cover, desired large wood recruitment, desired understory complexity, desired role of fire in the riparian reserves, etc. and how the logged and unlogged stands would meet these desired characteristics over the short and long term. The unlogged stands (or stands with wider no-cut buffers) are in fact more likely to attain late successional conditions because: (a) the FEIS p 278 admits that "thinning of the lodgepole pine overstory would approximate the loss of overstory trees from the mountain pine beetle infestation…" (so the stands would be naturally and beneficially thinned even under the no action alternative, thus increasing the growth of surviving); and (b) the unlogged stands will not only have large live trees but will also accumulate more dead wood which is an essential component of late successional forest that the logged stands will have too little of.

The FEIS does not respond to opposing viewpoints indicating that beetles help reduce fuels and fire hazard and help improve habitat. FEIS 280 says "The chances of severe fire

effects to forest floor soils and associated organisms would be elevated in the stands containing stem exclusion and mature lodgepole due to predicted fuel build-ups from the beetle infestation." The FEIS uses old beetle-fire mythology to support its riparian logging plans, but there is compelling scientific evidence that beetles actually thin the forest, reduce canopy fuels, increase the vigor of remaining trees, increase landscape heterogeneity and lead to beneficial forest successional changes that do not need to be addressed with commercial logging, especially not in riparian reserves. At a minimum, the FEIS failed to respond to credible opposing viewpoints which say (1) that beetles reduce fire hazard instead of increase it, and (2) that logging can increase fire hazard instead of decrease it. See the section below concerning the FEIS failure to accurately describe the effects of beetles.

To overcome the general prohibition on logging in riparian reserves the FEIS p 279 claims that logging in riparian reserves is necessary "in order to contribute to meeting the desired riparian forest conditions of improved species and structural diversity and lowering the risk of crown fire that could impact such diversity." But this is merely an assertion. The FEIS fails to provide any analysis to support this assertion. The record of the NWFP is clear that ACS objectives are best met with dense forest canopy that provides cool moist conditions, high biomass accumulation that provides large wood inputs over time, a diverse understory that provides food and litter inputs, and relatively undisturbed soil that minimizes chronic sediment inputs. The FEIS fails to show how the ACS is met when logging will remove canopy and create warm and dry conditions, reduce the recruitment pool for future large wood, degrade understory vegetation, and disturb soil.

FEIS p 278 suggests that logging will have the same effect on riparian canopy cover as beetles. "thinning of the lodgepole pine overstory would approximate the loss of overstory trees from the mountain pine beetle infestation…". This analysis fails to consider several factors: (a) beetle killed trees cast cooling shade, but trees sent to the mill do not; (b) thinning by beetles retains large woody habitat structure for a variety of species; (c) the beetle outbreak is unpredictable so a portion of the riparian stands that are proposed for logging will not be affected by beetles; (d) riparian sites tend to have relatively higher soil moisture so riparian trees would be less stressed, more vigorous, and better table to resist beetles than the average upland site[2]; and (e) thinning by beetles avoids the impacts of log extraction such as heavy equipment, roads, weeds, soil compaction, etc. The FEIS failed to recognize that in riparian reserves it is ecologically preferable that the thinning be done via beetles instead of via commercial logging.

The FEIS fails to accurately disclose and assess the effects of logging on dead wood habitat.

The FEIS p 132 tries to excuse the adverse effects of logging on snags and dead wood by saying that these are matrix lands, but this ignores that Matrix standards & guidelines require 100% potential population levels for black-backed woodpecker. Also, large parts

[2] Upper Clearwater WA p 57 says “higher site quality allows for slightly greater basal areas before trees are at risk.”

of the planning area are designated as riparian reserves, administratively withdrawn areas, visual corridors, etc... These are not strictly and exclusively matrix. Furthermore, even the matrix is supposed to have mitigation for dead wood and but the mitigation provided in the 1994 ROD is scientifically discredited.

As explained in our comments on the DEIS, the D-Bug Project FEIS and the LRMP rely on the outdated "potential population" methodology for determining desired retention levels for dead wood habitat which fails to provide enough habitat for species associated with snags and dead wood. Provision for continuous long-term recruitment of nags and dead wood is an important mitigation measure and the FS methods for doing this no longer considered credible. Before taking actions that will diminishes snags and dead wood recruitment (as this logging project clearly will) the FS must consider and adopt new standards pursuant to NEPA and NFMA procedures.

Our comments asked the FS to consider new information and question that assumptions about whether retaining only a few snags/acre will meet the needs of wildlife when current science indicates that much more than a few snags/acre is needed; See 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://web.archive.org/web/20060708035905/http://www.nwhi.org/inc/data/GISdata/docs/chapter24.pdf (*accessed* 11-8-2010). The FEIS p A-141 failed to respond to the this issue.

FEIS p A-152 fails to respond to our comment that current dead wood standards are inadequate:

> [comment] Bull et al. states that the current direction for providing wildlife habitat on public forest lands does not reflect the new information that is available which suggests that to fully meet the needs of wildlife, additional snags and habitat are required for foraging, denning, nesting, and roosting (1997). Johnson and O'Neil (2001) and Rose et al. (2001) also state that several major lessons have been learned in the period 1979 to 1999 that have tested critical assumptions of earlier management advisory models … This suggests the current direction of managing for 100 percent population potential levels of primary excavators may not represent the most meaningful measure of managing for cavity-nesters and that these snag levels, under certain conditions, may not be adequate for some species. [This is actually a direct quote from a FS document http://www.fs.fed.us/r6/frewin/projects/analyses/barneslong/ea/appb.pdf *accessed* 11-5-2010]
>
> [response] The effects of the post treatment levels of snags and coarse wood are discussed in the respective species specific analysis sections of the FEIS. Snag and coarse wood retention levels are consistent with the Umpqua's LRMP, the NWFP S&G's and DecAID.

The FEIS response to comments merely says the project meets standards — standards that we have shown are outdated and the FEIS makes no attempt to correct for this deficiency.

We raised several specific concerns about the DecAID methodology relied on by the FS but the FEIS p A-158 failed to meaningfully respond. The FS has a duty to disclose the weaknesses and short-comings in the analytic methods it uses.

FEIS p A-88 recites a comment concerning the legal sufficiency of outdated science that underpins the LRMP.

> "The DEIS makes an unsupported assertion that the proposed logging will not violate standards & guidelines, but the statement does not acknowledge that the existing standards & guidelines [for dead wood habitat] are scientifically discredited. That the FS is meeting illegal standards offers little reassurance and the public and the decision-maker should know that."

The FS response is inadequate:

> "Thank you for your comment. The current standards and guidelines as described in the Umpqua National Forest Land and Resource Management Plan, as amended, are being met. There has been no lawsuit filed against these that would render them 'illegal'."

If an important management standard has unsupportable, then it is illegal to continue to rely on it. The Forest Service should recognize this and fix it, not just keep using an inappropriate standard until they get sued. The FS should stay abreast of current science and the law and develop management programs that are consistent with both current law and current science. Everytime the FEIS says that the project will meet forest plan standards related to dead wood, the FS is misleading the public and the decision-maker with false assurances which violate NEPA's mandate for accurate scientific data and analysis.

