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Comments on the BLT Project DEIS

Members and volunteers of the Oregon Chapter Sierra Club and the League Of Wilderness Defenders – Blue Mountains Biodiversity Project regularly enjoy Deschutes National Forest public lands within the Crescent District BLT Project and surrounding areas. The Oregon Chapter Sierra Club and the League Of Wilderness Defenders-Blue Mountains Biodiversity Project have participated throughout the public NEPA process for the BLT Project. Our organizations have reviewed the Draft EIS for the BLT Project; participated in meetings and discussions with Deschutes National Forest decision-makers and project planning staff; and have hiked, surveyed, camped, and photographed the BLT Project area; we have the following comments, concerns, and recommendations for this project.

The Sierra Club represents over 23,000 members throughout Oregon, including over 1,000 Juniper Group members throughout central and eastern Oregon. LOWD-Blue Mountains Biodiversity Project has many members and volunteers throughout the Northwest. Sierra Club members feel strongly about nature, wilderness, wildlife and the environment. Our members regularly enjoy hiking, camping, birding, wildlife watching, recreation and ecological study within the national forests of central and eastern Oregon, including the BLT Project area within the Crescent District of the Deschutes National Forest. The interests of our members, and their ability to continue to enjoy and utilize the BLT Project area would be irreparably harmed if the project is implemented as proposed in the DEIS. Members and volunteers of the LOWD-Blue Mountains Biodiversity Project regularly use the Deschutes National Forest, including the project area, for hiking, ecological study, watching wildlife, viewing forest native botanical diversity, and avian species study. The BLT Project would adversely degrade the ecological integrity and native forest species habitat viability of the project area, irreparably harming the interests of LOWD-BMBP members, volunteers and supporters.

Project Location: Deschutes National Forest, Crescent Ranger District, Upper Little Deschutes River 5th field watershed, 80,072 acres total of which approximately 53,542 acres are National Forest (with remaining acres privately owned), 50 miles south of Bend, Oregon, in Township 25-26 South, Range 6 ½ East; T25-26 South, Range 7 East; Township 24 South, Range 8 East, Willamette Meridian, within Klamath County. Approximately 26,487 acres are within the Northwest Forest Plan, with about 10,190 acres in Matrix, and the remaining acres under the Eastside Screens.

Purpose and Need:

1. There is a need to reduce forest vegetation density so as to lessen the risk that disturbance events such as insect, disease, and wildfire will lead to large-scale loss of forest.
2. There is a need to contribute to the local and regional economies by providing timber and other wood fiber products.

The BLT Project DEIS discloses “**Alternative B** is the agency’s “Preferred Action:”

- Alternative B “a variety of vegetation management activities” on 7,499 acres;
- Logging of approximately 12.1 million board feet;
- Activities are purported “to improve forest health and reduce risk on the landscape;”
- “Improvement” cutting primarily in lodgepole pine on 3,614 acres;
- Thinning on 3,550 acres;
- Small diameter thinning and fuels reduction on 312 acres;
- Prescribed fire on 2,312 acres;
- Utilization of forest products (posts and poles and firewood) on 3,093 acres;
- Opening 22 miles of closed roads;
- 160 miles of road maintenance;
- 9.7 miles of “temporary” roads.

Alternative C:

- 5,771 acres,
- 9.8 million board feet of timber.
- Alternative purported to “address the needs of wildlife species that favor dense canopies and decadent conditions” with stands of late and old-structured lodgepole pine dropped from Alternative B for goshawk nesting and three-toed/black-backed woodpecker nesting and roosting habitat.
- “Improvement” in lodgepole pine on 2,672 acres;
- Thinning on 2,765 acres;
- Small diameter thinning and fuels reduction on 334 acres;
- Prescribed fire on 1,764 acres;
- Utilization of forest products (posts and poles and firewood) on 2,304 acres;
- Opening of 17 miles of closed roads;
- 126 miles of road maintenance;
- 8.7 miles of temporary roads.

Alternative D:

- Vegetation management activities across 2,616 acres;
- 5.2 million board feet of timber;
- Alternative purported to focus “on the short term production and harvest of matsutake mushrooms... excluding... productive matsutake areas;”
- “Improvement” cutting in lodgepole pine on 1,323 acres;
- Thinning on 981 acres;
- Small diameter thinning and fuels reduction on 312 acres;
- Prescribed fire on 824 acres;
- forest products (post and poles and firewood) on 1,064 acres;
- Opening 11 miles of closed roads;

- Road maintenance on 76 miles of roads;
- 4.7 miles of temporary roads;

Overview of Issues

The EIS purpose and need premise, analysis, and action alternatives significantly diverge from scientifically supportable ecologically appropriate methods to effectively “lessen the risk that disturbance events such as insect, disease, and wildfire will lead to large-scale loss of forest.” Implementation of the BLT Project as proposed would significantly harm the area’s varied forest environments and dependent wildlife species, while failing to meet the project’s purported ecological purpose and need objectives. The extent of proposed logging activities far exceeds the limited small diameter tree thinning scientifically capable of achieving reduced risk of uncharacteristic fires, and/or insect and disease disturbance events. Logging of mature and old fire resistant trees, logging in mixed conifer forest habitat, road building, and heavy machinery use will adversely impact forest ecology; biodiversity; vegetation; soils; wildlife, avian, botanical & aquatic species of concern populations and habitat; riparian areas, headwaters and waterways; resulting in further degradation of the ecological integrity, wildlife habitat, soil hydrology, and aquatic systems in and around the project area.

In brief, the project must be revised to incorporate actions and protective provisions recommended by scientific research, including:

- A. Avoid commercial logging in mixed fire severity ecosystems, including moist mixed conifer and high elevation mixed conifer forests;
- B. Provide for dispersal habitat connectivity and forest structure with spotted owl nesting roosting and foraging areas within and adjacent to the BLT project area;
- C. Maintain forest stand structure and ecological integrity specific to natural plant association groups (and corresponding aspect, elevation, and natural fire patterns);
- D. Provide for the habitat needs and both short and long term recovery of wildlife, aquatic, and botanical species of concern in the region;
- E. Retain all trees with old and mature characteristics in ponderosa pine and mixed conifer forest areas;
- F. Utilize strategically placed land area treatments appropriate for lodgepole pine and ponderosa pine forests, allowing interior lodgepole pine forest to undergo natural cycles as feasible;
- G. Protect soils by requiring low impact light machinery in all interior forest areas where machinery is employed;
- H. Protect riparian areas by prohibiting machinery use and commercial logging in these locations, and by preventing sedimentation and erosion from project actions, including surface and airborne sedimentation;
- I. Seasonal restrictions on project implementation protecting avian species during nesting and fledging periods;
- J. Other provisions as ecologically appropriate (noted elsewhere herein).

Basic Conservation Concerns

The project involves scientifically insupportable logging actions in mixed and high fire severity forest ecosystems. Commercial logging to “lessen the risk that disturbance events such as insect, disease, and wildfire will lead to large-scale loss of forest” is at best scientifically controversial even within dry lower elevation ponderosa pine frequent low severity fire ecosystems. Such logging has largely been proven by scientific research to be incapable of achieving this purported purpose and need goal in mixed fire severity, mixed conifer forest ecosystems. The proposed logging actions fail NEPA’s requirement that actions be based in accurate site-specific conditions and objectives, high quality science and expert

advice, and are reasonable. While our organizations share ecological concerns, including reasonable restoration and fire reintroduction objectives, the proposed logging is largely not in accord with credible science, and would irreparably harm the area's forests, wildlife, and waterways, and increase the risk of severe uncharacteristic fires both during and following project implementation. Given the extensive past, current, and future cumulative management impacts throughout the greater area's contiguous forest ecosystems and waterways, the proposed actions are excessive and largely unwarranted. The alternative actions are clearly far more than necessary or scientifically justifiable to effectively reduce the risk of fire, insects, and/or disease as initially described in the purpose and need for this project. We specifically question the lack of a substantiating scientific basis for this project.

The EIS fails to adequately disclose and address scientific research that conflicts with agency action assumptions, including the failure to disclose scientific controversy regarding the efficacy and appropriateness of the proposed actions. The EIS fails to present a varied range of alternatives based upon credible science research representative of concerns in mixed conifer, old growth, and lodgepole pine forest ecosystems. The EIS fails to present pertinent scientific research addressing the habitat needs and recovery of imperiled interior forest and aquatic species of concern.

Significant scientific evidence documenting adverse impacts and failures in the effectiveness of similar management projects exists, the bulk of which has been ignored by this EIS, in violation of the NEPA. Based upon scientific research on the impacts of similar actions in similar forest ecosystems, the proposed logging "treatments" will result in the further cumulative degradation and loss of essential wildlife habitat and forest ecological integrity and resilience. This project area contains valuable wildlife habitat and interfaces the ecologically important Oregon Cascades Recreational Area and the Mount Thielsen Wilderness Area. Additional uninventoried unroaded area forest habitats adjacent to these areas are included within and adjacent to project units.

Our organizations have a range of significant ecological and legal concerns with the BLT Project. Primary concerns over this large-scale commercial thinning project include:

- Ecologically harmful project actions that fail to be based upon or incorporate the best available credible peer reviewed science and expert advice;
- Project logging actions that fail to protect the area's ecologically essential remaining mature and old characteristic trees and ecological integrity;
- Logging and other management activities that are in ecologically functioning forests with late-successional and mature mixed conifer characteristics;
- Logging and related actions that would irreparably degrade currently viable connective forest habitat for ESA listed and regional species of concern in project units contiguous with forests set aside as LSRs under the NW Forest Plan, in inventoried roadless and uninventoried unroaded areas, and in designated wilderness and recreation areas;
- Scientifically insupportable logging to "lessen the risk that disturbance events such as insect, disease, and wildfire will lead to large-scale loss of forest" in ecologically inappropriate mixed-conifer plant association group forests;
- Harmful commercial logging adjacent to riparian areas and their seasonal tributaries within the Upper Little Deschutes River watershed.
- Potential "changed conditions" that are likely to occur within this fire ecology forest ecosystem that have not been adequately addressed within the EIS, yet which are likely to occur within the next ten year implementation period. Future fires, whether natural or human caused, are likely to significantly alter available habitat, connectivity, and exponentially increase cumulative impacts issues throughout the greater project area.

The following lays out, in specific terms, problems inherent in the BLT Project.

The EIS is premised upon erroneous and scientifically controversial management assumptions and actions, which are incapable of meeting the ecological goals and objectives of the project's purported purpose and need.

The DEIS identifies the “purpose” of the BLT Project as:

- 1) “There is a need to reduce forest vegetation density so as to lessen the risk that disturbance events such as insect, disease, and wildfire will lead to large-scale loss of forest.
- 2) There is a need to contribute to the local and regional economies by providing timber and other wood fiber products.”

The purpose as expressed above is illusory and the analysis in the EIS is unsound for at least two reasons. First, the historic forest conditions and forest health justification for this project is inherently flawed due to the belief that logging can correct past bad management practices, including fire suppression. While there is limited scientific support for the removal of small diameter trees and flash fuels in frequent fire-interval low elevation ponderosa pine forests, and controversial science regarding similar actions in mid and higher elevation ponderosa pine and dry pine forests, there exists significant scientific controversy and strong recommendations against logging-thinning in mid and high elevation mixed conifer forests to “lessen the risk that disturbance events such as insect, disease, and wildfire will lead to large-scale loss of forest.” Indeed, the EIS ignores and largely fails to objectively disclose the majority of credible peer-reviewed scientific research that clearly indicates the project's actions are incapable of achieving its stated purpose 1 above, and instead would increase the risk and extent of severe fires, and uncharacteristic insect and disease activity in the project area (see the scientific research, articles, and presentations within the Comment Exhibit III CD enclosed as part of these comments). The underlying premise that a forest is generally healthier if properly functioning parts of the forest are removed is similarly unsupported by fact.

The agency's interpretations of scientifically controversial research addressing regional forest ecology is based upon the selective and contextually inappropriate misuse of a combination of limited scientific studies, agency assumptions, and politically-contrived timber volume agendas. While there is emerging scientific consensus concerning pre-European settlement era forest stand compositions and varied historical fire patterns in the region, the Forest Service has largely misapplied scientific conjecture in this project's interpretation of “historic conditions” and in developing its planned actions within the planning area. The resulting project is a hodge-podge of only partially accurate historic stand assumptions mixed with erroneous and misapplied scientific interpretations. Consequently, overall the project's logging plans will result in far more ecological harm than benefit to the area's complex interface of lodgepole pine, ponderosa pine, and mixed conifer forest ecosystems and their dependent wildlife, native plant, and aquatic species, and watersystems. Agency contentions regarding “historic forest stand conditions” are ecologically simplistic, and largely incapable of factually representing the varied natural fluctuations of area plant associations and forest conditions that occurred prior to human manipulation of the environment.

Our organizations however, do not dispute that some portions of the planning area exhibit unnatural conditions, including increased stand densities of young trees, due largely to past and ongoing ecologically inappropriate management actions. However, stand overstocking occurs primarily among young understory trees that have little if any merchantable timber value. Significant portions of the project also contain areas with unnatural logging created openings, old logging skid trails, far too many resource damaging unmaintained logging created roads, and overall degraded forest ecosystem conditions due to a combination of past and ongoing management, including logging, road building, fire suppression,

invasive plant introduction and spread, past livestock grazing, and growing frequency of OHV and snowmobile use.

Past and recent logging projects have exacerbated current fire risk throughout the area by removing fire resistant old growth, mature, and maturing trees, leaving high levels of logging slash in piles and spread across the forest floors. Fire resistant trees removed by logging have been – and are being - replaced relatively quickly with more fire prone vegetation including grasses, invasive plants, shrubs, forest vegetation, and small seedling and young trees.

Still, despite the presence of widespread cumulative management harms, a considerable portion of the planning area contains healthy maturing and old growth trees and forest stands. Past high-grade logging removed many of the largest diameter trees, including fir and ponderosa pine trees, significantly altering the area forests. Consequently, many of the project's forest stands are still in the process of natural recovery from past over-logging. Old, mature, and maturing trees, including many of those planned for logging removal, play an essential role in the ongoing natural recovery process of the area's forests. As many of the area's old growth and large mature trees have been removed during past logging, the area's remaining trees greater than 14" to 16" in diameter provide essential forest stand structure for wildlife habitat viability and the long term ecological integrity and recovery of the area. Trees above 8" to 10" in diameter also provide important forest structure essential for connectivity, foraging, and hiding cover. Removing many of these inherently fire resistant old and maturing trees as planned would be in contravention to the recommendations of the majority of scientific research studies and to the purported purpose 1 (above) of this project. Such logging removal also cannot be justified under the stated "needs" for this project.

As noted by scientific research, trees begin to exhibit fire resistant characteristics as they mature, with increased height of branches, thickening bark, vigorous growth, deepening roots, and greater moisture capacity retention. Varying somewhat by tree species and localized conditions, inherent effective fire resistance of growing trees begins to be attained between 8" to 14" diameter. Indeed, former Forest Service Chief Dombeck has been quoted as stating there is no valid rationale for removing trees greater than 12" diameter to meet fuels and fire risk reduction goals. As noted herein, removing too much of an area's basically fire resistant maturing tree forest stand structure actually increases the risk of fire severity and extent of spread, due to greater solar drying, higher wind speeds, and greater prevalence of fire prone brush, vegetation and small diameter trees that soon replaces the more fire-resistant shade-providing/moisture retaining trees removed. Additionally, logging slash that remains in the forest increases the risk and extent of severe fires, as well as increasing the risk of insect impacts, far above the pre-project implementation risks. Slash piles and scattered fuels from past and recent logging can be found throughout the project area already. Yet this project, which purports to be concerned with reducing the risk of severe fires and uncharacteristic insect impacts, fails to disclose or address these very significant issues and conditions. Removal and/or reduction of existent logging generated fuels and insect habitat should have been a major focus of agency actions, especially given the purported purpose and need for the project.