FEIS p A-86 says "Recommendations made in DecAID are followed in D-Bug." This implies that the FS is actually using DecAID as a replacement for its outdated snag habitat standards, but this is in appropriate because DecAID is an advisory tool, not a management standard (DecAID does not make any "recommendations"), AND D-Bug will log many stands below even the lowest of the three "tolerance levels" in DecAID, AND DecAID is being treated as a *de facto* plan amendment but has not gone through NEPA & NFMA procedures. The agency must follow NEPA and NFMA procedures to amend its forest plan. ONRC and HCPC v. Forsgren, (CV 02-368-BR) (Oregon District Court 2003).
http://maps.wildrockies.org/ecosystem_defense/Resources_Species_Topics/Lynx/lynx%20NW%20Decision.pdf (*accessed* 11-5-2010)

Public comments asked for disclosure of the effects of logging relative to DecAID 50-80% tolerance levels but the FEIS does not show this. FEIS p A-87. FEIS pp 138-141 showed the effects of logging relative to the 30% tolerance level in DecAID. It's notable that most logged stands do not produce more than the bare minimum level of snags per acre. The FEIS failed to show the effects of logging relative to the 50% and 80%

tolerance levels which are necessary to maintain viable populations of species. An adequate snag mitigation strategy must include stands in the 50-80% tolerance. This may not make sense within 200 feet of homes, but in balancing the needs of wildlife and fire control further from homes requires retaining more snags and recruitment trees. Many of the logging units are much further from homes and should be providing much higher levels of snags over the long-term (i.e. enough green trees to recruit 50-80% tolerance level over the long -term).

The FEIS fails to accurately disclose and assess the effects of logging on management indicator species.

The FEIS relies on statewide monitoring data for management indicator species that are supposed to be monitored at the forest level on an annual basis (1990 LRMP pp V - 18-21). The LRMP does not allow reliance on statewide breed bird surveys, but rather requires annual monitoring of "detected presence" and "habitat capability" and "habitat suitability." The FEIS fails to reconcile these inconsistencies.

The FEIS p 195 admits that logging will reduce snag levels below DecAID's minimum 30% tolerance levels. While this is not a standard, it is an indication that the forest plan objectives for providing habitat for MIS primary cavity excavators are unlikely to be met in treated areas as a result of logging. Since the forest plan standards are discredited and known to provide too few snags, and since the FS has not adopted new standards to replace the old standards, the FS should not be logging in such as way as to push snag levels below the minimum levels displayed in DecAID. The FS cannot rely on DecAID to replace the outdated standards, because DecAID is an advisory tool with a vague menu of three different levels of assurance, but no rule-set for applying these tolerance levels across the landscape. DecAID is not a management standard that has been shown to meet the wildlife diversity requirements of NFMA and its implementing regulations. For instance, the FEIS reveals that black-backed woodpecker are a declining species, that they prefer beetle infested forests, and that the D-Bug project will log 21% of the lodgepole forests in the planning area, yet there is no way of knowing if the black-backed woodpecker population will remain viable after logging because there is no credible management standards to compare this logging project to.

FEIS p 196 describes fuel reduction and fire control as a benefit to species like black-backed woodpecker that actually depend on large mortality events. Richard Hutto recently said:

> From my perspective as a bird-research biologist, I have become aware of one of nature's best-kept secrets -- there are some bird species that one is hard-pressed to see anywhere else but in burned forests.
>
> The species whose habitat distribution is more restricted than any other to burned-forest conditions is the black-backed woodpecker. Everything about it, including its jet-black coloration, undoubtedly reflects a long evolutionary history with burned forests.

Richard L. Hutto 2005. Post-fire logging is bad for forests and wildlife. Seattle Times. http://seattletimes.nwsource.com/html/opinion/2002670756_burnedforests08.html Fuel

reduction and fire control are more accurately described as adverse to species like the black-backed woodpecker that depend on dead wood and large mortality events.

The analyses of project effects on big game (and pine marten and fisher) fail to account for the movement barrier created by the long linear fuel breaks along roads where big game (and marten and fisher) would lack secure cover and likely avoid travel. This could make MIS wildlife less mobile, less adaptable, and less likely to survive through hard times. They might become separated from preferred foraging areas, fawning or denning areas, cover areas, thermal refugia that are important to their life cycle. Big game may also become more vulnerable to hunters.

The FEIS p 201 says that 546 acres of optimal marten habitat would be downgraded by logging, equivalent to 12% of the forestwide total optimal marten habitat. The FEIS also says that fuel reduction and fire control would benefit marten, but this analysis fails to account for the length of the fire return interval which is required to support such a finding, and the analysis fails to account for the fact that marten evolved with fire and depend in part on a cycle of forest disturbance and regrowth which creates complex habitat structures and landscape heterogeneity favorable to marten, so the FEIS fails to accurately disclose that fuel reduction and fire control are adverse to the natural processes that create and sustain habitat for MIS.

The FEIS fails to accurately disclose and assess the effects of logging on carbon.

Converting biomass to wood products instead of allow biomass to accumulate in the forest is a significant adverse effect of logging that the FEIS does not adequately disclose and consider. Global climate change is a new and significant threat to humanity and forests. Climate change is caused by excess CO_2 and other greenhouse gases transferred to the atmosphere from other pools. All temperate and tropical forests, including those in this project area, are an important part of the global carbon cycle. Since the time the resource management plan was written, there is significant new information reinforcing the need to conserve all existing large stores of carbon in mature & old-growth forests in order to keep carbon in forests and out of the atmosphere in order to mitigate climate change. Since all forests are an important part of the global carbon cycle, the agency must do it's part by managing forest to maintain and increase carbon storage. Global warming is caused by the cumulative build up of greenhouse gases, especially carbon, in the atmosphere. Logging will add to the cumulative total carbon emissions so it is clearly part of the problem and must be minimized and mitigated. Logging will not only transfer carbon from storage to the atmosphere but future regrowth is unlikely to ever make up for the effects of logging, because carbon storage in logged forests will lag carbon storage unlogged forests for decades or centuries. Even if future forest carbon in the logged forest eventually matches the unlogged forest, there is still a “catch up” period during which atmospheric carbon is increased thus exacerbating climate change. How does the agency plan to mitigate for this? Please review the report on "Forests, Carbon & Global Warming" prepared by Oregon Wild. The report explains how climate change is likely to affect Pacific Northwest forests as well as how forest conservation and restoration

(including sensible changes to this project) may help mitigate climate change. http://tinyurl.com/2n96m5 (*accessed* 11-8-2010). And see this related slideshow that helps debunk some of the flawed arguments used by logging advocates: http://www.slideshare.net/dougoh/forest-carbon-climate-myths-presentation/ (*accessed* 11-8-2010). The FEIS Response to Comments refuses to address this document because it says this document is "not peer reviewed." Whether this comment is peer-reviewed is immaterial. The FS does not have the discretion to ignore highly relevant public comment. If the FS is going to use this peer-review criteria, then it needs to cleanse it's FEIS of all non-peer-reviewed information such as the epidemic finding and the conclusion that fuel reduction logging is beneficial to spotted owls.