As planned, the project would further harm the ecological integrity of the area by its planned removal of far too many of the area's old and mature trees, including the scientifically insupportable logging of old growth trees that have survived decades to centuries of recurrent fires. Such scientifically and ecologically unwarranted logging will seriously degrade existent wildlife habitat, jeopardizing the viability of forest-dependent species of concern throughout the greater project area. The project's planned logging, absent clear provisions to retain all trees with mature and old characteristics, and absent diameter limits capable of maintaining viable wildlife habitat conditions, violates the purpose and need for this project. Project logging actions violate the qualified scientific objectives that comprise the foundation of the Northwest Forest Plan and the Eastside "Screens." Proposed logging of mature and old trees and degradation of forest habitat and connectivity would likely extirpate or harm the progeny of affected ESA threatened-

listed spotted owls, and LOS-dependent native species of concern including goshawks, fishers, pine marten, lynx, Lewis's and other woodpeckers, and a range of forest dependent neotropical migrant and native birds, in violation of the NFMA.

If implemented the BLT project would increase the risk of severe fire by: excessive opening of the forest structure and canopy and resultant increased solar exposure and drying; and by the increased presence in subsequent post-project years of fire-susceptible brush, grasses, invasive plants, small diameter trees and other small diameter flash-fuel prone vegetation where fire resistant maturing and older trees had previously stood.

The agency's inferred premise that it can somehow improve upon nature's millenas long forest ecological and natural recovery processes by thousands of acres of widespread logging – including cumulative impacts from other logging projects in the greater area - is scientifically controversial at best and largely insupportable when weighed in light of the full extent of credible peer reviewed scientific research, especially within the area's mixed conifer forests, and to the extent of commercial logging removal of essential maturing/mature forest structure in both ponderosa pine and mixed conifer stands.

We herein request that scientific recommendations in our Exhibit III, and raised herein, be addressed and incorporated into the project, and that the agency disclose and address the ongoing scientific controversy concerning its proposed management actions. The FEIS or SEIS must develop a legally and scientifically responsible reasonable range of alternatives, rather than this current EIS which has differing versions of the same logging premised alternative that largely vary only in the extent of acres logged.

It is the agency's legal responsibility to found its NEPA projects upon the best available science and expert advice, to develop a full range of varied alternatives based upon pertinent science, and to disclose the full extent of applicable science and the existence of scientific controversy and scientific recommendations that differ with proposed agency actions. The DEIS however, in clear violation of the requirements of the NEPA, ignores substantive issues of scientific controversy, failing to disclose or address scientific research that contradicts or recommends against the project's actions. Agency dismissal of scientifically based reasonable alternatives, and the mere listing of scientific research reports, fails to meet the requirements of the NEPA to meaningfully and reasonably incorporate, disclose, and address applicable science, including the development of scientifically varied proposed actions and objective alternative analysis.

We herein request the agency substantiate the scientific basis of its proposed alternatives. The EIS notes selective scientific research to support its thinning contentions, but fails to correlate the extent of its thinning with these studies, in particular as related to stand structural integrity, ongoing natural recovery processes, and cumulative impacts from past and ongoing management. The agency fails to disclose scientific research pertinent to varied plant association groups and their dependent wildlife, and fails to correlate this research with specific alternative actions. For example, in addition to concerns about logging in mixed conifer mixed fire severity forest plant association group areas, what is the range of scientific recommendations and research pertinent to lodgepole pine forest systems and their dependent wildlife?

As another example: one USFS study that addressed logging to reduce the impacts of insects over a thirty year period concluded that such actions were infeasible as they would have to "destroy the forest to save it." Yet, the agency repeats past failed logging proposals to reduce the risk of insects and fire in lodgepole pine forest systems where growing stand density, insect mortality, corresponding fuels buildup, and high severity stand replacement fires are the natural ecological patterns. Mixed conifer and ponderosa pine forests in the area have evolved with and adapted over time to lodgepole pine patterns, with a likely fluctuating natural variability of stand compositions and mosaic landscape scale patterns – yet the EIS fails to disclose or address research pertinent to these patterns and issues.

Overall, the agency fails to develop a range of reasonable alternatives based upon credible scientific research that is not in accord with the myopic logging-permitting research cited, thus failing to provide

the decision-maker and the public with a full range of reasonable scientifically supported alternatives, or even the awareness that the planned actions are scientifically controversial at best.

The agency may not arbitrarily selectively pick only among the limited scientific studies that appear to support its logging plans. It may not just merely list scientific studies in its index or refer to these in the midst of chapters without meaningfully incorporating such research or addressing why it has been ignored. Analysis must disclose which studies were incorporated in the planned actions, and must also disclose which studies recommend against such actions, providing the public and decision-maker with NEPA's requisite scientifically and meaningfully informed analysis on which to weigh the impacts, benefits and harms, and efficacy or lack thereof, of proposed agency actions. Alternatives presented where there exists credible scientific controversy must reasonably include a range of actions substantiated by the varied research, so the public and decision-maker can choose which actions may be most effective or desirable in the long-term in a given project area. The BLT Project however, only presents four "alternatives" – that of no action (which the agency generally never selects), and three logging actions that differ only marginally in the number of acres logged. All three action "alternatives" are based upon the same controversial logging premises, with no action alternatives developed that are based upon other, more credible, peer reviewed ecological science.

In its arbitrary dismissal of other potential alternatives, the agency fails to adequately address the existence of scientific controversy. Instead the agency misuses its limited selective studies, previous agency analysis, and the apparent proposed-alternative biased prerogatives of its planning team staff to arbitrarily and capriciously dismiss a wealth of substantive pertinent peer reviewed scientific research, management directives, the Northwest Forest Plan and Eastside Screens science recommendations and goals, and accurate site-specific natural range of variability of conditions. These serious analysis development deficiencies violate the requirements of the NEPA, and have resulted in this ecologically harmful, legally non-compliant, logging focused timber volume EIS.

Further, the agency fails to effectively and adequately modify its logging plans to incorporate the recommendations of scientific research on the habitat and viability needs of the many affected native forest-dependent species in the greater project area. Here again, to a large extent, the EIS fails to adequately disclose pertinent scientific research on affected native species. Indeed, the proposed project not only fails to meet these NEPA requirements and NFMA necessities, it proposes to sacrifice regional forest wildlife and riparian habitat objectives, viability, and recovery goals for the short-term timber economics represented by the project's purpose 2 (a legally non-compliant arbitrary and capriciously derived purpose). The EIS fails to adequately disclose and address scientific research and Northwest Forest Plan science foundations related to LOS and mature forest-dependent species, waiving away these outright in favor of the agency's logging plans without adequately informing the public or decision-maker of scientific recommendations against such logging, overall wildlife viability recovery objectives, cumulative impacts issues, and the accurate extent of the likely harmful consequences of its actions to species of concern that are or may be within the project area.

As a significant number of relatively recent logging projects and cumulative past management has already degraded the landscape-scale of project area forests, the BLT project would further remove essential forest structure and cover for species of concern. Cumulatively these projects effectively degrade many thousands of acres of now functioning habitat for species of concern into forest stands that are deficient in necessary structure to provide for imperiled native species needs. The EIS fails to accurately and adequately address these significant scientifically controversial issues, fails to comply with the requirements of the NEPA, and if implemented would violate the NFMA.

As field verification by Appellants indicates, fir and pine species of large diameter once dominated some portions of the planning area. Yet contrary to the readily abundant site-specific evidence found throughout historic non-lodgepole pine forests of the planning area (easily verified by numerous old large diameter stumps, and downed logs, of fir and pine trees), the Forest Service decision would convert areas

of historic multi-storied mature and old growth mixed conifer forests to unnaturally open pine forest stands.

If the agency had contained their actions to areas of greater scientific consensus, in ponderosa pine stands with frequent low severity fire patterns and where necessary in mixed lodgepole –ponderosa pine stands, limiting the planned thinning to retain all mature and old characteristic trees with inherent fire resistance, agency plans would have greater scientific merit. But the level of logging planned defies scientifically credible ecological recommendations, and would result in severe degradation to the area's mixed conifer and ponderosa pine forest ecosystems.

The depletion of the HRV of LOS forests is represented by the many old clearcuts and widespread past high grading of pine and mixed conifer forests, which removed old and mature sized trees of all species throughout the project area. This has been documented by the surveys of Appellants in the project area (see Exhibits I and II). This is also readily verified by reviewing aerial maps of the areas forests, which clearly depict the numerous old logging cuts and fragmented forests across the project watersheds.

Given all the above, it defies common sense, and NEPA's reasonableness and accuracy requirements, for the EIS to make its many scientifically controversial and insupportable claims that extensively logging the project area as planned could do anything other than further degrade and harm the project area forests and watersheds.

National Environmental Policy Act Issues

1. The EIS does not analyze a full range of alternatives

The EIS does not include a restoration alternative, or a range of other scientifically-based alternatives, even though it is "reasonable" to include a restoration alternative, and even though NEPA requires a full range of reasonable scientifically sound alternatives.

Analyzing alternatives is "the heart of the environmental impact statement." 40 C.F.R. 1502.14. An agency is required under NEPA to "rigorously explore and objectively evaluate *all reasonable* alternatives." 40 C.F.R. 1502.14(a) (emphasis added). An agency may not decline to evaluate an alternative simply on the grounds that it is not a "complete solution" to the agency's goals. Citizens Against Toxic Sprays, Inc. v. Bergland, 428 F. Supp. 908, 933 (1977). Furthermore, an agency should use the NEPA process to "identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment." 50 C.F.R. 1500.2(e).

The range of alternatives to the BLT Project is inadequate, because the EIS never analyzes a restoration-only alternative. A restoration-only alternative is certainly a reasonable alternative to consider for this purported fuels and fire risk reduction project, especially considering that the stated ecological "needs" of the project as noted above. "Mechanical fuels treatment, by itself, is not enough to reduce the risk of severe fire; treatments must be accompanied by efforts to remove the underlying causes of fire risk, like logging and fire-suppression." (Rhodes, 2007).

A restoration alternative would focus on maintaining the "ecological integrity" of a forest ecosystem, upholding the overall goals of the Northwest Forest Plan, Eastside Screens, and Deschutes LRMP. Ecological integrity means ecological wholeness and would consider forest health, fire risk and hazard, insect and disease potential, conserving wildlife or fish habitat, and hydrologic condition. (Brown et al, 2004) "The essence of maintaining ecosystem integrity is to retain the health and resilience of systems so they can accommodate short-term stresses and adapt to long-term change." Id at 19. Neither

of the action alternatives focus on restoration of the ecosystem, even though restoration is the best approach for maintaining the wholeness of the forest and its habitat and reducing fire risk in the long-run.

The three action alternatives presented focus largely on commercial logging. However, commercial logging is not the only way to reduce the risk of natural disturbances, nor is it the best way. Commercial logging has, in fact, not been shown in any scientific literature to reduce the incidence of large-scale fire. (Carey and Schumann, 2003) Commercial logging in important habitat with no diameter limits does not make sense in light of the objective to protect habitat. Cutting large-diameter trees not only degrades wildlife habitat, but it exacerbates wildfire severity. (Brown et al, 2004; Carey and Schumann, 2003; Noss, et al 2006; Rhodes, 2007; Morrison and Smith, 2005) See also additional studies included in our exhibit III.

Managed forests should not only support ecologically appropriate fire regimes and forest resiliency, they should also support viable populations of species. (Noss, et al 2006). The Forest Service must at least *consider* an alternative that will truly protect important habitat without destroying it. Appellants have repeatedly asked for consideration of a restoration-only alternative, as well as a full range of scientifically varied action alternatives. Our requests are based on reasonable evidence that threatened Spotted Owl and native species of concern populations cannot sustain more habitat degradation in the short and/or long-term. As the project contains logging units within contiguous viable habitat for spotted owls and other species of concern, immediately adjacent to LSR, roadless, and wilderness, logging within project units would degrade potential habitat for ESA listed and other imperiled species of concern, disrupting forest connectivity and available habitat. The EIS fails to adequately disclose and address this significant issue, and instead proposes to compound existent cumulative impacts habitat degradation with even more logging harms.

The Forest Service uses dubious fire models to claim that commercial logging is the only way to serve the Forest Service's needs. These models do not give, nor can they give, an adequate explanation of how mechanical fuels treatment can reduce the risk of fire. (Morrison and Smith, 2005; Veblen 2003; Carey and Schumann, 2003, and new science studies by Veblen, Rhodes, and others included in exhibits) The NEPA regulations allow the agency to explain why a particular option is not feasible, or otherwise not reasonable, and hence eliminate it from further consideration. 40 C.F.R. 1502.14. However, the reasons given must be adequately supported. Muckleshoot Indian Tribe v. U.S. Forest Service, 177 F.3d 800, 813-15 (9th Cir. 1999). The EIS claims that small diameter thinning alternatives do not sufficiently reduce the risk of fire, but fails to include sufficient information to support its scientifically insupportable and/or controversial conclusions. The EIS similarly dismisses utilizing scientifically recommended strategically placed treatments – SPOTS or SPLATS, failing to meaningfully and responsibly develop and address these feasible action alternatives. The EIS fails entirely to meaningfully address developing a restoration alternative that either does not contain or significantly limits commercial logging, despite scientific support for such an action alternative. Without fully analyzing either the small diameter thinning or restoration alternatives, the Forest Service and the public will never know how the forest will be affected without widespread commercial logging. The Forest Service cannot make a fully informed decision without full analysis of small diameter, SPOTS, and restoration alternatives.

The Forest Service must analyze an alternative that will eliminate scientifically controversial commercial logging and all fuels treatment that is not based in sound ecological principles, as this is reasonably within the stated purpose and need of the project. Each current alternative significantly degrades viable mature and old forest habitat in mixed conifer mature and old forests, adjacent to LSR, roadless, watersystems, and wilderness. The Forest Service does not present any alternative that actually protects viable old and mature forest habitat, that protects essential forest connectivity, and that addresses cumulative impacts harms throughout the project area. The EIS claims that forest habitat is *at risk* of destruction by uncharacteristic fire but does not disclose that old and mature forest habitat and connectivity are *certain* to be irreparably injured under this project. The effects to the interior mature and

old forest dependent wildlife, including spotted owls, under this project are immediate and certain, while the risks the project is attempting to avoid are distant and hypothetical. Similarly, scientific research confirms that many old forest and interior forest dependent species of concern, including spotted owls, will continue to utilize burned forest habitat, but these same species are extirpated or otherwise displaced by logging. The Forest Service must analyze an alternative that would actually “avoid or minimize adverse effects of these actions,” as NEPA requires it to do. 50 C.F.R. 1500.2(e).