The FEIS highlights the carbon emissions that may result from wildfire under the no action alternative, but the FEIS fails to accurately portray the carbon consequences of logging. The FEIS does not disclose the carbon emissions that may result from wildfires that may also occur under the logging alternatives, plus the carbon emissions that will result from logging. The FEIS carbon analysis fails to accurately account for the fact that wildfires tend to be weather driven, not fuel driven in this project area, so large fires can be expected even if the FS does try to log the forest to control fuels. The FEIS also fails to account for the fact that logging accelerates the transfer of carbon from the forest to the atmosphere. Under the no action alternative, there are some emissions from fire, but fire typically consumes the small fuels and leaves behind the large trees that store the most carbon, while under the logging alternatives there are significant cumulative carbon releases from both fire and logging. The FEIS shows the effects of wildfire emissions in Figure 3-22, but the FEIS dos not show the effects of logging plus fire, so the public and the decision-maker can not get a clear picture of the effects of the proposed logging compared to no action.

The FEIS presents an inaccurate picture of the total carbon consequences of logging plus wildfire. FEIS p 242 says "Fuel treatments that reduce the number of small-diameter trees, which act as ladder fuels, reduce emissions and the mortality of large trees (Hurteau and North, 2009)." This study is not applicable here because the authors assumed that fire is certain to occur on a 20 year interval. The results of studies like this are highly sensitive to the *de facto* fire return interval because it determines how likely it is that fuel treatments will actually interact with wildfire and provide fire behavior changes. (Mitchell et al 2008). The forests in this project area do not have a 20 year fire return interval, not historically and not in the future (under prevailing fire suppression policies) when the projected emissions will occur. To assume that every treatment is highly likely to be affected by fire over the short-term over-estimates the value of fuel treatments that reduce carbon emissions from fire, and it underestimates the value of carbon that can be stored in growing forests in between relatively infrequent fires. By assuming that fire is highly likely to occur, this study essentially assumes that every fuel treatment will be affected by fire and will yield benefits in terms of modified fire behavior and reduced carbon emissions, but since in reality the FS cannot predict when or where wildfire will occur, most fuel treatments will not be affected by fire, and many of the fuel treatments proposed in this project will reduce carbon storage unnecessarily. See Mitchell, Harmon, O'Connell. 2009. Forest fuel reduction alters fire severity and long-term carbon storage in

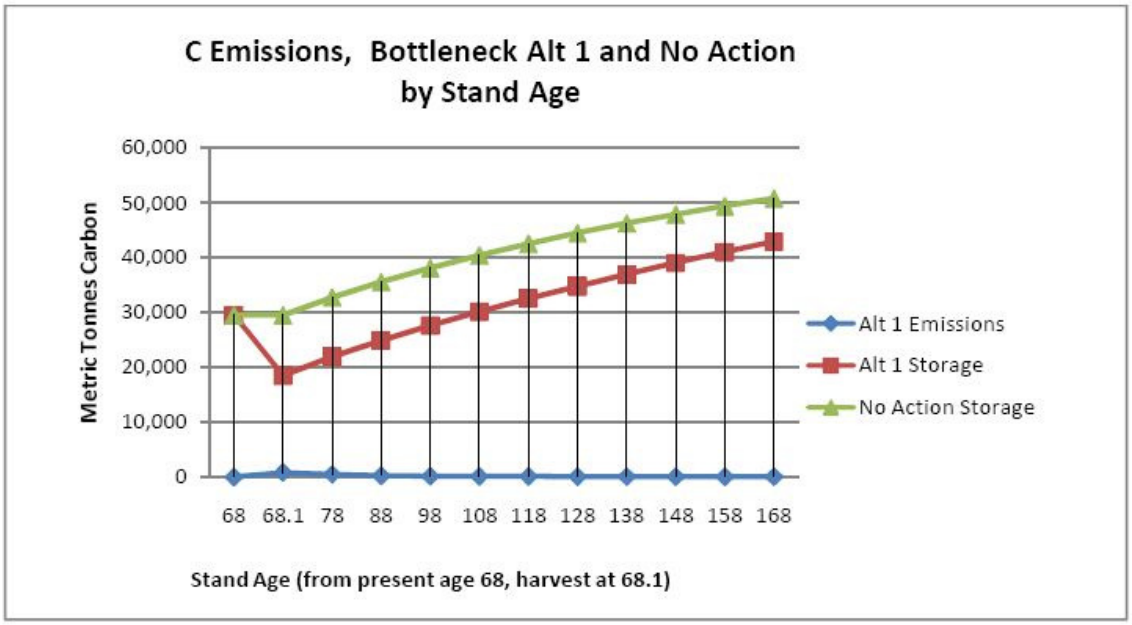
three Pacific Northwest ecosystems. Ecological Applications. 19(3), 2009, pp. 643-655 (attached).

The FEIS drops its "substitution" analysis because it did not hold up to scrutiny. Now the FS has shifted gears to excuse logging the basis of the "leakage" argument. However, the carbon leakage analysis is speculative and attempts to justify logging based on a flawed assumption that logging is inevitable and there is no elasticity of demand. In fact, the alleged effects of leakage for this project may be minimal if there is just an slight decrease in demand for wood products, which might be caused by an economic recession (which is happening), a trend toward smaller houses (which is happening), consumers choosing to delay or shrink the size of construction projects, or other means. The FEIS failed to consider these factors in the leakage analysis. A recently completed report commissioned by the Oregon Department of Environmental Quality in collaboration with the Oregon Home Builders Association and Earth Advantage Institute concludes that constructing smaller homes is among the best ways to reduce greenhouse gas emissions and waste generation from the residential construction sector. The report, A Life Cycle Approach to Prioritizing Methods of Preventing Waste from the Residential Construction Sector in the State of Oregon, is available on DEQ's website at http://www.deq.state.or.us/lq/sw/wasteprevention/greenbuilding.htm.

The FEIS p 245 says "All action alternatives would result in a negative net carbon balance and would offset through sequestration or energy substitution more greenhouse gases than they emit." This is confusing and unsupported because (a) the FEIS uses an inappropriate baseline (The logging alternatives should be compared to no action, not compared to some other baseline.), and (b) the FEIS never discloses the tons of carbon that would be emitted immediately and over time as a result of logging. It's not until the very end of the carbon analysis that one reads "Alternative 1 would potentially retain 32 to 45 percent more carbon over the next forty years than either action." This is the most important thing for the public and the decision-maker to understand, but it's buried at the very end of the analysis and the FEIS fails to provide a linear and coherent path leading to that conclusion. The FEIS fails to show the effects of carbon storage over time in a graphic that accounts for forest growth, forest mortality, and carbon removals related to logging under all alternatives. It could also account for carbon consequences of fire if it was based on an accurate estimate of fire severity, fire extent, and de facto fire frequency.

Figure 3-23 purports to show the carbon in snags that die from beetles and fire, but it does not show the carbon emissions from accelerate decay of logs that are removed and sent to the mill, and the figure seems to assume a 40 year fire return interval affects every acre of the project area, which is unrealistic and inaccurate. It is also unclear how carbon in standing snags is relative to carbon transfers to the atmosphere. Carbon in dead trees is actually a good thing, because dead trees can last a long time which delays carbon emissions to the atmosphere compared to putting those same trees through the process of logging, milling, manufacturing, and disposal. Why does Figure 3-23 just show standing dead carbon instead of the full carbon picture, including carbon removed via logging and slash disposal? The FEIS violates NEPA's mandate for clear analysis that can be

understood by the public. Here is an example of a carbon graphic that can be easily understood.



Compare to D-Bug:

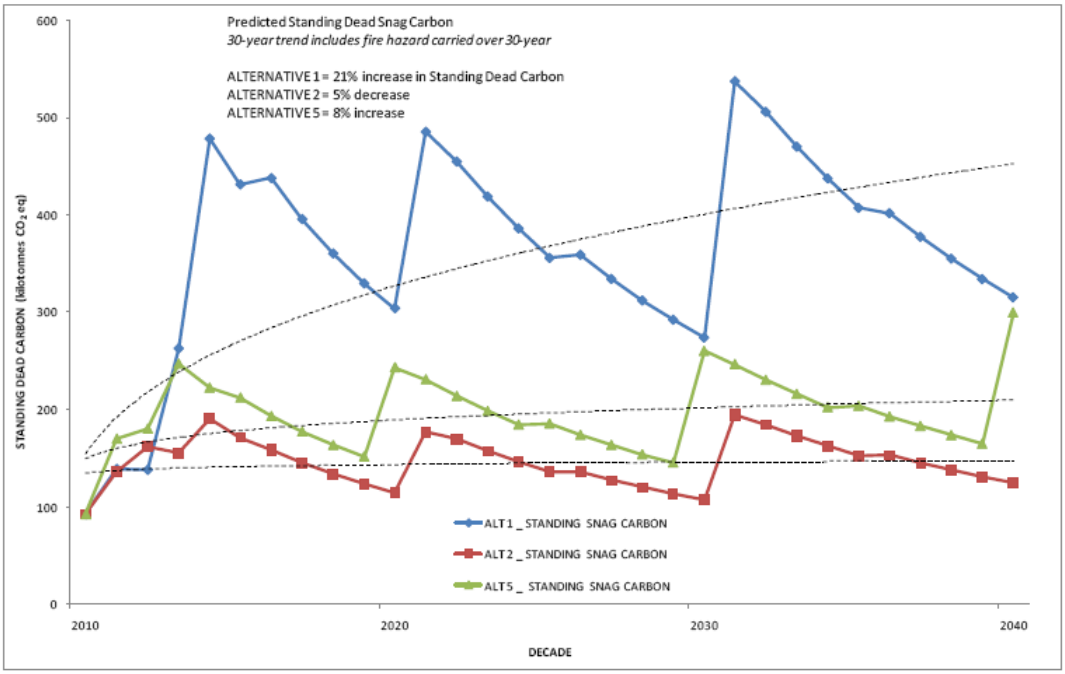


Figure 3-23. Standing dead snag predictions using FFE-FVS for the D-Bug planning area. Considering beetle damage and the average 40-year fire risk, the carbon balance in standing dead snags may potentially increase 21% from the existing condition under Alternative 1 and potentially decrease 5% to 8% under the action alternatives.

The FEIS uses an unclear baseline for carbon analysis. The no action alternative should be the baseline so that the carbon emissions related to logging can be easily compared.

The FEIS analysis is confusing with statements like this "Alternatives 2 and 5, would maintain carbon storage equivalent to the annual emissions of about 4,500-5,700 cars." This makes it sound like logging will help mitigate emissions from cars, when in fact logging will exacerbate global warming relative to the no action alternative.

The FEIS fails to accurately disclose and assess the cumulative impacts of logging plus wildfire as the product of the magnitude of impact (from logging and fire) times the probability of impact (from logging and fire) under each alternative.

In describing the effect of the no action alternative, the FEIS attributes many adverse effects to future disturbance by beetles and fire. In describing the logging alternatives, the FEIS does not accurately disclose the cumulative effects of logging, plus beetles and fire (which will not be fully controlled even after logging). Since the effects of logging are adverse and virtually certain to occur, while the effects of natural disturbance by beetles and fire and uncertain and speculative, an accurate NEPA analysis requires an estimate of the relative probability of adverse effects from logging vs natural events. Our public comments asked the FS to consider the probability of the adverse effects of logging and fire under the logging and no logging alternatives. The FEIS p A-133 dismisses this suggestion by saying “Natural systems are generally too complex to assign a reasonably accurate probability to an event.” But by describing the effects of no action assuming a 100% chance of adverse natural disturbances, the FS has arbitrarily assigned a probability to the event of fire, just not an accurate one that accounts for the actual fire return interval as modified by fire suppression policies.

The response to comments goes on to say “A certified entomologist, who helped develop prescriptions, estimates that up to 90% mortality in mature lodgepole pine can be expected.” This describes the maximum probability of individual trees dying within a beetle infested stand but this is not the probability we need to know. The analysis still fails to account for the fact that not all stands will be affected by beetles. The analysis assumes 100% chance that unlogged stands will be infested. It fails to account for the fact that some stands will be infested and others will not, some will experience 90% mortality and some will experience 10% mortality, and consequently some stands will suffer the adverse consequences of logging unnecessarily. The FEIS fails to disclose the probability of each stand being infested and over what time scale.

The FEIS response to comments (p A-190) says “The DEIS does not assume an absolute outcome of large scale wildfire following the current mountain pine beetle outbreak.” But the negative portrayal of the no action alternative throughout the FEIS does not reflect this rare acknowledgement.

There are more suitable analytic frameworks that the FS should use in order to fully account for the relative improbability of natural disturbance in each stand. See for instance, Heiken, D. 2010. Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat. Oregon Wild. V 1.0. May 2010. http://dl.dropbox.com/u/47741/Heiken%2C%20Log%20it%20to%20save%20it%20v.1.0.doc

The FEIS fails to accurately disclose and assess the effects of long linear fuel breaks on big game, American marten, Pacific fisher, and other wildlife that need adequate cover for safe travel across the landscape.

In its discussion of the effects of the logging alternatives on wildlife that need dense forest conditions to facilitate movement across the landscape to meet their life needs, the FEIS fails to discuss the adverse effects of the long linear open forest conditions. Such open forest conditions on one or both sides of a completely open road will serve to impede the movement of wildlife and adversely affect their ability to meet their life needs.

Our comments asked "Big game analysis is done at the scale of the planning area instead of the scale used by big game. Where will big game find cover in the wide open stands near roads? How will they cross treated roadsides?" (FEIS p A-138), but the FEIS does not answer these questions.

The FEIS fails to accurately disclose and assess the effects of beetles.

The EIS analysis of no action is misleading because it repeatedly says that without treatment beetles would be "unchecked." But in fact beetles would continue to be "checked" by natural processes such as cold winters, predators, diminishing host availability, etc.