Undisturbed mature forests require little or no restoration. (Baker et al,) Passive restoration is the best way to return forests back to the condition first perceived by the European settlers. (McIver and Starr, 2001) At a minimum, the Forest Service must analyze an alternative that would exclude the most important mixed conifer and ponderosa pine mature and old forest habitat from ecologically harmful active forest management actions and protect the area’s connective forest habitat, especially surrounding and linking LOS, LSR, roadless/unroaded, and wilderness areas with adjacent mature and old forest habitat.

The EIS only analyzes alternatives that are virtually identical to each other

The Ninth Circuit has found that an EIS that analyzes a no-action and two virtually identical action alternatives violates NEPA. Muckleshoot Indian Tribe v. U.S. Forest Service 177 F.3d 800, 813-15 (9th Cir. 1999). The BLT EIS takes this very same approach with its alternatives. There are only 4 “alternatives” in the project EIS: the no action alternative; Alternative B, which commercially logs on 7,499 acres, removing 12.1 million board feet (hereafter mmbf) of forest trees; Alternative C, which commercially logs on 5,771 acres, removing 9.8 mmbf of forest trees, and Alternative D, which commercially logs on 2,616 acres, removing 5.2 mmbf of forest trees. The action alternatives are essentially similar in premise and methods, especially in regards to their focus on commercial logging/thinning, varying only in acreage extent and board foot volume. Credible scientific research however clearly confirms that the *only* possible alternatives do not necessarily involve wide-scale commercial logging in mature and old ponderosa pine and mixed conifer forest habitat, and indeed largely recommends against the EIS alternative actions. In an EIS, the Forest Service has a duty to fully consider alternatives to the wide-sweeping logging impacts that are posed by this project. The Forest Service must include a sufficient range of scientifically credible alternatives in order to provide a basis for sound forest management decisions.

Purpose and Need of the Project is Impermissibly Narrow

The BLT EIS states the project’s purpose and need as:

- 1) There is a need to reduce forest vegetation density so as to lessen the risk that disturbance events such as insect, disease, and wildfire will lead to large-scale loss of forest.
- 2) There is a need to contribute to the local and regional economies by providing timber and other wood fiber products.

An agency must not define the purpose and need of a project so narrowly that the proposed action is the only possible course of action. EPIC v. USFS, D.C. No. CV-04-01705-GEB (9th Cir. 2006)(attached). In the recent EPIC case, the Ninth Circuit found that the purpose and need of a timber sale project was so narrow that it was impermissible. The proposed action was the only possible course of action to fulfill the purpose and need, so there was no real analysis of alternatives. The purpose and need of the BLT Project timber sale is also far too narrow. The Forest Service has only the two limited scientifically controversial or more aptly incongruous objectives above. The Forest Service narrows their objectives and analysis in the EIS, failing to address cumulative fuels build up from past and recent projects, failing to accurately disclose or address the harmful logging slash and overall impacts of this project, and failing to effectively address a range of restoration actions that encourage and restore forest resiliency and LOS habitat, and instead focusing almost exclusively on scientifically controversial

logging actions to accomplish its stated objectives of reducing fire risk. Given the EIS's stated purpose 2 above, the only possible action that could fulfill the need to "contribute to the local and regional economies by providing timber and other wood fiber products" is commercial logging. Because of the narrow purpose and need, the Forest Service only analyzes alternatives that include commercial logging.

In *Methow Valley Citizens Council v. Regional Forester*, 833 F.2d 810, 815, rev'd in part, 490 U.S. 332 (1989) (internal citations omitted) the Court determined that the EIS was inadequate because it failed to examine all reasonable alternatives. The Court held that "the range of alternatives considered must be sufficient to permit a reasoned choice." Here, beyond the statutorily required "no action alternative," only three largely similar logging alternatives were developed and considered. These logging alternatives differ only by extent and focus of acres logged. They do not differ in substance concerning the action methods, scientifically controversial premise, logging impacts, changes to forest stand structure and wildlife habitat, or economic timber volume objectives. The Forest Service failed to consider other reasonable activities in violation of NEPA.

Violations of the Core Tenets of the NEPA

The EIS violates the very core tenets of the NEPA:

- 1) Directing that actions not harm the environment: "NEPA, CEQ Regulation part 1500 - Purpose Policy and Mandate" "Sec. 1500.1 Purpose. (c) Ultimately, of course, it is not better documents, but better decision that count. NEPA's purpose is not to generate paperwork - even excellent paperwork - but to foster excellent action. The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions **that protect, restore, and enhance the environment**. These regulations provide the direction to achieve this purpose."
- 2) Directing the agency to develop and analyze a reasonable range of alternatives that avoid or minimize environmental harms: "Sec. 1502
 - a. (e) Use the NEPA process **to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment**.
 - b. (f) Use all practicable means, consistent with the requirements of the Act and other essential considerations of national policy, **to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions upon the quality of the human environment.**"
- 3) More directions on the range of alternatives: "Sec. 1502.14 Alternatives including the proposed action. This section is the heart of the environmental impact statement. Based on the information and analysis presented in the sections on the Affected Environment (Sec. 1502.15) and the Environmental Consequences (Sec. 1502.16), it should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public. In this section agencies shall: (a) **Rigorously explore and objectively evaluate all reasonable alternatives**, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated."
- 4) And finally, the very core of NEPA - Congressional intent and directives to "prevent or eliminate damage to the environment" From "The National Environmental Policy Act of 1969; Purpose Sec. 2 [42 USC § 4321]. The purposes of this Act are:
 - a. (a) To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to

- enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.”
- b. (b) In order to carry out the policy set forth in this Act, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may –
- i. 1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
 - ii. 2. assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
 - iii. 3. attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
 - iv. 4. preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice;
 - v. 5. achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
 - vi. 6. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.
- c. (c) The Congress recognizes that each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.”

Clearly, the EIS itself serves as perhaps the best evidence that the Forest Service fails to begin to meet these most basic NEPA requirements. The project’s contrived purpose and need, similar logging action alternatives, analysis failures, environmental harms, and failure to adequately disclose and address significant scientific controversy and contravention to the selected and presented alternatives violate the most elemental requirements of the NEPA.

While the agency seems to believe – as stated by one regional official - that “NEPA doesn’t require decision-makers to choose the best alternative, and instead only requires that impacts be addressed,” –this perspective is clearly incorrect regarding NEPA’s requirements to utilize sound purpose and need, expert advice and high quality science, develop a full range of reasonable alternatives that “take actions that protect, restore, and enhance the environment” (CEQ 1500 §1501.1(c)) and a host of other NEPA core directives that follow above regarding the development of reasonable alternatives that “identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions” to the final directive above about the responsibility “to contribute to the preservation and enhancement of the environment.” Clearly the EIS fails the requirements of the NEPA, necessitating that this DEIS be withdrawn and project be revised in a new legally compliant EIS analysis process that develops a full range of environmentally beneficial, scientifically based, LRMP and legally compliant action alternatives.

The Need for An SEIS

NEPA requires the Forest Service to prepare an EIS for all major federal actions that “may significantly affect the quality of the human environment.” 42 U.S.C. § 4332(2)(C). If an agency decides not to prepare an EIS, it must supply a “convincing statement of reasons” to explain why a project’s impacts are insignificant. *Blue Mtns. Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1212 (9th Cir. 1998) (also holding that a “plaintiff need not show that significant effects will in fact occur” that it is

enough for the plaintiff to raise “substantial questions whether a project may have a significant effect” on the environment). Because this decision includes widespread scientifically controversial commercial logging actions in an area with significant public recreational, wilderness, waterway, and wildlife values, which has extensive past and ongoing cumulative impacts issues, and the current EIS analysis and range of alternatives are legally deficient, scientifically insupportable, and ecologically, NEPA requires a new SEIS for this proposed project before a final EIS may be developed and a decision issued. The issues raised herein clearly indicate that a final EIS and decision at this time would be arbitrary and capricious and scientifically and legally insupportable for a project of this extent and level of irretrievable impacts.

Science Inadequate

The NEPA regulations require the Forest Service to “insure the professional integrity, including scientific integrity, of the discussions and analyses” in the NEPA documents that it prepares. 40 C.F.R. § 1502.24. Furthermore, the Forest Service must disclose the extent to which the impact of the proposed action is scientifically controversial. See *id.* §§ 1508.27(b)(4), 1508.27(b)(5).

Purpose and Need is Not Based on Best Available Science and is Scientifically Controversial

The project purports it will reduce the risk of severe fires, insects, and forest disease through mechanical treatments, including thousands of acres of commercial logging. However, the mechanical treatments would actually degrade and destroy habitat in both the short and long-term. The planning area includes diverse stands of forest that are green, healthy and thriving. The project area is home to a diverse array of species, many of which depend upon complex interior forest. The Forest Service’s proposal to “protect” wildlife habitat in the future by destroying wildlife habitat in the present fails to make ecological sense, and is scientifically controversial at best and in large part insupportable.

The Forest Service never presents science showing that wildlife habitat and biodiversity is benefited in the future by destroying habitat in the present. To the Forest Service, the theoretical risks of fire, insects, and other disturbances are just as great as the actual impact of logging. Where is the science to support this hypothesis? The Forest Service’s plan to protect forest habitat with mature, late, and old-structured stands and mature and large trees is to cut them down. The actual planned action is, then, inherently antithetical to its stated purpose.

.The stated purpose and need of the project is to protect habitat, however, the project does the exact opposite. The activities planned for this sale may cause both a short-term *and* a long-term modification or degradation of suitable habitat. Area forest species of concern, including spotted owls, goshawks, fishers, marten, neotropical migrant birds, and others, require extensive connective forests with mature and late-successional characteristics, including large diameter trees. (Lint, 2005) It is these forests that are most fire resistant, as they have moist interiors, a complex canopy, and are impenetrable to wind. (Rhodes, 2007 and others – see below) Since there are no upper diameter limits for the commercial thinning units in NFP areas, mature and old trees over 20 inches in diameter at breast height (DBH) could be logged indiscriminately, while limits of 21” dbh in Eastside Screen areas would also permit essential mature and old trees and forest structure to be logged, degrading wildlife species of concern and listed-species habitat, including connectivity, *and* increasing the risk of fire. It is well documented that mechanical logging fuels treatments may not reduce the risk of fire, but such “treatments” most certainly destroy habitat.

The Forest Service fails to address cumulative impacts properly, and fails to provide any science showing that destroying viable mature and old mixed conifer and ponderosa pine forest habitat in the present benefits the area’s many diverse forest species of concern in the future. Without protection today, the future viability of the area’s listed species and species of concern is absolutely uncertain. In light of the new scientific information revealing the importance of forest connectivity and evidencing population declines of numerous old and mature forest dependent species, the Forest Service makes a very risky move to further stress these populations in the present with this project’s planned logging.

Additionally, three scientific research reports exist that clearly conclude spotted owls and other species of concern continue to use even severely burned mature and old forest habitat, while other spotted owl research concludes that these forest species, including threatened-listed owls, are deterred from utilizing LOS habitat that has been degraded by commercial logging, including commercial thinning-style logging. Research by Monica Bond et al, Jeffrey Jenness et al, and Andrews & Anthony (OSU-OCFWRU) all clearly indicate that spotted owls continue to utilize burned LOS habitat. Additional research also concludes that logging extirpates and harms populations of goshawks, fisher, marten, lynx, eagles, osprey, Lewis' and other woodpeckers, as well as populations of their prey species. The failure of the project EIS to disclose and include this pertinent information in its analysis deprives the public and the decision-maker of essential information critical to designing a reasonable project with a likelihood of accomplishing its purpose and need goals. The project is premised in large part on the perceived need to protect area forests and wildlife habitat from the effects of severe fire(s). As such, it is extremely important that project analysis address scientific research that indicates affected species of concern are not extirpated from LOS/LSR habitat from fire – and comparatively assess scientific research that indicates these species are extirpated from LOS/LSR habitat from commercial logging. The failure to include this analysis within the EIS, and the failure to include a restoration alternative based upon relevant scientific research violates the NEPA.

Plans for Reducing Fire, Insect, and Disease Risk do not use the Best Available Science and are Scientifically Controversial

There is ample scientific controversy about whether mechanical fuels treatment reduces fire risk. Mature, old-growth stands have dense, moist interiors and little wind, which inhibit the spread of wildfire. (Morrison and Smith, 2005; Rhodes, 2007) Fuels treatments that reduce stand density and open up the forest actually enhance fire spread, as fire moves more readily through an open environment. (Morrison and Smith, 2005; Rhodes, 2007) An opened forest allows fuels to dry out faster and winds to blow through the stand. (Morrison and Smith 2005; Rhodes, 2007) Thinning the understory is more effective at reducing fire risk than thinning the overstory. (Carey and Schumann, 2003) Complex and varied canopies may actually prevent the spread of wildfire better than dense, young, single-storied canopies. (Morrison and Smith, 2005) The Forest Service plan to disturb the canopy and interior forest conditions of late-successional forests is not based in the best available science. “Although the assertion is frequently made that reducing tree density can reduce wildfire hazard, the scientific literature provides tenuous support for this hypothesis.” (Carey and Schumann, 2003, page 14). The Forest Service is at least required to discuss this very lively scientific controversy about the role of mechanical fuels treatment in reducing the risk of fire in the project EIS.

There is insufficient and highly controversial scientific support to show that commercial thinning reduces fire risk. (Carey and Schumann, 2003) Despite the stated intention to protect habitat, the project EIS focuses more heavily on commercial logging than it does on “fuels treatments.” Commercial thinning is especially controversial when no diameter limit, or an ecologically too high diameter limit of 21” dbh, are in place to prevent the cutting of large trees. Science overwhelmingly concludes that cutting large, fire resistant trees does not reduce the risk of fire and actually can contribute to more intense fires. (Brown et al 2004; Carey and Schumann, 2003; Noss et al, 2006; Rhodes, 2007; Morrison and Smith, 2005; Baker et al, 2006) A percentage of the trees to be logged in this project will be up to and/or over 21” DBH, yet this total is not accurately disclosed in the EIS nor are the impacts adequately assessed and disclosed. The Forest Service apparently erroneously concludes that *commercial logging* of mature and old trees is the only way to reduce the risk of fire in the planning area. The Forest Service does not need to cut trees over 14” to 16” DBH, or for that matter to cut any trees that evidence fire resistant mature and old characteristics to reduce fire risk, and the Service’s decision to cut an undisclosed number of old and mature large fire-resistant trees does not utilize the best available science. Also, the EIS never

“disclose[s] the extent to which the impact of the proposed action is scientifically controversial,” regarding the Forest Services’ decision to reduce fire risk by commercially thinning intact, mature stands of mixed-conifer forest. 40 C.F.R. 1507.27(b)(4).

A significant portion of the commercial thinning and fuels reduction will occur in mixed-conifer forests, which happen to be adjacent to or nearby Spotted Owl LSR habitat. However, thinning is not needed in mixed-conifer forest to prevent fire. Mixed-conifer forests are wetter and have a mixed-severity fire regime. (Noss et al, 2006; Rhodes, 2007) The mixed-conifer stands have developed with both low-severity fires and high-severity fires, thus there is no support to show that the stands’ fire regimes have been altered. If the fire regime is not altered, then fuel “treatments” do not help to reduce the risk of severe fire or restore the stand to its natural fire behavior. (Rhodes, 2007) The EIS does not present any proof that mixed-conifer forests are at “uncharacteristically severe levels” with their fuel load. The Forest Service just claims that fuels are outside their desired condition, so a large fire is expected. However, the forest is not outside of its desired condition unless the current time period without fire is longer than any time period in the areas’ history. (Rhodes, 2007) The mixed-conifer forests in the project timber sale area do not require fuels management, especially when the “treatment” will destroy important old and mature connective forest habitat for listed spotted owls, goshawk, fisher, marten, and other species of concern. Fire is a natural and inevitable component in a functioning forest ecosystem, and the mixed-conifer forests in the project area are within their natural range of fire behavior. The Forest Service has not based its determination to alter the natural fire regime of the mixed-conifer forests in the best available science.

The EIS does not adequately address science that shows how slash piles from logging create a greater risk of fire. Slash from commercial logging units is generally left sitting on the ground for 1 or 2 years or more after a project is implemented. Slash from previous logging projects in the area are still largely untreated, exacerbating if not outright causing increased fire risk in the greater project area. The EIS fails to address these accumulations of untreated slash, revealing no timeline for the clean-up of cumulative slash across the area, despite this being a purported fire risk reduction project, and despite slash being a major factor increased fire risk throughout the greater project area. The EIS fails to adequately address how slash can increase the risk of fire. Mechanical fuels treatments generate slash, which are highly flammable and increase the risk of fire. (Rhodes, 2007). Post-wildfire studies have shown that there are severe effects to the landscape if a project’s slash is not cleaned up before the next fire occurs. (Carey and Schumann, 2003). Indeed the severity and extent of the Davis fire to the immediate north of the project was exacerbated by untreated slash from a fuels “reduction” thinning project. Slash is not often cleaned up before the next fire; even if the land manager has plans to clean up the slash, the clean-up often lags years behind the thinning or fuels treatment project occurs. (Rhodes, 2007). The Forest Service must disclose how it will deal with the slash that is generated by this project in addition to how it plans to address cumulative slash build-up across the greater project area, and analyze the increase in fire risk due to slash left in the project area and the backlog of untreated slash needing to be removed.

The Forest Service uses models are not based in best available science. It relies heavily on Fire Regime Condition Class (FRCC), which is a highly controversial method of determining the ecological status of a forest. (Morrison and Smith, 2005) The FRCC model is overly simplistic and is based on subjective estimates and guesses about the general fire regime over a large landscape. *Id.* “The use of the FRCC model as the primary basis for forest and landscape planning is an oversimplification of complex systems and does not make use of the best available science.” *Id.* at page 9. The FRCC model also assumes that a land manager can reduce the risk of fire by changing the condition of the forest to Class 1. “However, this idea does not have adequate support in practice and is currently the subject of much scientific controversy.” The EIS fails to adequately address the scientific controversy surrounding the use of Fire Regime Condition Class or the model methodology used in its fire risk modeling for this project.

Cumulative Impacts have not been adequately analyzed

The Forest Service is required to discuss and fully analyze the cumulative impacts of a project. 40 C.F.R. 1508.8. “‘Cumulative impact’ is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” 40 C.F.R. 1508.7. Recently, the Ninth Circuit has held, “[a] proper consideration of the cumulative impacts of a project requires some quantified or detailed information; . . . [g]eneral statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided.” Klamath-Siskiyou Wildlands Center v. Bureau of Land Management, 387 F.3d 989, 993 (9th Cir. 2004) *quoting* Neighbors of Cuddy Mountain v. United States Forest Service, 137 F.3d 1372, 1379 (9th Cir. 1998) (internal quotations omitted).

This project area has been tremendously impacted in the last few years. The project EIS does not analyze the cumulative impacts of this project area in the requisite meaningful assessment and disclosures. The cumulative effects analysis largely depends upon simply listing the numerous projects that are planned or ongoing in or around the project area, and citing some of the area conditions. There is very little discussion of the impact of these projects on the project area within the EIS. The EIS reveals insufficient “quantified or detailed information” on any of the projects that have occurred in the area; such “quantified or detailed information” is required by Klamath-Siskiyou Wildlands Center v. Bureau of Land Management legal ruling. Merely disclosing that an activity has, will, or is occurring is inadequate: the Forest Service must discuss the environmental consequences from the activities. Lands Council v. Powell, See 379 F.3d 738, 745 (9th Cir. 2004). As past projects have a direct impact upon both viable wildlife habitat and fire risks in the area, in particular Five Buttes, Seven Buttes, and Seven Buttes Return among others, which removed forest structure necessary for wildlife species of concern while increasing slash and consequent severe fire risks, it is imperative these issues be addressed adequately within the project’s analysis.

The Ninth Circuit has recently held that a project on LSRs on BLM lands, the Timbered Rock post-fire logging project, did not adequately analyze cumulative effects because it did not analyze the effects of fire suppression in the project area, creation of firelines to wildlife and natural resources, and salvage logging on private lands. Oregon Natural Resources Council Fund v. Timber Products, No. 05-35063 (9th Cir 2007) (cumulative impacts analysis must enumerate environmental effects of related projects and consider the interaction of multiple activities) (attached). The Five Buttes Project legal ruling also concluded that the agency failed to address cumulative impacts as well as scientific controversy. Here again, the agency is repeating some of the very same analysis failures of the Five Buttes project, necessitating that this DEIS be withdrawn and a new SEIS be conducted.

Cumulative effects analysis must also include actions that are “reasonably foreseeable.” Mechanical fuel treatments have only transient effects on fuel conditions. (Rhodes, 2007) Opening the forest canopy will increase the growth of the most flammable small fuels in the short-term, creating more fire risk. *Id.* This project would create a future need for more thinning if the Forest Service really intends to reduce fire risk in the area. There is inadequate provisions for future maintenance of forest “fuels,” which would be needed for this project to really have an impact on fuels reduction.

The EIS does not adequately discuss or propose mitigation measures

As part of the scope its analysis, an agency must include mitigation measures in the discussion of alternatives. 40 C.F.R. 1508.25 (b)(3). When a decision reached, the agency must adopt a monitoring and enforcement program for any mitigation intended to avoid or minimize environmental harm. 40

C.F.R. 1505.2. The National Environmental Policy Act requires that mitigation measures be analyzed in detail and that the effectiveness of mitigation measures be disclosed. Courts have ruled that a mere listing of mitigation measures is insufficient to qualify as a reasoned discussion by NEPA. Planning documents must analyze mitigation measures in detail and explain the effectiveness of such measures. Best management practices (BMPs) are not adequate mitigation. The Northwest Forest Plan explicitly prohibits using mitigation or restoration to substitute for habitat degradation (S&G page C-37).

There is no monitoring and enforcement program set up to minimize the environmental harm done by this project. Mitigation measures are briefly mentioned, but not as part of an enforceable program to lessen the effects of the project.

Soils require rehabilitation under the Deschutes LRMP. Among the only mitigation measures intended to off-set the damage to soil conditions is subsoiling. This is not an adequate mitigation measure because it does not actually rehabilitate the soil. Furthermore, there is insufficient analysis of the effectiveness of subsoiling. With insufficient analyses of mitigation measures, the public and decisionmaker do not have all the information they need to ensure a good decision. Similar thinning-logging projects in the area have extensive irreparable damage to forest soils, soil microbial communities, native vegetative diversity and abundance, nutrient availability, and soil hydrology. This project would have similar significant short and long-term harms to forest soils, which the EIS has failed to responsibly address. Scientific research related to forest soils and information on light on the land mechanical equipment have been omitted from this EIS in violation of the NEPA. As resilient forests depend upon healthy functioning soil communities, and as the goal of the project is purported to be restoring the ability of area forests to resist fires, insects, and disease, the omission of this pertinent information violates the NEPA.

The EA does not otherwise adequately analyze the environmental impacts of the BLT Project

NEPA requires federal agencies to involve the public, consider alternatives, and disclose the impacts of a proposed action and its alternatives before making a decision. 42 U.S.C. § 4332(2)(C). The purpose of an EIS is to “provide full and fair discussion of significant environmental impacts and ...inform decision makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment.” 40 C.F.R. 1502.1. Thorough discussion of the environmental impacts of an action is necessary to allow the public a chance to review the project and influence the agency’s decision. 40 C.F.R. 1502.16. An EIS must also disclose ample information to show that the agency adequately analyzed the impacts of an action before making a final decision.

Many important issues have not adequately been discussed in the EIS, making it a legally inadequate document for this project under NEPA. First, a critical information regarding cumulative impacts from past thinning and unaddressed slash build up was not adequately addressed. Second, FS Crescent District Ranger and staff involved in planning the similar Five Buttes project, stated that they had completed a 200 acre fuels reduction thinning project that later burned in the Davis Fire. Despite fuels reduction thinning across approximately 200 acres, this area burned at similar high fire intensity as did the surrounding un-thinned forests, and was ineffective in reducing fire risk or severity impacts. The agency’s failure to adequately address this pertinent information in the EIS to the public and decision-maker(s), violates NEPA. Omitting relevant information critical to assessing the effectiveness (or lack thereof) of proposed “fire, insects, and disease risk reduction thinning” action alternatives, while at the same time dismissing ecologically and scientifically based reasonable restoration alternatives, violates the objective, site-specific, reasonable, and scientific requirements of the NEPA. The omitted information is critical to evaluating the effectiveness of reducing the risk of high-severity fire through thinning. The Forest

Service is in violation of NEPA for failing to disclose highly pertinent information concerning the lack of effectiveness of similar area projects.

Also, the fire models used are a crucial part of the decision to heavily thin. But the fire models do not adequately represent the situation on the ground in the forest. They are theoretical and do not give enough information for the public to determine whether they are based on actual, on-the-ground data.

Mycorrhizae.

The EIS did not sufficiently recognize the importance of mycorrhizal fungi on forest growth and productivity. The EIS failed to adequately discuss how mycorrhizae will be impacted by the proposed timber project. The EIS failed to sufficiently assess how logging has affected mycorrhizae in areas nearby the analysis area. Mature and old growth forests within the project area are rare within the Deschutes, and must be protected from adverse logging impacts. Scientific evidence suggests that mycorrhizae and other soil organisms and processes are extremely important and are easily destroyed by ground-based logging, including thinning using BMPs as well as post-logging subsoiling, which devastates subsurface soil microbial communities upon which healthy functioning forests depend. Affected wildlife species, including prey species for spotted owls and other raptors and predators (such as lynx, marten, wolverine, and fisher among others) also rely on the fungi, but there is no discussion of how the project will affect this important food source for these species. Without an adequate discussion of the impacts to soil mycorrhizae, including the harmful impacts of subsoiling and ineffectiveness of BMPs, the public and the decisionmaker are precluded from making an informed decision regarding the proposed project, and the USFS cannot assert that there will be no permanent impairment of the soil. 30 C.F.R. §§ 219.27(a)(1), 219.14(a)(2) (prohibiting activities unless technology is available to prevent impairment of soil or water resources). See Exhibit III presentation on Forests, Fires, Resilience, and Restoration for additional information on soil subsurface microbial, fungal, and animal communities – their ecological importance and functioning, and impacts from similar fire risk reduction treatment projects.

Lynx

Among our many concerns is that of this proposed project's effect on lynx. Based on data from the U.S. Fish and Wildlife Service's (USFWS) Portland office, there have been past sightings of lynx in the Oregon Cascades region, including the Deschutes NF. Historic evidence of lynx in these areas include positive occurrence records, lynx bounty claims, and Forest Service Wildlife Statistical Reports. Positive reports of lynx occur as far south as Modoc County, California. As this is the case, the project area may be important to lynx recovery. It is plausible that lynx are rare in the project area (and in Oregon on the whole) due to bounties, aerial poisonings, and other efforts to eliminate them (and other predators) that were performed systematically for decades, and not due to a lack of habitat, as is the current situation with wolves as well.

The USFS should have addressed how further fragmentation of the planning area will affect lynx. It is clear that lynx habitat is very fragmented, and that large blocks of intact forest are required to maintain viable populations of the species. Without these large blocks, lynx may need larger ranges to survive. The project is located in higher Cascades Mountain slopes, buttes, and plateaus, in mixed conifer and lodgepole forest habitat known to be preferred by lynx, and connective forest habitat with roadless and wilderness areas. Project area forests include spruce, true fir, doug fir, lodgepole pine, and ponderosa pine, among other species. The proposed logging in the planning area may adversely affect whatever lynx recovery is occurring, as lynx may use portions of this area for both nocturnal foraging as well as migratory and dispersal routes and refuge. Continuing to squeeze lynx out of their habitat range by intensively managing the land runs afoul of NFMA's requirement that the agency maintain viable populations of wildlife that are well distributed across the landscape. 36 C.F.R. § 219.19. The USFS has an obligation to accurately assess the impacts of its project on lynx.

Next, it is clear that data is lacking on the food habits of lynx in Oregon's forests, which represents a critical research need. Ruggiero, 1999b; Aubry, 1999. It is well accepted that lynx are dependant on snowshoe hares as a prey base, but in the southern portions of lynx range squirrels, other rabbits, small rodents, birds and other wildlife may always be an important part of lynx diet. Some of these same prey species may also be important to spotted owls and other wildlife species. It is critical to understanding how this project may impact lynx to examine how it will impact lynx prey.

Snowshoe hares, squirrels, and other mammals have different habitat needs, but many of these species could be negatively impacted by the fragmentation, logging, road building, and other actions associated with this project. Most of these prey species require adequate cover (USFWS, 1999), especially conifer cover in winter (GTR-RM-254), and foliage that is accessible during winter snowpack conditions. Hares, squirrels, and forest-dependent species are typically associated with dense forest cover, including shrubs and "dog hair" thickets of small trees. McKelevey, 1999a. Many of these prey species also perform important roles in the recovery of fragmented forest habitat, helping to spread seeds of forest plants and trees, distributing nutrients throughout area soils, and loosening compacted soil areas—none of which was sufficiently disclosed or addressed in the EIS. Edge areas within and adjacent to dense mixed conifer forests provide viable habitat for many species, including potential prey species for lynx. The adjacent designated LSRs, wilderness and roadless areas also provide potential habitat, and the project area likely serves as dispersal and migration corridors, as well as supplemental habitat for lynx which may occur within, or traverse through, the project area. The proposed action alternatives which would log connective mature and old forest habitat, would result in significantly further reducing needed cover for wildlife, jeopardizing both lynx and their prey species viability across the area—in violation of the NEPA, NFMA, and the ESA.

Different timber harvest methods can have detrimental impacts on many of these species, including squirrels, rabbits, rodents, and birds, as well as snowshoe hares. Koehler and Brittell (1988) predict that it may take up to seven years after logging an area for hares to recolonize the site and up to 25 years before they reach their highest densities. Bull (1999) examined the results of a variety of harvest prescriptions on hares and found that in lodgepole stands, the number of snowshoe hares decreased in all types of harvest. She reports that mixed conifer stands appear to be "no longer suitable for hares after harvesting." This same is also true for many of the other forest-dependent species which comprise the lynx's diet.

Squirrels have different habitat needs than snowshoe hares and are associated with mature, cone-producing forests. Ruggiero, 1999a; Buskirk, 1999b; McKelvey, 1999a. They tend to reach their highest densities in late-successional, closed-canopy forests with substantial quantities of course woody debris. The EIS fails to adequately address potential impacts this project may have on squirrels, and ignores an important component of lynx diet. The discrepancies and deficiencies of EA assertions further underscores the failure of the EIS to adequately disclose and analyze this important issue.