The EIS claims that the current forest conditions are uncharacteristic and that lodgepole pines stands are unnaturally "synchronized." The FEIS p A-134 failed to respond to our comment that

> "The FS has [presented] a testable hypothesis but certainly has not shown much evidence to support the assertion about lodgepole stand synchronization to be true. Even if there are a few large patches of mature lodgepole in the area, there is no way of knowing whether they will be infested simultaneously or burn simultaneously. Nature has many mechanisms to interrupt contagious disturbances. The FEIS should consider the possibility that a hard winter halfway through the beetle infestation could halts the spread of the beetles and break up the patch via natural processes instead of logging. Similarly, cold nights or wet thunderstorms [or a change in wind speed] can interrupt an otherwise fast-moving fire, and break up a uniform event, into a mosaic."

The FEIS also undercuts its own assertions when it says "Effects of mountain pine beetle attacks are scale-dependent, with infestations creating a mosaic of forest patches of various ages, densities, species compositions, and successional stages across the landscape (Schowalter, 2006). A multi-age, multi-size tree distribution, rather than a carpet of seedlings, is often the natural structural effect of mountain pine beetle activity in unmanaged, mature lodgepole stands (British Columbia FPB, 2007)." FEIS p A-136.

FEIS p 106 tries to address the scientific controversy over the efficacy of logging to control insect outbreaks. The FEIS says that the bulk of the scientific literature supports thinning before an outbreak is the best method to reduce infestation and mortality. However, this project is not occurring before but during an outbreak, and second, the literature is focused on the goal of protecting timber values, not the goals of protecting natural processes that serve ecological functions, like landscape heterogeneity, recruitment of dead wood habitat, recruitment of riparian and instream coarse wood, carbon accumulation and storage, nutrient retention and cycling.

FEIS page 114 says that beetles cause an increase in fire hazard even though they reduce canopy fuels. This is not supported by the evidence. There may be a build up of large fuels in the years after the dead lodgepole begin to fall down but *large* wood is not a major factor driving wildfire, and more importantly, these fires regimes in these forest types are weather driven, not fuel driven, so the evidence for increase fire effects following beetle outbreaks is lacking. For instance, NASA searched for and failed to find a positive relationship between beetles and fire —

> [A]nalysis indicates that large fires do not appear to occur more often or with greater severity in forest tracts with beetle damage. In fact, in some cases, beetle-killed forest swaths may actually be less likely to burn. What they're discovering is in line with previous research on the subject.
>
> The results may seem at first counterintuitive, but make sense when considered more carefully. First, while green needles on trees appear to be more lush and harder to burn, they contain high levels very flammable volatile oils. When the needles die, those flammable oils begin to break down. As a result, depending on the weather conditions, dead needles may not be more likely to catch and sustain a fire than live needles.
>
> Second, when beetles kill a lodgepole pine tree, the needles begin to fall off and decompose on the forest floor relatively quickly. In a sense, the beetles are thinning the forest, and the naked trees left behind are essentially akin to large fire logs. However, just as you can't start a fire in a fireplace with just large logs and no kindling, wildfires are less likely to ignite and carry in a forest of dead tree trunks and low needle litter.
>
> Forest ecologists noted this same phenomenon after the massive Yellowstone wildfires in 1988. As large crown fires swept quickly through the forest, many trees were killed and their needles burned off, but the standing dead tree trunks remained. In the ensuing years, new wildfires have tended to slow and sometimes even burn out when they reach standing dead forest. There simply aren't enough small fuels to propel the fire.

Shoemaker, J. 2010. NASA satellites reveal surprising connection between beetle attacks, wildfire. http://www.nasa.gov/topics/earth/features/beetles-fire.html (*accessed* 11-8-2010).

> Based on a recent review of relevant studies, Forest Service scientists said there is no large amount of evidence suggesting that significantly increase the fire risk in a given area. … "There's a popular misconception that the bugs turn the trees red and that equals more fires," Shepperd said during a recent tour of the Fraser Experimental Forest, near Winter Park. "Red trees do not appreciably increase the fire risk. At least many of our scientists say no." … [R]eality is much more nuanced, with the fire risk depending on other significant factors, including the presence of ladder fuels, as well as wind and weather, he said. A drought-stricken lodgepole pine forest with green trees on a hot and windy day can be just as susceptible to a big fire as a beetle-killed stand. Focusing on beetle-kill at the expense of other factors could result in a faulty rationale for decision- making, both scientists said.

Bob Berwyn. Pine beetle link to fires unclear - Foresters question what has long been assumed as true. Summit Daily News. October 13, 2006 http://www.rockymountainnews.com/drmn/local/article/0,1299,DRMN_15_5062558,00.html

Another relevant study compared beetle activity in thinned and unthinned stands found that thinning had the effect of increasing the number of pine engravers while decreasing the relative abundance of their predators (the predators being more abundant in unthinned stands).

> The largest effect of stand thinning was the 7-fold increase in the abundance of pine engravers relative to unthinned stands. We speculate, but did not show, that this increase in pine engraver abundance in thinned stands is due to the increased availability of habitat, decreased stand complexity and potential decline in predation pressure. Traits associated with host quality did not improve after thinning as we had expected and as other studies in the boreal forest have shown (Valinger 1992, 1993, Yang 1998). Pine engravers tended to settle on logs from thinned stands earlier and at higher densities than on logs from unthinned stands, yet ultimately experienced similar reproductive success in both log types. Thus, the costs of declining phloem quality after thinning appear to be offset by the direct effects of earlier settlement and of a more simplified stand structure, and the indirect effects of increased host availability or decreased predation pressure.
>
> These results contrast with previous work that indicates thinning is a good management strategy for preventing outbreaks of mountain pine beetle (see above). Thinning is thought to deter attack by mountain pine beetle because of enhanced stand temperature, interrupted pheromone signals and/or improved host defensive response (Waring and Pitman 1985, Amman et al. 1988, Bartos and Amman 1989, Schmid et al. 1991, 1992). We did not detect deleterious impact of increased temperature on pine engraver abundance. Furthermore, we found no difference in pheromone detection ability between thinned and unthinned stands. However, an improvement in host defensive capability may account for the pine engraver's poor performance in trees from thinned stands, though we were unable to address this specifically.

> The response of pine engravers seven years after thinning further contrasts with another species of secondary bark beetle, the striped ambrosia beetle, which was more abundant in unthinned stands. Previous work (Hindmarch and Reid 2001, Park 2002) found the striped ambrosia beetle to be more abundant in thinned stands up to two and three years after harvest. Logging slash and stumps may be better habitat than windfalls for striped ambrosia beetles, unlike pine engravers.

Colleen Simpson and Mary Reid. Consequences of stand thinning for bark beetles: direct and indirect effects. University of Calgary. January 2004
http://sfm-1.biology.ualberta.ca/english/pubs/PDF/PR_200304reidmcons6.pdf

Increasing tree vigor through thinning also has complex effects. On the one hand it may help the tree "pitch out" the invading beetles, but on the other hand a vigorous trees may support higher rates of beetle reproduction.