The EIS fails to provide a thorough examination of how the project will impact both hares and squirrels, as well as other wildlife species which are potential lynx prey. Without complete analysis of how these prey species will be impacted, it is impossible to quantify and qualify the impacts to lynx. The EIS must analyze the cumulative impacts of this project on lynx prey in association with other projects on the District, Forest, and surrounding lands.

In sum, The Lynx Conservation Assessment and Strategy (LCAS) clearly asks that the Forest Service perform project specific analysis for each project. The lack of project specific analysis has been a long-standing problem with the Forest Service. The USDA Office of the Inspector General in its January 1999 report (No. 088001-10-At.) tries to correct this problem but the Forest Service has ignored the recommendations of this report. The LCAS executive summary states:

Plans that incorporate the conservation measures, and projects that implement them, are not generally expected to have adverse effects on lynx.... However, because it is impossible to provide standards and guidelines that will address all possible actions, in all locations across the broad range of the lynx, project specific analysis must be completed.

It is clear that the Forest Service has not completed NEPA required accurate analysis and therefore is in violation of the LCAS, as well as the ESA and NFMA. The EIS makes little mention as to any site-specific recent surveys supporting its determinations, fails to disclose surveys or survey protocol, methodology, areas or frequency. As such, this determination is arbitrary and capricious and therefore illegal. The EIS must be withdrawn and a new SEIS conducted which addresses and corrects these analysis deficiencies and illegalities.

Wolverine

It is suspected that wolverine may use the planning area as part of their seasonal and nocturnal foraging and territorial wandering patterns. Winter season surveys by our organization over the past decade have found likely wolverine snow tracks within the region's forests. Wolverine are known to have a 150 square mile or more winter range, and are also known to utilize roadless and wilderness areas—including the areas surrounding these preferred places. It is also well known that human disturbance related to the proposed activities is likely to alter the movement patterns of wolverine and other wildlife species. Failing to adequately address the likely impacts to wolverine by the proposed projects, given the large home ranges of these animals (approximately a 150 square mile winter range), and the likelihood of wolverines in the high Cascades, violates both NEPA and NFMA.

The EIS fails to adequately analyze how wolverine will be affected by the proposed project. Because it is probable that the species utilizes the planning area for some life cycle needs, the USFS is required to accurately address how the commercial logging and road building projects will affect those needs and the species itself. The EIS's failure to do so, and its irresponsible dismissal of the proposed project's likely adverse impacts to wolverine, including the project's likely incremental role in ongoing trends pushing this species towards uplisting under the ESA, violates NEPA and NFMA. 40 C.F.R. § 1502.16 (environmental consequences); 36 C.F.R. § 219.19 (fish and wildlife resources).

Given the sensitive nature of this species, it is likely that the proposed project will decrease Wolverine viability through the actual loss of connective travel, nocturnal, and seasonal foraging habitat, and possible loss of individuals. This is inconsistent with the Forest Plan as amended and NFMA because the project would contribute incrementally to Wolverine populations trend towards listing, 36 C.F.R. § 219.19.

Wolverine are already listed as "Sensitive" in Oregon by the Oregon Department of Fish and Wildlife, however the Forest Service fails to adequately address this within the EIS or disclose any consultation with ODF&W regarding wolverine. These failures are in violation of the requirements of the NEPA, and in contravention to the necessary cooperative interagency efforts needed to begin the recovery of this species and its required habitat.

Northern Goshawk and Other Forest Raptors

We have several concerns regarding Northern Goshawk, and related concerns to other forest raptors in the area, including osprey, eagles, owls, as well as large water-adapted predators such as herons. It is known that Goshawks currently are (and historically have) utilizing the forests of the proposed project and surrounding areas for nesting, fledgling, and foraging. It is also known that Goshawks, similar to many predatory species, rotate their nesting and foraging territories over time, so as to not deplete their prey species populations and thus maintain their viability over the long-term. As such, to ascertain potential Goshawk use, agency surveys must be conducted seasonally each year to determine the rotational patterns of Goshawks for the project and adjacent area forests. Goshawks also have an

extensive foraging territory. It is likely that nesting pairs may utilize significant portions of the project area's mature and old forest areas, as well as adjacent wilderness, LSR, and roadless forests. It is also known that open-forest edge areas, and burned areas, may be utilized as foraging territory by this species. The EIS fails to adequately address impacts to this species such as how logging removal of forest canopy cover, and further fragmentation of the area's forests, will affect adult and juvenile Goshawks and other raptors, or other direct, indirect, or cumulative effects to goshawks and other raptor species. The EIS fails to adequately address impacts to Goshawk nesting areas, including sufficiently assessing historic nesting areas, within or adjacent to the proposed logging project. Similarly, the EIS fails to address potential direct and cumulative impacts harms to existing raptor nests of other species in the area.

Several scientific studies exist regarding significantly detrimental logging impacts to Goshawks due to logging within or near Goshawk PFA's, as well as from fragmentation of natural forest habitat. (Reynolds et al, 1982, 1989, 1991; Moore and Henry, 1983; Fleming, 1987; Hall, 1984; Saunders, 1982; Crocker Bedford et al, 1988, 1990, 1991; Patla, 1991; Hayward and Escano, 1989; Kennedy, 1988; Shuster, 1980; Speiser and Bosakoski, 1987; Woodbridge et al, 1988; Bendire, 1892, Bull, 1988; Hargis et al, 1991; Bryan and Forsman, 1987; Andeson and Shommer; among others). Some of these studies were conducted for the agency. However the EIS violates the NEPA by failing to adequately and accurately disclose or assess this pertinent information. As such and the agency fails to uphold its responsibility to address these issues thoroughly as required by both the NEPA and the NFMA. The EIS fails to address the cumulative impacts of the proposed project along with past, present, and reasonably foreseeable future actions, in violation of NEPA, 40 C.F.R. § 1508.7.

We are concerned about the affect of the planned transformation of the commercial logging units from mature and old mixed-conifer multi-storied forests, to more open forest areas preferred by other raptors such as red-tailed hawks, which could extirpate goshawks from logged unit areas. It is known that suitable goshawk habitat contains a mix of dense multi-storied stands for nesting – such as currently exists in the project area. The project will remove necessary foraging, fledgling, and nesting habitat, which may result in the loss of potential goshawk nesting habitat, as these features are inextricably linked within the greater goshawk territory, thus resulting in fewer pairs of nesting birds within the area, or a loss of either or both fledgling juveniles and/or adults to predation or other mortality associated with logging impacts. The failure of the project's action alternatives to protect goshawk habitat would further reduce potential nesting and foraging habitat and thus violate NFMA's requirement to maintain viable populations of these and many other forest canopy-dependent species, 36 C.F.R. § 219.19. It is clear that the agency must prepare a new SEIS to deal with this issue legally and adequately.

American (Pine) Marten & Fisher

There is not sufficient analysis in the EIS of the effects of the proposed project on American marten and/or Fishers that may be, or historically were, in the planning area. The forests of the Deschutes, including the project area, have historically provided marten and fisher habitat. It is likely that the project currently provides marten and fisher habitat—both for denning and foraging, as well as dispersal and travel corridors. Recent scientific research confirms that old forest dependent wildlife species are well adapted to the cyclic changes in the region's fire ecology forests ever changing mosaic patterns. Many old forest wildlife species, it is being discovered, continue to use even severely burned old forest and roadless area habitat – if these are left unlogged. The EIS fails to address this issue.

The agency has an obligation under NEPA to assess the direct, indirect, and cumulative impacts to all species that will be affected by the proposed action. 40 C.F.R. §§ 1502.16. The Forest Service also has an obligation to obtain missing information or state why it could not be obtained if that information is necessary to make an informed decision. *Id.* § 1502.22. Finally, the agency has a duty to prepare a new SEIS when there are unknown risks to the environment—and its current EIS is deficient in addressing these issues. *Id.* § 1508.27.

In this case, the Forest Service failed to accurately and adequately assess how the proposed timber sale will impact marten and/or fishers. The Deschutes NF clearly is not meeting the requirements of NEPA and NFMA as they apply to pine marten and fisher, and is precluded from implementing the proposed project as a result.

Additional Issues

NEPA regulation, 40 C.F.R. 1508.27(b)(9), requires the EIS to describe the effects to threatened and endangered species. There is very little analysis of the effects to the Canada lynx, the Oregon Spotted Frog, and the Pacific Fisher. Requisite analysis must be done to ensure the long-term survival of these species. Surveys should be conducted on a regular basis and potential habitat should not be negatively affected.

The EIS does not provide a significant analysis on how introducing or disbursing invasive species over the project area will be prevented. The EIS provides a list of standards that must be followed and Project Design Features (PDFs) that should be followed, but it doesn't actually describe how the project will follow the Standards and PDFs. Invasive plant risk is equated to the number of acres in the project area. Considering that this project proposes thousands of acres of logging and action disturbance, there is a very significant risk of invasive plants, which should be analyzed thoroughly in an EIS.

Neotropical Migrant and Native Birds

Neo-tropical migrant and native forest-dependent birds (as well as numerous other forest species) are in serious decades-long population declines due to the adverse cumulative impacts from over a century of commercial logging in Oregon (see "Avian Population Trends" by Brian Sharp). The EIS for this planned project fails to fully and adequately disclose the current population status and trends of native forest dependent Neotropical migrant and native avian species within the analysis area and adjacent forest. Compliance with both the NFMA and the MBTA requires that all alternatives presented within the EIS must be capable of protecting forest habitat for these many native forest species, and of reversing any current downward population trends. Such a course of proactive protective action is also required by the ESA and the NEPA, Presidential and USFS directives, and the Migratory Bird treaty Act, as well as credible conservation science and ethical integrity. However, in violation of these legal and ethical requirements, the EIS presents action alternatives which would degrade habitat and further imperil neotropical and native avian species populations, resulting in both individual mortality to these species as well as irreparable habitat and population level harms.

The proposed timber sale(s) would significantly impact migratory birds in violation of the Migratory Bird Treaty Act, 16 U.S.C. §§ 703—712 (1994). It is well known amongst the conservation-science community that many migratory birds which are currently experiencing severe population decline trends are "strongly associated" with old and mature interior forest and related habitat. The proposed commercial "thinning" logging would likely directly kill nesting and fledgling migratory birds. The proposed logging would significantly reduce existing mature and old forest-dependent migratory bird habitat, which has already been significantly diminished due to the cumulative impacts of past management throughout much of the Deschutes National Forest, including the project area.

The proposed logging units would irreparably fragment migratory bird habitat. Areas that were not logged would also be negatively impacted by generalist bird species favored by the environmental conditions created in highly fragmented logged forests. Additionally, barred owls are known to be migrating southward and are now present in the Deschutes. This predatory species is adapted to the more open, logging-thinned type forests that would result across the project area if this sale is implemented. Barred owls not only predate upon and displace spotted owls, but they also prey upon neotropical migrant and native bird species. Other avian and predator species more adapted to open logging thinned forests

also would move into the project area, further adversely impacting interior mature and old forest dependent neotropical and migrant avian species. The impact these abundant and highly competitive bird species would have on sensitive bird species dependent on less fragmented forests should have been adequately disclosed and evaluated in the EIS. The adverse impacts that the proposed logging would have on migratory birds are supported by multiple scientific studies.

Forest fragmentation, including loss of viable nesting habitat within central and eastern Oregon's national forests, is considered to be a primary cause behind declines observed in many forest songbird species. Further loss or fragmentation of habitat could lead to a collapse of regional populations of some forest birds (Robinson *et al.* 1995). As landscapes become increasingly fragmented, regional declines of migrant populations may result (*Id.*). In the Pacific Northwest, researchers have found that old growth forests and natural forest processes (including natural fire-recovery) are integral to the survival of migratory birds. The past and continuing logging-oriented management of the forests of Oregon and Washington, which provide nesting and fledgling habitat for numerous migratory birds, has resulted in severe ongoing population declines in forest canopy-dependent migratory and native birds. (*reference: "Avian Population Trends in the Pacific Northwest" by Brian Sharp*). Among the many avian species experiencing population declines due to Forest Service logging projects are: band-tailed pigeon, rufous hummingbird, olive-sided flycatcher, winter wren, song sparrow, golden-crowned kinglet, pine siskin, solitary vireo, willow flycatcher, tree swallow, brown creeper, Lewis' woodpeckers, black-backed woodpeckers, red-eyed vireo, yellow warbler, yellow-breasted chat, and others as well. This information was not adequately addressed in the EIS despite the obvious direct adverse impacts to many migratory and native bird species from the removal of forest canopy cover and forest structural continuity which would occur with the implementation of this project. Failure to sufficiently disclose and comprehensively analyze this pertinent, essential, scientific information violates provisions of the NEPA. Implementation of this project would violate both NFMA and the Migratory Bird Treaty Act. As such the unroaded areas, and mature and old ponderosa pine and mixed conifer forest commercial logging portion of this project must either be withdrawn from the selected alternative, or a new SEIS must be prepared which addresses these issues.

In August 1999, the FWS outlined what it perceived to be the agency's legal obligation in terms of migratory birds and timber harvest. FWS stated that agencies should take "an extremely cautious position with respect to the intentional take of migratory birds by federal agencies." *Letter from Acting Director, United States Fish and Wildlife Service, to Regional Directors, Regions 1-7 and Assistant Director, Refuges and Wildlife (August 17, 1999), 3.* FWS also cautioned that "the Service should not assert in any communication or correspondence that federal agencies are not covered by the prohibitions of the MBTA [Migratory Bird Treaty Act]." *Id.*

In July 2000, the Eighth Circuit Court of Appeals held that federal agencies are required to obtain a take permit from FWS prior to implementing any project that will result in take of migratory birds. *Humane Soc'y of the United States v. Glickman*, 217 F.3d 882 (8th Cir. 2000). Due to this litigation, the FWS is operating under the assumption that the Migratory Bird Treaty Act applies to the Forest Service and its activities. 16 U.S.C. § 703 et seq. The Act states that "it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill . . . any migratory bird." 16 U.S.C. § 703.

In January 2001, President Clinton signed Executive Order 13,186 that outlined the federal government's responsibility to comply with the Migratory Bird Treaty Act. Exec. Order No. 13,186, 66 Fed. Reg. 3,853 (2001). President Bush has not rescinded this Order. Recent legal analysis confirms that

the Forest Service must actively prevent the take of migratory birds, or obtain a permit for incidental take of individual species. *Helen M. Kim, Chopping Down the Birds: Logging and the Migratory Bird Treaty Act, 31 Envtl. L. 125 (2001).*

The Forest Service has failed to comply with these legal and scientific obligations. Until the agency can demonstrate that it has complied with the requirements of the Migratory Bird Treaty Act, the DEIS for this project must be withdrawn and a new SEIS must be prepared.

Further, the EIS did not accurately address the direct, indirect and cumulative impacts that the project would have on migratory birds. The USFS has on record a study by Brian Sharp (“Avian Population Trends in the Pacific Northwest” as cited above), which concludes that commercial logging in public forest lands in Oregon plays a significant role in the continuing population declines of several neotropical migrant bird species. The failure to disclose the full conclusions and implications of this study in the EIS is particularly egregious in that the study was done for Region 6 of the Forest Service specifically on Central/Eastern Oregon forests. There are numerous management projects that have recently been completed, with others still to be implemented or planned in this same project area. Recent fires have also altered habitat. Cumulative loss of viable mature and old forest habitat for avian species of concern is a serious significant issue in the project area, which the EIS has failed to responsibly and adequately address. The lack of adequate scientific assessment of cumulative impacts issues, and of pertinent scientific research on avian species fails to meet NEPA’s requirement for high quality scientific analysis that would satisfy the “hard look” standard. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 353 (1989); *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208 (9th Cir. 1998) cert. denied, *Ochoco Lumber Co. v. Blue Mountains Biodiversity Project*, 119 S.Ct. 2337 (1999).

National Forest Management Act issues

NRF & Connectivity must be protected in the Matrix to prevent habitat fragmentation

NRF habitat must be protected not only in the LSRs, but also in the Matrix. The 2005 monitoring study on the Spotted Owl population states that “the land outside the reserved blocks makes a valuable short-term contribution to the Plan’s habitat management strategy for territorial owl pairs and is important in the long term by providing dispersal habitat.” (Lint, 2005, page 75) The owl population in the greater project area is quite low, The Forest Service must take care not to jeopardize the continued existence of the owl population by removing habitat and connectivity corridors. (see below for Endangered Species Act issues). These owls cannot afford further destruction of their habitat.

Also, the Forest Service fails to consider that Spotted Owls will, in fact, use burned forest for habitat. Destroying connective habitat to protect it from fire, then, is only making the situation for Spotted Owls worse. The 2005 population study warns that “understanding the effects on owl habitat and owls of stand treatments to reduce fire risk before they are applied is an important step so that the treatments do not have a greater effect than the wildfires.” (Lint, 2005 page 76) The DNF has already conducted huge thinning projects just to the north of this project area to “reduce” the risk of wildfire. One such area was within the Davis Fire area where the thinning had absolutely no effect in preventing high-severity fire. It must wait and see how this large-scale habitat modification is affecting the Spotted Owl before continuing to destroy more habitat.

The recently revised final recovery plan for the spotted owl recognizes the importance of “restoring sustainable ecological conditions” (p 22); “mature and old trees” (p 22); “old trees regardless of diameter” (p110); “maintain medium and large tree structure” (p 112); “smaller size classes of fire tolerant species provide the recruitment resource” (pp 23, 109); removing canopy fuels is “least important” (p 109); “focus on thinning stands created by past harvest” (p 23); “most forest landscapes, even in dry ponderosa pine environments, included some level of mixed and high severity wildfire under natural

conditions" (p 104); "The key ingredients in all management to produce, conserve, or protect dry east-side old forest is the retention or generation of sufficient numbers of large and very large, old ponderosa pine, western larch, and (in some cases) Douglas-fir and the maintenance of both meso- and fine-scale patchiness among and within stands." (p 107); apply treatments unevenly within and among stands (p 110); "incorporate spatial heterogeneity of dry forest stand structure into restoration treatments" (p 112); outside of high quality owl habitat patches "maintain structural conditions supporting prey occurrence and abundance in current or potential NRF habitat, maintain structural conditions conducive to Northern Spotted Owl foraging, and allow for rapid development of replacement NRF habitat." (pp 112-113); "lack of follow-up [fuel] treatments would likely increase fire risks quite dramatically" (p 113). In the recommendations above, references to spotted owl NRF, could just as well apply to goshawk NRF, pileated woodpecker habitat, Pine Marten habitat, etc. See USFWS. 2008 Final Recovery Plan for the Northern Spotted Owl. In general, the EIS fails to develop action alternatives capable of adhering to and accomplishing the above management objectives.

<http://www.fws.gov/pacific/ecoservices/angered/recovery/NSORecoveryplanning.htm>

Old Growth characteristics and habitat connectivity are being degraded

The Northwest Forest Plan requires the protection of remnants of old-growth forest, recognizing that they are important refugia for a large number of species. NWFP S&G C-44. At least 15% of late-successional forests must be preserved across all land designations on the fifth-field watershed level. Also, a project must maintain or restore ecosystem diversity and structure within the range of variability for that area. 36 C.F.R. 219.20(b)(1). The structural heterogeneity of these forests must also be preserved, as interior forest-dependent species rely on these diverse structures. The project intends to reduce the complexity of late-successional reserves by thinning the understory and reducing the complexity of the canopy. The canopy cover will be reduced, the stem density reduced, and downed wood will be reduced in the project area. It is unclear whether the BLT Project will reduce the amount of late-successional forest below the required 15% at the fifth- field watershed level, especially when including the effects of the numerous other recent and concurrent projects. However, this is something that should be analyzed and revealed.

Also, new so-called "temporary" roads will be constructed and old roads will be reopened. Roads fragment habitat, introduce invasive species, and reduce wildlife's privacy from human interaction. Roads are not "temporary" ecologically on the landscape. How will these roads affect the remnant stands of old growth on the project area? There is inadequate discussion of the impacts of the roads on wildlife and important habitat and connectivity of that habitat.

The project does not comply with the Aquatic Conservation Strategy

The Aquatic Conservation Strategy was developed to "restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands." NWFP S&G at B-9. Each action must "not retard or prevent attainment of the ACS objectives." Agencies must maintain *and* restore conditions of riparian resources to meet ACS objectives. NWFP S&G at B-10 (emphasis added).

The nine objectives of the Aquatic Conservation Strategy described in the Northwest Forest Plan (S&G at B-11) are:

1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.
2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and

physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian dependent species.

3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.
4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.
5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.
6. Maintain and restore instream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.
7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.
8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.
9. Maintain and restore habitat to support well distributed populations of native plant, invertebrate, and vertebrate riparian dependent species.

Project area watersheds are high priority under the Aquatic Conservation Strategy. To be within the mandate of the ACS, the project must maintain *and* restore riparian conditions in the area. Activities of the BLT Project would create new “temporary” roads, open closed roads, initiate extensive road maintenance, logging actions, and road hauling - affecting a number of water bodies, including two 303(d) listed waterways. The water quality of some of these water bodies is already compromised. The proposed project would violate a number of ACS objectives, as the project would not “maintain *and* restore” important riparian characteristics.

Roads are a major contributor of sediment into aquatic ecosystems. The fact that “temporary” roads would be obliterated does not ameliorate the effects of the sediment created from building the roads. Closed roads would be opened for this project and existing roads would receive extensive heavy logging truck use. The use of these roads would contribute further sediment. The project will also create skid trails and landings which will contribute sediment. The EIS claims that the activities of the project will mostly occur outside of riparian reserves, so there will be little effect to streams. However, sediment can affect streams regardless of whether the activities are inside or outside riparian reserves. Best Management Practices are not enough to prevent increased sediment loads. Furthermore, activities will occur on sensitive soils and in RCHAs. These areas have a great risk of contributing sediment to streams when disturbed by management thinning-logging activities.

Even though the Forest Service claims that logging will not increase sediment, turbidity, or water temperature in the surrounding bodies of water, the body of science on these subjects shows otherwise. (Robichaud, et al; Brown 2004; Rhodes, 2007) The Forest Service does not actually have data to back up its claims that there will be no increase in sediment, turbidity, or water temperature.

According to the Clean Water Act (CWA) Section 313, all federal agencies “*shall* comply with all Federal, State, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution, and federal actors must comply with all record keeping, recording and permitting requirements.” 33 U.S.C. § 1323(a) (emphasis added). The Ninth Circuit has interpreted this provision to mean that the U.S. Forest Service must comply with all state water quality standards when carrying out its road-building and logging activities. Northwest Indian Cemetery Protective Ass'n v. Peterson, 795 F.2d 688 (9th Cir. 1986). This means that the Forest Service cannot claim that the agency's own policies and regulations supersede state water quality standards. In Northwest Indian Cemetery, the Forest Service claimed that its BMP's were the only water quality standards applicable. *Id.* at 697. The Ninth Circuit held that adherence to BMP's did not automatically ensure that state water quality standards were met. Accordingly, the Forest Service must describe how the action alternatives for the BLT Project timber sale(s) complies with Oregon's water quality standards.

Similarity with the Following Five Buttes Ecological and Legal Issues:

The lengthy but deficient EIS for this project shares numerous legal and ecological issues with the similar Five Buttes project, which was just halted by our lawsuit in federal court. As part of our comments, and to expedite the time required to cover such a lengthy yet legally deficient EIS, we herein incorporate the issues addressed in our Five Buttes appeal and prevailing litigation, as applicable also to this project. The attached Exhibit III includes information from the Five Buttes project, including the appeal, legal ruling, exhibits, and comments, etc. We request agency staff incorporate this pertinent information in revising the SEIS and range of scientifically supported alternatives for the new BLT project.

Deschutes Land Resource Management Plan Standards and Guidelines

Detrimental Soils Limit is Exceeded

The DLRMP requires the Forest Service to leave a minimum of 80% of an activity area in a condition of acceptable productivity. DLRMP SL-3, p. 4-70. “Any sites where this direction cannot be met will require rehabilitation.” DLRMP SL-4, p.4-70. Many of the areas of the BLT Project would exceed these detrimental soil allowances after the project is completed. Some units *already* exceed detrimental soil conditions and implementing the project would make the conditions even worse. The EIS proposes to increase the area of detrimental soil conditions through ground-based logging operations and then subsoil areas of detrimental soil conditions as its primary mitigation measure. The Forest Service admits that “subsoiling doesn't return [subsoiled] areas to pre-impact conditions.” Subsoiling is a far cry from the soil “rehabilitation,” which is required by the DLRMP. Also, the accuracy of the amount of detrimental soils is questionable, as the detrimental soil conditions were generally determined through aerial photos, not on the ground surveys.

The Forest Service is obligated prevent damage to soils instead of violating soil standards and guidelines and then relying on mitigation to “fix” the problem. The Northwest Forest Plan mandates prevention over mitigation: “Do not use mitigation or planned restoration as a substitute for preventing habitat degradation.” WR-3, NWFP ROD page C-37. See also Northwest Indian Cemetery Protective Ass'n v. Peterson 795 F.2d 688, 697 (9th Cir. 1986) (holding that compliance with BMPs does not equate to compliance with water quality standards).

Roads are a main cause of detrimental soil conditions. The BLT Project would open up to 17 miles of closed roads, require 126 miles of road maintenance, and create an additional 8.7 miles of so-called “temporary” roads. The roads are intended to be temporary, but the EIS provides insufficient scientific disclosures on long-term impacts to forest soils, structure, hydrology, and continuity. There will still be impacts to the soil long after the road is closed.

In addition to Exhibit III, to facilitate awareness of important ecological and legal issues raised by the BLT EIS, the following from the Five Buttes project are included herein:
Management Indicator Species are not Properly Protected

NFMA requires the Forest Service to “provide for diversity of plant and animal communities” in managing national forests. 16 U.S.C. § 1604(g)(3)(b). To insure this diversity, NFMA requires that fish and wildlife habitat are managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area. 36 C.F.R. § 219.19. NFMA further requires that “to estimate the effects of each alternative on fish and wildlife populations, certain vertebrate and/or invertebrate species present in the area shall be identified and selected as management indicator species. 36 C.F.R. § 219.19(a)(1). These species shall be selected because their population changes are believed to indicate the effects of management activities.” Id. § 219.19(a)(2). Finally, NFMA requires that “habitat must be provided to support, at least, a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area.” Id.

The Deschutes LRMP requires the protection of horizontal, vertical, and vegetative species diversity for the maintenance of management indicator species at the required levels established in the Standards and Guidelines of the LRMP. DLRMP TM-55, p. 4-47. The Northern Spotted Owl, Northern Bald Eagle, American Marten, Northern Goshawk, Cooper’s Hawk, Sharp-shinned Hawk, Elk and Mule Deer are all Management Indicator Species. All except the Northern Bald Eagle and Mule Deer require interior, intact forest for the persistence of the species. The Five Buttes project would be eliminating diversity in units with heavy commercial logging. These species would be adversely affected, and the Forest Service has not planned a monitoring program to ensure viable populations of these species.

The Ninth Circuit has stated that the duty to ensure viable or self-sustaining populations “applies with special force to “sensitive” species.” Inland Empire Public Lands Council v. USFS, 88 F.3d 754 (9th Cir. 1996) *citing* ONRC v. Lowe, 836 F.Supp 727, 733 (D.Or. 1993). Surveys for sensitive or listed species that have been reported or are likely to utilize the project area should be conducted if reliable population estimates are not available. Such monitoring is required under NFMA. 36 C.F.R. § 219.27(a)(6). No surveys have been conducted for Pacific Fisher, bats, Horned Grebe, Red-necked Grebe, Harlequin Duck, Peregrine Falcon (one conducted by Davis Lake in 2005), or the Tricolor Blackbird: all regionally sensitive species. The Forest Service also has not conducted surveys for Osprey, Great Blue Heron, Golden Eagles, Redtail Hawk, Sharp-shinned and Cooper’s Hawk (sightings reported but no surveys). How can the Forest Service ensure the viability of these sensitive species if no surveys have been conducted? The failure to complete such monitoring means that the data is not collected, and the approximate population levels or trends of species on the Forest is unknown. Without such data, the Forest Service lacks the informed ability to issue this decision.

Finally, the 2.5 mi² target for road density from the DLRMP is exceeded for big game.

Not enough retention of downed wood and snags

Snags must be retained in sufficient numbers throughout the matrix forests to support species of cavity-nesting birds at 40% of potential population levels. NWFP S&G page C-42. The Five Buttes Project includes stands that are currently below minimum snag levels. FEIS page 24. When larger trees are cut, large snag recruitment decreases, but the project will still cut trees with no size limit. Cutting larger trees will also reduce the supply of large down logs, which would violate the NWFP Standard to provide a “renewable supply of large down logs well distributed across the matrix landscape.” NWFP S&G at C-40. The Five Buttes Project would violate both these NWFP Standards.

The EIS failed to disclose compliance with snag habitat standards. Failure to provide information adequate to determine compliance with legal standards is a NEPA violation. The Deschutes LRMP (WL-37, LRMP p 4-55) requires that compliance with snag habitat standards be determined at the harvest-unit scale. The EIS snag habitat analysis diluted the effect of logging by averaging snags over treated and untreated areas (EIS p 205). This is impermissible under the recent 9th Circuit decision in ONRC v. Timber Products. Wildlife uses snags at the stand- and site- scales, not just the landscape scale. The EIS failed to disclose the impacts on snag habitat at scales that are most affected by this project. The EIS instead attempts to disguise the effects of logging by lumping and averaging over large areas that will not be logged. All logging has the effect of reducing snag habitat, by: removing hazard trees wherever workers are put in harms way, and by capturing mortality and increasing tree vigor which both reduces absolute amount of snag habitat and delays the recruitment of snag habitat.

The ROD page 34 says that this large logging project will not appreciably change the snag recruitment process. This is unsupported by the evidence. Partial logging is virtually certain to capture mortality, increase the vigor of remaining trees, and reduce snag recruitment. Logging and log hauling also puts workers in harms way and requires the removal of hazard trees, some of which are important habitat trees. The scale of this project, considered in the context of other recent events (e.g., Davis fire, Davis salvage, Seven Buttes, etc.) is almost certain to appreciably change snag recruitment processes.