> Thinning may also enhance reproductive success of pine engraver bark beetles as a result of increased tree vigour in the residual stand. Pine engraver reproductive success was significantly greater in trees that had been growing vigorously at the time of death: females laid more eggs and a higher proportion of their eggs developed resulting in more offspring produced per female than in less vigorous hosts. Consequently, trees that fall in thinned stands are superior hosts when compared to trees that fall in unthinned stands, and may lead to larger populations in thinned stands.
>
> …
>
> Reproductive success of pine engravers was examined as a function of tree vigour using freshly felled jack pine (Pinus banksiana Lamb.) from a 77 year old stand (Reid and Robb 1999). The number of eggs laid, egg gallery length, proportion of eggs that successfully developed, and number of emerged offspring per female were higher on trees that had been growing most vigorously before death.
>
> Commercial thinning had a significant effect on bark beetles. Although diversity did not change after thinning, the number of beetles in thinned stands was higher than in unthinned stands. Furthermore, beetles in thinned stands chose the biggest logs possible for breeding, and had higher reproductive success in the most vigorous hosts. Beetles could also fly on more days and do so more easily in thinned stands than in unthinned stands.

Trevor D. Hindmarch and Mary L. Reid. Effects of Commercial Thinning on Bark Beetle Diversity and Abundance. May 1999.
http://sfm-1.biology.ualberta.ca/english/pubs/PDF/PR_1999-13.pdf

The agency cannot brush these concerns aside. They must address them head on in the NEPA document.

Public comments raised concerns from the scientific literature about the fact that thinning might displace beetles from treated areas to other areas. The FEIS p A-191 failed to respond to this saying "Treatments outside the planning area are beyond the scope of this project." Commenters were not talking about treatments outside the planning area but

rather beetle infestations outside the treatment areas caused by treatments within the project area, something that the FEIS can and should consider and disclose.

The FEIS fails to accurately disclose and provide an integrated assessment of the effects of canopy removal on fire hazard and other values.

Surface and ladder fuel removal are widely supported and tend to have clear net benefits in terms of reducing fire hazard without significantly reducing habitat values. Cutting larger trees that form the forest canopy is less favored because canopy removal has complex effects on fire hazard, as well as mostly adverse effects on multiple habitat functions, carbon storage, aquatic functions, and other public values.

The D-Bug Project proposes to significantly reduce canopy cover in order to reduce the risk of canopy fire, however reducing canopy density has complex effects with tendencies to both increase and decrease fire behavior. FEIS pp A-83, A-135 fails to respond to the concern that canopy removal has complex effects on fire hazard that are not adequately discussed in the EIS.

> [Comment]The FEIS must recognize that thinning affects fire hazard in complex ways, possibly even making fire hazard worse because thinning: creates slash; moves fine fuels from the canopy to the ground (increasing their availability for combustion); thinning increases ignition risk (by increasing human access and human activities, including spark-generating machine); thinning makes the forest hotter, dryer, and windier; and makes site resources available that could stimulate the growth of future surface and ladder fuels. Fuel reduction must find the —sweet spot, by removing enough of the small surface and ladder fuels while retaining enough of the medium and large trees to maintain canopy cover for purposes of microclimate, habitat, hydrology, suppression of ingrowth, etc. [Response] Prescriptions respond to each fuel profile, including surface fuels. It is documented in scientific literature that thinning can increase surface wind speeds and solar radiation, important factors in calculating fire rate of spread. This logic is improperly used to suggest that thinning will unavoidably increase fire hazard. The overwhelming majority of scientific literature supports a combination of managing tree density, size class distribution, and species composition in combination with surface fuel treatments to reduce fire hazard.

This response (and the FEIS itself) fails to provide an accurate disclosure and integrated analysis of the effects of canopy removal and the value of canopy retention and large tree retention for meeting other objectives.

Maintaining a high canopy cover (along with surface and ladder fuel reduction) in treated stands might actually provide for *more* favorable fire behavior. There is scientific evidence that less dense stands will experience relatively more canopy damage, while more dense stands will experience relatively less canopy damage wildfire. A recent study of crown damage related to the Biscuit fire showed that —

> The most important predictors of total crown damage were the percentage of pre-fire shrub-stratum vegetation cover and average daily temperature. … The median level of damage was 32% within large conifer cover and 62% within small conifer cover. Open tree canopies with high levels of shrub-stratum cover were associated with the highest levels of tree crown damage, while closed canopy forests with high levels of large conifer cover were associated with the lowest levels of tree crown damage.
>
> …
>
> [Random forest analysis] RFA explained 45% of variation in total crown damage. Shrubstratum cover was, by far, the most important predictor variable (Fig. 4); increasing shrub-stratum cover was associated with increasing crown damage (Fig. 5). Average temperature and burn period were similarly important and were ranked second and third, respectively. Large conifer cover was ranked fourth and was associated with decreasing total damage.
>
> …
>
> Furthermore, the ability of conifers to resist fire damage increases with age, as the height to the base of the crown rises and the insulating capacity of the bark increases. This is consistent with the fact that, within the Biscuit Fire, median crown damage within large conifer cover was 32%, compared to 62% within small conifer cover.
>
> …
>
> In addition, mixed-sized conifer cover experienced levels of damage that were intermediate between small and large (median = 52%), which suggests that multi-storied conifer stands did not increase the level of damage by increasing vertical fuel continuity. Instead, it seems likely that the small tree component of the mixed-sized stands was damaged, while the large tree component was not.

Jonathan R. Thompson, Thomas A. Spies 2009. Vegetation and weather explain variation in crown damage within a large mixed-severity wildfire. Forest Ecology and Management 258 (2009) 1684–1694.

Before embarking on an aggressive strategy of crown fuel reduction, the agency must address the responsible opposing viewpoints regarding the manifold reasons to retain more canopy to maintain cooler temperatures and greater moisture. Experts say that reducing ground fuels and ladder fuels should be the first priority and reducing canopy fuels a lesser priority. The agencies must also recognize that most large fires are climate driven, not fuel driven. “Our analyses indicate that year-of-fire climate is the strongest influence on area burned in forested ecosystems, but fire size may be limited secondarily by fuel continuity between or within forest stands (Rollins et al. 2002). For example, continuity may be less limiting for fire regimes in which crown fires are the dominant mechanism than in lower-elevation forests characterized by surface fires, ...” JEREMY S. LITTELL, DONALD MCKENZIE, DAVID L. PETERSON, AND ANTHONY L. WESTERLING. 2009. Climate and wildfire area burned in western U.S. ecoprovinces, 1916–2003. Ecological Applications, 19(4), 2009, pp. 1003–1021.

> [R]elationships described in Westerling et al. (2006) hold for more of the 20th century than previously shown. ... These relationships all support our claim that

> drying of fuels is the primary mechanism for large WFAB [Wild fire area burned] in the higher-elevation and northern mountainous ecoprovinces. Wild fire area burned in these ecoprovinces thus appears to be limited by climate rather than fuel availability, …
>
> …
>
> Our analyses indicate that year-of-fire climate is the strongest influence on area burned in forested ecosystems, but fire size may be limited secondarily by fuel continuity between or within forest stands (Rollins et al. 2002). For example, continuity may be less limiting for fire regimes in which crown fires are the dominant mechanism than in lower-elevation forests characterized by surface fires, …
>
> …
>
> Climate controls on the area burned by wildfire in the western United States are strong, even during the dominant period of fire suppression and exclusion in the last two-thirds of the 20th century. Roughly 39% (1916–2003) to 64% (1977–2003) of the fire area burned can be related directly to climate. The variance explained by climate implies that fuel treatments, for example, might be tailored to specific ecosystems and climate–fire relationships. Recognizing that most ecoprovinces have significant ecological variability, climate-limited ecoprovinces may be less influenced by fuel treatment than fuellimited ecoprovinces (at least for area burned, if not fire severity).

Jeremy S. Littell, Donald McKenzie, David L. Peterson, Anthony L. Westerling (2009) Climate and wildfire area burned in western U.S. ecoprovinces, 1916–2003. Ecological Applications: Vol. 19, No. 4, pp. 1003-1021.

Models also show that maintaining canopy cover is a useful way to reduced fire hazard, while removing canopy increases fire hazard.

> Compared with the original conditions, a closed canopy would result in a 10 percent reduction in the area of high or extreme fireline intensity. In contrast, an open canopy has the opposite effect, increasing the area exposed to high or extreme fireline intensity by 36 percent. Though it may appear counterintuitive, when all else is equal open canopies lead to reduced fuel moisture and increased midflame windspeed, which increase potential fireline intensity.

Rutherford V. Platt, Thomas T. Veblen, and Rosemary L. Sherriff. 2006. Are Wildfire Mitigation and Restoration of Historic Forest Structure Compatible? A Spatial Modeling Assessment. Annals of the Association of American Geographers, 96(3), 2006, pp. 455–470. See also, Jim Agee. Risk Assessment for Decision-making Related to Uncharacteristic Wildfire, Conference Portland, Oregon Nov 17-20, 2003 http://outreach.cof.orst.edu/riskassessment/presentations/ageej_files/v3_document.htm

Sierra Club v. Eubanks, 335 F.Supp.2d 1070 at 1081 (E.D. Cal. 2004) ["Defendants have failed to take the 'hard look' required by NEPA at scientific studies which suggest that the timber removal proposed actually increases, not reduces, fire risk."]

Furthermore, trees that are currently being killed by beetles are addressing the purpose and need and reducing the need for intervention with each passing year. Beetles help thin

the forest and reduce canopy fuels. The small fuels created by dying trees will break down over time and do not represent a serious fuel problem in a forest like this (with a relatively long fire return interval), and the large fuels associated with the dead tree boles do not contribute to high fire hazard and are a non-issue. In fact, the moisture stored in large wood might serve as a heat sink and reduce fire severity.

The FEIS fails to describe how the D-Bug project meets the requirements of HFRA, RACR, and the Umpqua LRMP.

The FEIS lacks adequate information and analysis to support a finding of consistency with applicable law and policy. Examples include:

- The FEIS lacks stand level data necessary to support a finding of an insect epidemic exists in the stand to be treated or in immediately adjacent stands;
- The FEIS lacks site-specific analysis of stream reaches and how logging will maintain and not retard attainment of ACS objectives "Riparian reserves that have not been managed should remain unmanaged …" but "pre-commercial thinning in previously harvested units should be site-specifically reviewed and proceed where appropriate." (UCWA p 132.);
- The FEIS lacks analysis to ensure viability of species associated with dead wood, given that the project will reduce dead wood below the 30% tolerance level and the existing standards are scientifically discredited;
- The FEIS lacks analysis to ensure viability of spotted owls in the face of cumulative habitat loss of logging plus barred owl competition;
- analysis to show which of the roadless area characteristics will be improved by logging;
- NWFP Matrix standards & guidelines requires 100% potential population for black-backed woodpecker. The FS methodology for meeting this standard are outdated, but the "100% potential population" requirement clearly implies an objective of "no net loss" of black-backed woodpecker habitat opportunities. The FEIS reveals that black-backed woodpecker re a declining species, that they prefer beetle infested forests, and that the D-Bug project will log 21% of the lodgepole forests in the planning area, yet there is now way of knowing if the black-backed woodpecker population will remain viable after logging because there is no credible management standards to compare this logging project to;
- The FEIS cover letter indicates that survey and manage requirements are not complete, but the 2001 S&M ROD recommends that survey results be included in draft NEPA documents so that the public can review and comment on them. The FEIS does not describe whether how survey and manage requirements are being met, except to say that "supplemental surveys are ongoing" and 100-150 ft buffers would be established on newly discovered sites (pp 222-223). Which species are being surveyed? What survey protocol is being applied? Are 100-150 ft buffers consistent with applicable management recommendations?;
- The FEIS failed to describe how the project complies with LRMP standards & guidelines for:
    - MA-2 recreation areas. Logging units larger than 2 acres are not permitted. Logging must complement the recreational designation.

- Prescription A4-1 calls for an "approved vegetation management plan" where stands in recreation areas around Diamond and Lemolo Lakes are susceptible to insects and disease. (LRMP p IV-153, 154).
- Mazama Unroaded Recreation Area, (could not find specific standards & guidelines in the LRMP but it's also unsuitable for timber production);
- Riparian Prescription C2-1 (which applies to the stands around Diamond Lake and along perennial streams) allows logging only to meet riparian objectives and requires a finding that trees are not needed for wildlife, fish, water quality, or soil productivity. (LRP p IV-170). This analysis is lacking from the FEIS.
- Visual Sensitivity Level 1 areas. The LRMP allows exceptions to visual standards "where catastrophic loss if imminent or has occurred" (LRMP p IV-23). The FEIS does not make these showings of catastrophe and immanency on a stand-by-stand basis. According to the LMRP "Catastrophic losses due to insects and disease are when there is a projected growth loss of over 20 percent on 2 percent or more (>12,200 acres) of the combined available, suitable CH-CW, CD-CP, and CR-CF ecoclasses or 20 percent or more (>18,000 acres) of the CM-CE ecoclass." (LRMP p IV-105). Analysis to support this determination is not found in the FEIS.
- The LRMP p IV-23 also requires a "viewshed (corridor) plan" for sensitivity level 1 and 2 routes. The LRMP prohibits "denudation of the site" via slash treatment within 500 feet of sensitive routes.
- Unsuited lands not capable of producing industrial wood crops. Specific exceptions that allow logging on unsuited lands are listed in the LRMP and application of those must be documented in the environmental analysis (LRMP p IV-44). None of those exceptions appear to apply to this project. If the FS wishes to change the inventory of suitable lands, certain process must be followed (LRMP p IV-44) which is not apparent in the FEIS.
- FEIS p A-108, -109 says "none of the action alternatives reduces snags or down wood below a tolerance level that would preclude meeting [riparian] standards and guidelines" This fails to compare the effects of logging to the actual standards for riparian reserves, i.e., maintain, improve, and not retard ACS objectives.
- "Established big game travel lanes will not have their character altered through pre-commercial thinning." (LRMP p IV-37).
- The FEIS does not explain how negative effects on sensitive species have been "avoided (preferable) or minimized" (LRMP p IV-37.)
- The FEIS does not explain how pileated woodpecker and pine marten habitat area are connected to other areas (LRMP p IV-37.)
- "The entry of large stable wood into fish-producing (Class I and II) streams will be maintained or increased by maintaining standing trees (green, dying, or dead) which are likely to reach the water when they fall Some standing trees will be left on other streams (Class 111 and IV) where necessary to maintain a source of large woody material." (LRMP p

IV-60. This would seem to require retention of all large trees within one site potential tree height distance from streams.