Use of DecAID is impermissible

Cavity excavators have been described as “keystone species” in the forest. They provide structural enrichment for a wide variety of other species. They help cycle nutrients and help limit populations of forest insects, yet the Forest Service continues to rely on flawed and outdated potential population standards for cavity species. A forest plan amendment is necessary to adopt new standards. This will require full NEPA and NFMA compliance including consideration of alternatives, disclosure of effects, addressing scientific differences, etc. DecAID is useful information, but information by itself is no replacement for actual management standards that will ensure viable populations. DecAID does not tell us what fraction of the landscape needs to be in a condition represented by each tolerance level and DecAID does not tell managers what is needed to maintain viability, not does it stop managers from doing things that would threaten species viability. Oregon Wild’s comments letter explain in great detail the “new information” about snag and dead wood and the problems with DecAID.

The agency often tries to use DecAID as a substitute for the outmoded potential population methodology. DecAID, the Decayed Wood Advisor for Managing Snags, Partially Dead Trees, and Down Wood for Biodiversity in Forests of Washington and Oregon, <http://wwwnotes.fs.fed.us:81/pnw/DecAID/DecAID.nsf> Although DecAID helps bring together lots of

useful information about snag associated species, the agency must recognize and account for the shortcomings of DecAID and cannot rely on DecAID to provide the project-level snag standards because: DecAID is a tool designed for plan level evaluations, because DecAID itself has not been subjected to NEPA analysis and comparison to alternatives, and because DecAID is an inadequate tool for the purpose.

1. Before relying on DecAID, the agency must prepare a comprehensive NEPA analysis to consider alternative ways of ensuring viability of all species dependent upon snags and dead wood. While it is true that the “potential population” or “habitat capability” method is no longer considered scientifically valid, the agency has not yet considered a full range of alternative methods to replace the habitat capability method mandated in the forest plans.
2. Before using DecAID, the agency must establish a rational link between the tolerance levels in DecAID and the relevant management requirements in the applicable resource management plan. For instance, since the Northwest Forest Plan and the Eastside Screens require maintenance of 100% potential population of at least some cavity-dependent species, the agency must explain why that does not translate into maintaining *100% of the potential tolerance level*. If the site is capable of supporting 80% tolerance levels, the agency should not be able to manage for 30-50% tolerance levels and still meet the 100% potential population requirement.
3. DecAID does not replace the discredited forest plan standards because DecAID is informational only. DecAID does not specify management objectives. The agency must specify the management objective based on RMP objectives for the land allocation or based on natural “range of variation.” Since large snags are outside the natural range of variability across the landscape, the agency must retain all large snags to start moving the landscape toward the natural range of variability, or the agency must carefully justify in the NEPA analysis every large snag it proposes to remove. See Jerome J. Korol, Miles A. Hemstrom, Wendel J. Hann, and Rebecca A. Gravenmier. 2002. *Snags and Down Wood in the Interior Columbia Basin Ecosystem Management Project*. PNW-GTR-181. http://www.fs.fed.us/psw/publications/documents/gtr-181/049_Korol.pdf This paper estimates that even if we apply enlightened forest management on federal lands for the next 100 years, we will still reach only 75% of the historic large snag abundance measured across the interior Columbia Basin, and most of the increase in large snags will occur in roadless and wilderness areas.
4. The agency cannot use “average” snag levels (e.g. 50% tolerance level) as a management objective within treatment areas, because treatments are essentially displacing natural disturbance events which would normally create and retain large numbers of snags, so disturbance areas should have abundant snags, not average levels of snags. It would be inconsistent with current science and current management direction to manage only for the mid-points and low points. The agency should manage for the full natural range dead wood levels, including the peaks of snag abundance that follow disturbance.
5. Be sure to use the DecAID tool appropriately. The agency must address the dynamics of snag habitat over time, by ensuring that recommended snag levels are maintained over time given typically high rates of snag fall and low rates of snag recruitment following fire. These dynamics are not accounted for in the DecAID advisor. The agency often misuses the DecAID decision support tool by looking at only a snap-shot in time. The agency relies on DecAID to analyze impacts on snag dependent species, but the agency fails to recognize that

“DecAID is NOT: ... a snag and down wood decay simulator or recruitment model [or] a wildlife population simulator or analysis of wildlife population viability. ... Because DecAID is not a time-dynamic simulator ... it does not account for potential temporal

changes in vegetation and other environmental conditions, ... DecAID could be consulted to review potential conditions at specific time intervals and for a specific set of conditions, but dynamic changes in forest and landscape conditions would have to be modeled or evaluated outside the confines of the DecAID Advisor.”

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

To clearly and explicitly address the issue of “snag dynamics” the can start by reading and responding to the snag dynamics white paper on the DecAID website which says “To achieve desired amounts and characteristics of snags and down wood, managers require analytical tools for projecting changes in dead wood over time, and for comparing those changes to management objectives such as providing dead wood for wildlife and ecosystem processes” and includes “key findings” and “management implications” including “The high fall rate (almost half) of recent mortality trees needs to be considered when planning for future recruitment of snags and down wood. Trees that fall soon after death provide snag habitat only for very short periods of time or not at all, but do contribute down wood habitat. In fact, these trees are a desirable source of down wood as they will often begin as mostly undecayed wood and, if left on the forest floor, will proceed through the entire wood decay cycle with its associated ecological organisms and processes that are beneficial to soil conditions and site productivity.”

<http://wwwnotes.fs.fed.us:81/pnw/DecAID/DecAID.nsf/HomePageLinks/863EEA66F39752C088256C02007DF2C0?OpenDocument>

6. The tolerance levels from DecAID may be too low to support viable populations of wildlife associated with dead wood, because anthropogenic factors that tend to reduce snags (e.g., firewood cutting, hazard tree felling, fire suppression, and salvage logging) may have biased the baseline data that DecAID relies upon to describe “natural” conditions. See Kim Mellen, Bruce G. Marcot, Janet L. Ohmann, Karen L. Waddell, Elizabeth A. Willhite, Bruce B. Hostetler, Susan A. Livingston, and Cay Ogden. *DecAID: A Decaying Wood Advisory Model for Oregon and Washington* in PNW-GTR-181, citing Harrod, Richy J.; Gaines, William L.; Hartl, William E.; Camp, Ann. 1998. *Estimating historical snag density in dry forests east of the Cascade Range*. PNW-GTR-428. http://www.fs.fed.us/pnw/pubs/gtr_428.pdf
7. DecAID is still an untested new tool. The agencies must conduct effectiveness monitoring to determine whether the snag and down wood retention recommendations in the DecAID advisor will meet management objectives for wildlife and other resource values.
8. The “unharvested” inventory data used in DecAID may represent but a snapshot in time, and fail to capture the variability of dead wood over time, including the pulses of abundant dead wood that follow disturbances and may prove essential for many wildlife species.
9. DecAID must be used with extreme caution in post-fire landscapes because the data supporting DecAID does not include natural post-fire landscapes. (“The inventory data likely do not represent recent post-fire conditions very well ... young stands originating after recent wildfire are not well represented because they are an extremely small proportion of the current landscape ... The dead wood summaries cannot be assumed to apply to areas that are not represented in the inventory data.” “DecAID caveats” <http://wwwnotes.fs.fed.us:81/pnw/DecAID/DecAID.nsf>).

10. DecAID relies on a wide range of sources in the literature, some of which recommend much higher levels of snag retention than reflected in the advisor. The agency NEPA analysis should disclose the published literature with higher levels of snag and wood retention and discuss their potential relevance for the project. (“the agency must disclose responsible opposing scientific opinion and indicate its response in the text of the final statement itself. 40 C.F.R. § 1502.9(b).” Center for Biological Diversity v. United States Forest Service, No. 02-16481 (9th Cir., Nov. 18, 2003).)
11. DecAID tolerance levels need careful explanation. These tolerance levels are very difficult to put in terms that are understandable by the general public, but if the Forest Service is going to use this tool they must make it understandable. The NEPA analysis should provide cumulative species curves for each habitat type and each forest structural stage and should explain the studies and publications that support the data points on the curves. What kind of habitat were the studies located in? What was the management history of the site? Was the study investigated nesting/denning, or roosting and foraging too?
12. DecAID does not account for the unique habitat features associated with some types of snags. DecAID primarily just counts snags and assumes that all snags of approximately the same size have equal habitat value, but this fails to account for the fact that certain types of snags and dead wood features are unique, such as: hardwood snags, hollow trees and logs, different decay classes, etc. The NEPA analysis must account for these features and the agency should disproportionately retain dead wood likely to serve these unique habitat functions.
13. DecAID authors caution that “it is imperative, however, to not average snag and down wood densities and sizes across too broad an area, such as across entire watersheds, leaving large areas within watersheds with snags or down wood elements that are too scarce or too small” Kim Mellen, Bruce G. Marcot, Janet L. Ohmann, Karen L. Waddell, Elizabeth A. Willhite, Bruce B. Hostetler, Susan A. Livingston, and Cay Ogden. *DecAID: A Decaying Wood Advisory Model for Oregon and Washington* in PNW-GTR-181. http://www.fs.fed.us/psw/publications/documents/gtr-181/042_MellenDec.pdf While we agree that snags and down wood must not be averaged over wide areas, we also must emphasize that snags and down wood are far below historic levels on non-federal lands, so in order to ensure viable populations of wildlife and avoid trends toward ESA listing, federal lands must be managed to compensate for the lack of down wood on non-federal lands.
14. DecAID appears to be based on the idea that the habitat needs of certain key wildlife species represent the best determinant of how much dead wood to retain, and this may in fact be true, but DecAID should also include cumulative curves for other ecological functions provided by dead wood, including: site productivity, nutrient storage and release, erosion control, sediment storage, water storage, water infiltration and percolation, post-fire micro-site maintenance, biological substrate, thermal mass, etc. How much dead wood is needed for these functions?
15. DecAID may be best used for program level planning rather than project level planning. See Dallas Emch and Gary Larson, 2006. Review & Analysis of Remainder of Comments on EA Supplements for Multiple Timber Sales on Mt. Hood & Willamette National Forests on Remand in ONRCA v. Forest Service CV-03-613-KI (D.Or.). 4-10-06.
16. Any activity that degrades snag habitat is arbitrary and capricious until the agency develops new procedures in compliance with NEPA and NFMA or LFPMA. Compliance with old standards is meaningless, and in the absence of new standards, the agency cannot draw any credible conclusions about impacts to snag associated species. There is no way to use DecAID to comply with the east side screens’ requirement to maintain 100% potential populations of cavity species (until the Forest Service develops some credible way to translate DecAID tolerance levels into potential population levels)

T. Area Watershed Analysis must be followed

The project would create a large amount of disturbance to the watershed. Many objectives in the Forest Service's Watershed Analysis are violated, including maintaining wildlife habitat, maintaining the integrity of the riparian area, maintaining ecological interrelationships both above and below ground, use management methods that will maintain soil capabilities, etc.

U. Timber Volume Targets Driving NW Timber Sales

Over the past years, conservation efforts have achieved many negotiated changes, upholding federal laws and limiting timber sales to protect old growth, forest ecosystems, wildlife, and fish. Recently negotiation attempts have hit agency walls. Many Forest Service staff across the region privately complain they are being pressured to meet new timber quotas, and no longer have the ability to modify timber sales to lessen harms to wildlife, salmon, and other important ecological concerns. Recently, the region's Forester wrote the following internal agency letter (included *italicized* in full below), confirming the existence of board foot volume targets driving the region's timber sales.

While the agency may believe it has this discretion, continuing to issue timber sale "purpose and need" statements and analysis documents that fail to publicly disclose timber volumes are a major purpose behind the region's projects violates environmental policy laws. NEPA requires that the public as well as the decision-maker have all pertinent information concerning proposed projects. The failure of the EIS to disclose the existence of Pacific Northwest Regional and Deschutes NF timber volume target quotas driving agency projects and influencing the design and selection of alternatives violates the clear disclosure requirements of the NEPA. Additionally, NEPA requires unbiased, scientifically-based, objective analysis and a full range of reasonable scientifically-sound alternatives. The existence of undisclosed quotas unduly influencing this project towards meeting predetermined agency timber volume targets violates the requirements of the NEPA. Quotas sabotage agency projects, illegally predisposing agency analysis towards developing logging-biased alternatives, and predisposing decision-makers towards approving logging that is likely to result in significant harms to imperiled wildlife and biodiverse forest ecosystems. Such is the case with the Snow Fuels project, which fails to disclose the existence or influence of quotas.

Written in "obfuscate-speak" style, one doesn't have to work hard to read between the lines of this internal letter to understand timber corporation economics trump wildlife and ecological concerns in today's Pacific Northwest Region Forest Service.

Among the ever-growing ranks of harmful sales spawned by timber quotas are: 5 Buttes, Sno-fuels, GW, SAFR, W. Tumbull, and Black Crater in the Deschutes; East Maury and Spears in the Ochoco; Thorn, Knox, Sharps Ridge, and Ant in the Malheur; and Wildcat, Falls Meadowbrook, Farley, Monument, Skull & Flat in the Umatilla. Together these and other sales total many thousands of acres and millions of board feet. The logging they plan to implement would harm wildlife and salmonid spawning habitat, destroy spotted owl nesting habitat; harm pileated, black-backed, and white-headed woodpeckers; degrade habitat for marten; wolverine; lynx; neotropical migrant and native birds; pygmy, flammulated, and great gray owls; and many other biodiverse native species of concern.

It is doubly ironic that this is done under Northwest Forest Plan cover – prioritizing timber volume goals above others. The plan has failed dismally to meet population recovery and old growth habitat protection goals for spotted owls and other wildlife, whose populations continue to decline steadily. This is illegal, as timber volumes must be based upon a mix of LRMPs and site-specific project analysis, not arbitrary and capricious timber volume targets which have little relevance and no legal bearing on federal national forests. The agency's blanket requirement of the region's forests to meet arbitrary timber targets violates federal environmental policy laws. Failure to disclose and analyze the impacts of this additional

timber directive violates the NEPA. The following is the timber quota letter announcing the increased timber quotas in the Pacific Northwest Regional Forester's own words:

“Linda Goodman - Regional Forester, Pacific Northwest Region:”

“As we get older, we accumulate things. Sometimes our closets show our life story by the old shirts, slacks or shoes that “hang out” in them. And sometimes, we face the need to downsize our closets and find the usable items that may have benefit to others. We often provide clothes, appliances and other useful items for the greater good of others.

Sometimes, our forests resemble those closets—a bit cluttered and in need of “tidying up.” This tidying up not only aids the environment by creating a healthier forest, it also can provide benefits to our local communities.

It takes money and time to do this. For a long time, we have known we didn't have the funds to get this work done. That has changed.

The President and Congress have given us an additional 24.7 million dollars to use for our fuels management and timber program. These dollars come with an expectation for us to increase our timber volume for the Northwest Forest Plan and also the east-side Forests.

We're going to increase our timber offered program to 675 million board feet this year, and 800 million board feet in fiscal year 2008. That is up from 520 million board feet last year. We're going to do this in both young and mature stands to accelerate growth, reduce hazardous fuels, and improve wildlife habitat. This work will help us fulfill the requirements of the Northwest Forest Plan.

One of the key provisions of the Northwest Forest Plan is to provide economic stability to local communities. Unfortunately, due to a host of factors, the local communities have not seen the stability as envisioned by the Plan. By offering an increased volume of timber, local communities will benefit, both in terms of jobs, revenue, and healthy forests.