- "Site preparation, release, and precommercial thinning will not be applied in riparian units along perennial streams, except to meet riparian objectives. Usually no precommercial thinning will be done within an average of 100 feet of fish-producing streams or within 50 feet of other perennial streams." LRMP p IV-61.
- The FEIS failed to describe how it would meet the Forest Plan (LRMP p IV-16) requirement to minimize OHV disturbance to wildlife when logging will open up access to large areas of the forest by snow machines and other OHVs.

All site-specific activities must comply with the governing forest plan. National Forest Management Act, 16 U.S.C. § 1604(i) (governing FS management of national forest lands). The Umpqua Forest Plan requires that environmental analysis provide "documentation adequate to display consistency…" (1990 Umpqua LRMP p V-4).

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). In this G-O Road case, the NEPA document described water quality changes resulting from a road project in terms of 7-day average changes, whereas the applicable WQ standard was defined by daily peak changes. The court found this to be a NEPA violation.

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
http://www.fs.fed.us/emc/nfma/includes/overview.pdf

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://web.archive.org/web/20041105214752/http://www.onrc.org/press/ONRCv.USFS.pdf And also Judge Hogan's ruling in Klamath Siskiyou Wildlands Center v. Boody (D. Or. #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).

The 9th Circuit has explicitly found that a EIS violates NEPA when it has an inaccurate or misleading description of forest plan requirements.

> The Forest Service's use of a hiding cover denominator in the EIS other than that allowed by the HNF Plan arbitrarily and capriciously skewed the EIS's elk herd hiding cover percentage. Consequently, the Elkhorn project EIS did not provide a "full and fair" discussion of the potential effects of the project on elk hiding cover and did not "inform[ ] decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts" on the Sheep Creek

> elk herd. *Klamath-Siskiyou Wildlands Ctr.*, 387 F.3d at 993 (quoting 40 C.F.R. § 1502.1); *see also Animal Def. Council v. Hodel*, 840 F.2d 1432, 1439 (9th Cir. 1988) ("Where the information in the initial EIS was so incomplete or misleading that the decisionmaker and the public could not make an informed comparison of the alternatives, revision of an EIS may be necessary to provide a reasonable, good faith, and objective presentation of the subjects required by NEPA.") (internal quotation marks omitted), *amended by* 867 F.2d 1244 (9th Cir. 1989).
>
> …
>
> The Elkhorn project EIS is inadequate under NEPA because, by using a hiding cover calculation denominator that is inconsistent with that required by the HNF plan, the agency did not take a "hard look" at the project's true effect and failed to inform the public of the project's environmental impact.

Native Ecosystems Council v. USFS. (9th Circuit August 11, 2005)
http://www.ca9.uscourts.gov/ca9/newopinions.nsf/4F9C4F14AB81393E8825705A00003F26/$file/0435375.pdf

A recent case in Montana found legal error where the record cannot support a finding that legal standards were met. In this case the FS had a LRMP requirement to meet big game cover requirements based on *concealment*, but then the NEPA analysis analyzed big game cover using *canopy cover* instead of *concealment*.

> The discussion of the method used does not mention the Forest Service definition of hiding cover, which requires timber to "conceal 90% or more of a standing elk at 200 feet." AR F176 at 26. However, the method does seem to correlate with the definition used by the Montana FWP, which defines hiding cover as "[a] stand of coniferous trees having a crown closure of greater than 40%." AR F176 at 26.
>
> ...
>
> As in *Native Ecosystems Council*, the Court is not "able reasonably to ascertain from the record that the Forest Service is in compliance with the HNF Plan standard." 418 F.3d at 963. First, it seems the Forest Service has modeled hiding cover based on the Montana FWP method using canopy cover. There is no discussion either in the document describing the methodology or in the EA whether measuring canopy cover percentages, as required by the FWP definition of hiding cover, is synonymous with the Forest Service definition of hiding cover. Consequently, it is impossible for the Court to determine whether the project will, in fact, comply with the Forest Service's elk hiding cover standard.

HELENA HUNTER & ANGLERS v. TOM TIDWELL. Montana District Court. CV 08-162-M-DWM. July 29, 2009.

The 9th Circuit recently highlighted the connection between substantive requirements and NEPA.

> [T]he Forest Service's use of the nonexistent sage grouse as an MIS to assess the project's impact on all sagebrush species' diversity was flawed. As a result, its overall study of the sage grouse habitat throughout the Environmental Assessment was similarly deficient. Just as the methodology applied by the Forest Service to measure habitat conditions did not meet the NFMA requirements, its flawed methodology in the complete absence of a sage grouse population does not

> constitute the requisite "hard look" mandated by NEPA. See Native Ecosystems Council v. USFS, 418 F.3d 953, 964-65 (9th Cir. 2005) (recognizing that the Forest Service's reliance on incorrect assumptions and/or data violated NFMA and did not meet the agency's obligation to take a "hard look" under NEPA). ... We note that a revised environmental assessment considering the issues addressed above might come to a different conclusion than the original environmental assessment…

NATIVE ECOSYSTEMS COUNCIL v. TOM TIDWELL (9th Circ March 9, 2010) http://www.ca9.uscourts.gov/datastore/opinions/2010/03/09/06-35890.pdf

> An agency is not entitled to deference simply because it is an agency. It is true that agencies are more specialized than courts are. But for courts to defer to them, agencies must do more than announce the fact of their comparative advantage; they must actually use it. And that means, among many other things, that the agency must apply—rather than disregard—the relevant statutory and regulatory criteria.

Meister v. USDA, 6th Circuit, 2010. http://www.ca6.uscourts.gov/opinions.pdf/10a0318p-06.pdf

Pursuant to HFRA objection rules, we incorporate by reference, Oregon Wild's comments on the DEIS and other supplemental comments and submissions sent to the FS concerning the D-Bug Project planning process.

All objections and concerns expressed herein about Alternative 5, apply equally or more so to Alternative 2.

Sincerely,

Doug Heiken

Enclosed:

- Heiken, D. 2010. Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat. Oregon Wild. V 1.0. May 2010. http://dl.dropbox.com/u/47741/Heiken%2C%20Log%20it%20to%20save%20it%20v.1.0.doc
- Heiken, D. 2010. Heiken D. 2010. Dead Wood Response to Thinning: Some examples from modeling work. http://www.slideshare.net/dougoh/effects-of-logging-on-dead-wood-habitat