I realize this work, so late in the fiscal year, won't be easy, and will require a united approach to handle the work. I've appointed Willamette National Forest Supervisor Dallas Emch to spearhead our efforts. Dallas will be working with Forests to make sure we can get the work done in a timely and efficient manner. We know you already had a full schedule of work so we want to look at a full range of options to assist employees in meeting our work. Our goal remains to do this work in a collaborative effort, with counties, partners and citizens all working together for the good of the land and the people

“Tidying up” our forests and providing benefits to local communities makes good sense.”

Interesting letter, for interesting times? Yet forests are not “closets.” Forests are an integral part of Earth's interwoven ecosystems, supporting innumerable biodiverse species, supplying clean waters, and providing all with the wondrous beauty of untrammled nature. Forests should not be subject to the political wiles of corporate timber, which has already imperiled not only spotted owls but numerous other LOS dependent wildlife and salmonid species, decimated old growth, and left forest ecosystems in fragmented tatters. We respectfully call for these Northwest Forest Plan dollars to be employed for legitimate restoration, forest protection, and recovery of imperiled species – and not used to toss more irreplaceable trees into the black hole of insatiable timber profits. The agency must begin to responsibly address the failure of Northwest Forest Plan provisions to prevent the continuing serious decline of ESA threatened-listed spotted owls, and a host of other imperiled forest species of concern. The agency must also comply with scientifically founded management directions for eastside forest projects, assuring the attainment of population, habitat, and viability goals for eastside imperiled species. A scientifically and ecologically sound restoration project needs to be designed for the Snow Fuels project area, and the current illegal EA logging plan withdrawn.

“Desired Condition” & Ecological Incongruities

The EIS describes the “desired condition” as fuels supporting generally low intensity fire. Throughout the project’s extensive lodgepole pine forest acres this “desired condition” does not comport with ecological reality. Lodgepole forest stands historically naturally burn at high intensity levels at regular intervals of time. As lodgepole stands age and increase in density, they naturally experience growing mortality levels, accumulating increasing fuel loads over time. Eventually such stands naturally burn in high mortality severe fires. Lodgepole forests are fire-adapted, requiring high severity fires from which new stands develop. Such fires are ecologically necessary for a number of interwoven factors to which this species is adapted, among which are: soil nutrient replenishment; insect population (bark beetles) and other tree pathogens level reductions and control (inherent natural checks and balances); competing tree and vegetative species reduction and control; and lodgepole regenerative propagation which is dependent upon recurrent periodic high intensity fires. The District’s proposal to re-make such a large portion of the area’s natural forests is not in accord with the historic natural ecological composition and necessary fire ecology process of the extensive lodgepole pine forests in the project area. National Forest Management Act provisions requiring the maintenance and protection of native biodiversity and ecological integrity would be violated by the proposed recreation of interior lodgepole forest area processes, and the resultant irreparable impacts upon this type of forest ecosystem and its dependent species over time. National Environmental Policy Act requirements that projects be based upon sound science and reasonable expert advice would also be violated by the unreasonable, scientifically indefensible plans to re-make and jeopardize natural ecological processes and conditions in lodgepole pine forest stands. Such a “desired future condition” – essentially artificially re-making nature - might make some semblance of sense in the immediate vicinity of homes and roads, (such as human residential communities in the greater Sunriver area). However, this project occurs across a large area where significant landscape scale interior forest stands are not located near communities or their infrastructure.

The scientifically supportable intent of the project in landscape scale interior lodgepole pine forest ecosystems should be limited to:

1. maintaining the natural ecological fire cycles and processes of these systems and in edge area ecosystem transition zones on this portion of the landscape;
2. strategically placed management actions minimizing the risk of historically unnatural severe fires in ponderosa pine and low/mixed fire severity forests outside lodgepole pine dominant areas;
3. strategically placed actions within ¼ to ½ mile around places of human habitation, with requisite cooperative actions by those private lands and/or resort area residents/owners;
4. minimal actions as necessary to maintain natural forest functioning, habitat, and character while reducing severe fire risks to public ingress and egress in major travel routes in the area.

The grandiose geographic extent of this project is scientifically unjustifiable, failing to prioritize areas of high residential and human resource value, high hazard, and high risk by responsibly and reasonably limiting logging-thinning actions to areas located nearest to communities and high priority travel routes. The most important feature of a CWPP, and any EIS based in-part upon it, should be to establish a clear set of ecologically feasible priorities, recognizing there are limited resources and the most important focus of WUI efforts should be within ½ mile of residential population areas.

If a community of people decide to settle in a recurrent high intensity fire-adapted ecosystem, they have inherently chosen to live with this fire-risk. Whether these residents have chosen this intelligently or not remains debatably questionable. Still, by focusing strategically on the areas nearest human communities, inherent fire risks can be effectively reduced. There is no justifiable need to extend WUI boundaries to the extent that this EIS and the county’s CWPP have attempted. The unreasonable extent

and consequent economic costs alone of this project have resulted in plans to include ecologically inappropriate logging of fire-resistant mature and old trees, absent ecologically responsible diameter limits or provisions to retain all mature and old naturally fire resistant trees, to help pay for the project's actions. By scaling the project down to actions that can be scientifically substantiated, there would be no "economic need" for harmful logging actions that equate with "cutting off the fingers of one hand to place a ring on a finger of the other hand."

Unless humans are unwisely allowed to recreate the earth's diverse interwoven natural ecosystems, with current and future generations suffering the growing repercussions from climate change to drought to high intensity fires to toxins and pollutants, etc. we have an ethical and legal responsibility to protect the ecological integrity and functioning of our public lands forest ecosystems. It is not within the legally permissible prerogative of the USFS or Klamath County to remake nature to their artifices or whims. Ultimately, as we are witnessing with increasing cumulative global climate change and ecosystem degradation, such recreation is also not plausible nor without significant and often unforeseen harmful repercussions.

The EIS fails to assess, and needs to disclose and analyze, the consequences of disrupting natural disturbance processes in lodgepole pine and mixed conifer forest ecosystems. Among the integral necessary benefits of periodic high severity fires are containing natural forest pathogens within the checks and balances of nature, including mistletoe, bark beetles, ips, root/fungal and other diseases, increasing nutrient availability, botanical diversity, stand vigor and growth, habitat diversity and rotation, and a host of other interrelated processes as old as the evolution of these forests themselves. The EIS must address pertinent scientific research assessing the costs and impacts of altering natural processes in the project area's lodgepole pine and mixed conifer forests. Of these latter, particularly in high elevation, north aspect, moist fir dominant forests with less frequent but still recurrent mixed and/or high severity fire patterns. A reasonable informed legal decision approving the proposed actions cannot go forward under provisions of the NEPA absent these imperative scientific analysis disclosures and considerations.

Conclusions

Our organizations remind the agency of our original offer to work with the USFS to redesign projects such as BLT to better uphold conservation goals and federal environmental policy laws. Hopefully the FS will recognize this opportunity to proceed in an ecologically responsible direction, withdraw this legally deficient and ecologically harmful project DEIS and conduct a legally and scientifically responsible SEIS. The agency must develop a scientifically and legally compliant project that can help restore and protect the resiliency, wildlife, aquatic systems and species, native plants, and ecological integrity of the BLT Project area, protecting natural resources including wildlife, old forest structure, and waterways.

For the Natural Heritage of us all,

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**Oregon Chapter Sierra Club &
League Of Wilderness Defenders – Blue Mountains Biodiversity Project**

**Comment Exhibits on the Deschutes National Forest
Crescent Ranger District BLT Project Draft EIS**

Exhibit I: Survey photos exemplifying project unit area site-specific conditions and issues.

Exhibit II: Completed survey forms for selected BLT units, representative of site-specific conditions and issues.

Exhibit III: CD compilation of applicable scientific research, reports, judicial caselaw, and conservation issues:

A. Fire Thinning Science Volume I Contents:

1. Effects of Fire and Post-fire Salvage Logging on Avian Communities in Conifer-dominated Forests of the Western United States (Kotliar, 2002)
2. Fire on the Mountain: Birds and Burns in the Rocky Mountains (Kotliar, 2005).
The collective influence of fire and human activities on the landscape influences avian community structure and dynamics.
3. The Effects of Postfire Salvage Logging on Cavity-Nesting Birds (Hutto & Gallo, 2006).
4. Appeal from the United States District Court: Appeal the district court's denial of preliminary injunction to halt the implementation of several United States Forest Service post-fire logging sales in the Umatilla National Forest.
5. Fire, Fuels and restoration of ponderosa pine-Douglas fir forests in the Rocky Mountains, USA (Baker et al, 2005).
A restoration model based on low-severity fire modeling, focusing on thinning and prescribed burning to restore historical forest structure.
6. Be careful what you wish for: the legacy of Smokey Bear (Donovan & Brown, 2007).
An alternate approach to wildfire management.
7. Postfire management on forested public lands on the western United States (Beschta et al, 2004).
8. Overstory and understory development in thinned and under-planted Oregon Coast Range Douglas fir stands. (Chan, et al, 2006).
9. Postfire logging hinders regeneration and increases fire risk (Donato, et al, 2006)
10. Postfire logging hinders regeneration and increases fire risk (Donato, et al, 2006)
11. Postfire impacts on forests and wildlife (Hutto, 2005)
12. Executive Summary: Interim protection for late successional forests, fisheries and watersheds (1993).

13. Study: Reforestation rich after fires: looking at the aftermath of wildfires in the forests of southwestern Oregon and Northern California (Barnard, 2007).
14. Fire regime considerations: Key issues in fire regime research for fuels management and ecological restoration (Veblen, 2003).
15. Forest Dreams, forest nightmares: An ecological and economic look at the Blue Mountains and the changes that have taken place since settlement (Langdon, 1995).
16. Preemptive and salvage harvesting of New England forests: When doing nothing is a viable alternative, (Foster & Orwig, 2006).
17. Changes in downed woody material and forest structures after prescribed fire in ponderosa pine forests, analyze changes in downed woody material and forest structure (trees and snags) measured within one year after prescribed fire treatments completed in Arizona and New Mexico in order to see effects on wildlife populations and their habitat (Saab).
18. Toward meaningful snag-management guidelines for postfire salvage logging in North American conifer forests. Effects of postfire logging on black-backed woodpecker and cavity nesting birds (Hutto, 2006).
19. Birds in the black: *Through following avian wildlife, a UM scientist has discovered that burned forests play a critical role in the health and diversity of the Western landscape* (Jamison, 2005).
20. Research Article: A landscape model quantifies error in reconstructing fire history from scars. *Errors in reconstruction may lead to a misunderstanding of the role of fire or incorrect restoration prescriptions. Here, a stochastic landscape model is used to quantitatively assess the accuracy of a commonly used statistic* (2005).
21. Logging to control insects: The science and myths behind managing forest insect “pests”. (Black, the Xerces Society for Invertebrate Conservation, Portland, Oregon, 2005).
22. Neo-tropical migrant and native birds: The impacts of timber logging on neo-tropical migrant and native birds.
23. Fire severity in conifer forests of the Sierra Nevada, California (Odion & Hanson, 2006).
A study of both spatial and temporal patterns of contemporary fires in the Sierra Nevada Mountains, California and how they are linked to species diversity.
24. Fire ecology of Ponderosa Pine and the rebuilding of fire-resilient Ponderosa Pine Ecosystems (Fitzgerald, 2005).
25. Research Proposal: Post fire management of snag forest habitat in the Sierra Nevada, (Hanson, 2006).

Investigation of the association of three woodpecker species with four habitat strata following fire in the Sierra Nevada, assessment whether one species in particular, the Black-backed Woodpecker, may generally be restricted to forest recently burned at high severity (“snag forest habitat”). Also investigates the factors that best explain post-fire conifer mortality, and thus the creation of snag forest habitat, as well as the extent of natural conifer regeneration in snag forest patches that are left unmanaged following severe fire.

26. Scorched forests best left alone, study finds. Biscuit salvage – Logging after the fire killed seedlings and added tinder, research by an OSU-led team says. (Milstein, 2006, Oregonian).
27. Summary Report – Winter habitat use by Spotted Owls on BLM within the boundaries of the Timbered Rock fire (Andrews & Anthony, OCFWRU, DFW, OSU, 2004).
28. Short-term effects of wildfires on spotted owl survival, site fidelity, mate fidelity, and reproductive success (Bond et al, 2002).
29. Associations between forest fire and Mexican Spotted Owls, (Jennes et al, 2004).
30. Stress (Waring, OSU, 2004)

A brief analysis of the kinds of tolerance and avoidance mechanisms that trees evolved to withstand specific stresses.

31. Studies to find danger to forests in thinning without burning (Robbins, New York Times, 2006).

Missoula, Montana – Thinning forests without also burning accumulated brush and deadwood may increase forest fire damage rather than reduce it, researchers at the Forest Service reported in two recent studies.

32. Thinning and nitrogen fertilization in a Grand Fir stand infested with Western Spruce Budworm. Part IV: An ecosystem management perspective (Waring, 1992).
Allowing pine forests to be replaced with fir through fire protection and selective logging has increased the nitrogen demand beyond that readily supplied in the ponderosa pine/true fir type. Fertilizing with one application of nitrogen at the time of an insect outbreak may reduce mortality and associated fire hazard through a period of up to 5 years.
33. United States Court of Appeals – Oregon Natural Resources vs. Timber Products.
34. Assessment of site index and forest growth capacity across the Pacific and Inland Northwest U.S.A. with a MODIS satellite-derived vegetation index (Waring et al, 2006).

Foresters, scientists, and policy makers would benefit if region-wide maps of potential forest productivity were available at decadal intervals to record changes, seek causes, and plan for the future.

35. The watershed impacts of forest treatments to reduce fuels and modify fire behavior (Rhodes, 2007). (Pacific Rivers Council)

This report examines the effects on watersheds and aquatic resources from forest fuel reduction treatments aimed at modifying wildland fire behavior on public lands.

B. Fire & Forest Science Vol. II Contents:

- Wildfire Charcoal and Soil Processes, Thomas H. DeLuca et al
- Contributions of Pinus Ponderosa Charcoal to Soil Chemical and Physical Properties, Christopher M. Briggs in Briggs, Breiner, Graham, 9 May 2005.
- Chemical composition of forest floor and consequences for nutrient availability after wildfire and harvesting in the boreal forest, E. Thiffault¹, K. D. Hannam², S. A. Quideau², D. Paré¹, N. Bélanger³, S.-W. Oh⁴ and A. D. Munson⁵, March 2008.
- Nitrogen mineralization and phenol accumulation along a fire chronosequence in northern Sweden, Zhanna Yermakov^{1,2} and David E. Rothstein¹, May 2006.
- Changes in understory composition following catastrophic windthrow and salvage logging in a subalpine forest ecosystem, Cristina M. Rumbaitis del Rio, 2006
- Contributions of Pinus Ponderosa Charcoal to Soil Chemical and Physical Properties, Christopher Briggs, 2005.
- Biochar: A Soil Amendment that Combats Global Warming and Improves Agricultural Sustainability and Environmental Impacts, recent report compilation of scientific research.
- Communication on BioChar and its implications for forest and societal management, and role in ongoing climatic change.
- Biogeochemical Consequences of Wind and Salvage Logging Disturbances in a Spruce-Fir Forest Ecosystem, C.M. Rumbaitis-del Rio and C.A. Wessman.
- And Several Additional New Studies also....

C. Neotropical Migrant & Native Birds research.

D. Five Buttes file and legal decision.

E. Spotted Owl Science.

F. “Forests, Fires, Resilience & Restoration” Sierra Club Presentation.