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To Whom it may concern:

These are comments on the Fishtrap Draft Environmental Impact Statement (DEIS), on behalf of the Ecology Center, Native Forest Network, and the Alliance for the Wild Rockies.

In essence, this DEIS reveals the profoundly horrific management that results when the Forest Service (FS) resigns itself to accept as "fact" that timber receipts must be its primary source of sorely needed watershed restoration funding. As stewards of public lands, you can, and must, do better. The premise is, the more logging that happens, the more restoration that could be paid for. Just how much logging (acres, volume, timing) would have to happen here for all the known restoration needs to be paid for?

Our organizations appreciate the genuine ecosystem restoration activities proposed, activities such as road obliteration, culvert removals and upgrades, large woody debris additions to streams, and motorized travel restrictions.

As far as the vegetation treatments, we have serious reservations. The action alternatives overly emphasize logging, despite the adverse cumulative effects attributable to previous logging. Obviously, timber production is too high a priority for the Lolo National Forest (LNF).

The part of the purpose and need emphasizing "at risk" vegetative communities is perplexing. The DEIS doesn't cite field-gathered data on why the FS believes that aspen, white pine, larch and ponderosa pine are in some way underrepresented in the project area landscape. Also, the DEIS states that logging has occurred on a very large portion of the analysis area, 40% (3-21), and much of that was clearcut or other "regeneration" logging. Just what tree species have you been planting, such that there is still a need to tweak the species balance?

The choice for analysis area boundaries omits and largely attempts to ignore the heavily industrialized land of other ownerships on three sides of the project area. Because of the condition of those areas of land, the Fishtrap project area is especially important for those values that can only be emphasized on public land, values such as clean water, old-growth habitat, wildlife populations, endangered species habitat, and primitive recreation. This donning of blinders is evident from the omission of full analysis of the lower Fishtrap Creek watershed. Fishtrap Creek is on the list of Water Quality Limited Segments (WQLSs) in regards to Clean Water Act and Montana water quality regulations, and a clean-up plan (TMDL) is to be prepared, yet by the choice of analysis area boundaries this EIS apparently does not disclose the degree to which it is a part of the needed restoration of the watershed. And despite the dire population and habitat situation for grizzly bears in the Cabinet-Yaak Grizzly Bear Recovery Zone (CYGBRZ), the choice of project area boundaries only includes 15% of Bear Management Unit 22 (DEIS at 1-4), and project activities will not result in compliance with the recent Forest Plan Amendment for access management within the Bear Management Unit (BMU).

The precision, or amount of error, in the modeled or otherwise estimated effects analysis estimates for measures of just about all resource conditions is not disclosed in the DEIS. The DEIS misrepresents them as precise measurements when in fact they are estimates, based upon limited sampling or no sampling, that inherently has an amount of error. The FS, in its "Response to Motion for Preliminary Injunction" brief in the ongoing litigation on the Kootenai NF, stated in regards to a scientific report, "Dr. Schloeder's purported 'statistical analysis' reports no confidence intervals, standard deviations or standard errors in association with its conclusions." The FS must be held to the same standards of data and information quality it expects of those who disagree with FS conclusions. However, the DEIS failed to present any "confidence intervals, standard deviations or standard errors in association with its conclusions" regarding the estimates or modeled effects analyses. Since the DEIS does not provide the public or decision maker with any kind of information on the accuracy of its estimates, the information is not scientifically valid nor reliable.

The DEIS claims there is declining forage base and "excess cover" for big-game species (1-7), but provides no quantification of the trends for either habitat nor populations.

Despite the admitted need to benefit fisheries as *the* highest priority here, the DEIS omits an alternative that would carry out only restoration activities and that wouldn't do more unnecessary damage—activities such as logging, log hauling, and road reconstruction to facilitate logging. This is not reasonable. The DEIS states such an alternative couldn't be implemented because of limited funding. When has the FS most recently requested appropriated funding for such restoration activities for the Fishtrap Creek watershed? Also, please disclose the amounts of restoration funding requested forestwide for the past decade, and disclose the numbers for all the identified financial needs for restoration forestwide. How much funding has the Lolo NF requested in the past decade for other restoration such as road obliteration, culvert removals or replacements, etc. that is not tied to timber sales? The truth is, through the appropriations process the FS **requests** a lot of timber production money but fails to **request** enough restoration funds. Fully analyzing such a restoration only alternative would serve the very useful and educational purpose of informing the public and Congress of the amount of funds needed for restoration and endangered species habitat restoration, via comparison with other alternatives.

The FS should always include an alternative that removes or fixes all the roads having design flaws, are otherwise contributing to soil and watershed problems, or are not needed for foreseeable management activities. The DEIS fails to consider an alternative that gets the streams in the project area to meet Riparian Management Objectives (RMOs). The public needs to know how much it costs to manage these watersheds correctly.

The failure to fully analyze an alternative that adequately removes or fixes all the roads having design flaws, and are otherwise contributing to soil and watershed problems, without adding the adverse impacts of new roads and logging, violates NEPA.

We recommend that the FS analyze an alternative that is consistent with the Forest Restoration Principles and Criteria (DellaSala, et al., 2003). These principles have been developed and adapted by a number of conservation groups and forest practitioners across the nation.

How much funding has the Lolo NF requested in the past decade for restoration of vegetation that is not tied to timber sales? As far as we know the Lolo NF has not requested that Congress fund these restoration projects on a landscape level, instead relying on logging projects to fund the restoration. Because of the cumulative effects of logging and roading, this is a policy that is destined for disaster. Riggers, et al. 1998 provides a good discussion on the comparison of stream and water quality conditions in roadless areas vs. roaded, developed areas on the Lolo National Forest.

Where past fire suppression is often identified as a culprit, it is necessary for the FS to programmatically assess its fire management policies so that economic investments in fuel reduction are most efficient. Throwing money at unnecessary fire suppression activities followed by throwing money at fuel reduction because of the adverse effects of fire suppression makes no sense ecologically nor economically. Likewise, spending money on fuel reduction activities so that fire suppression can allegedly be carried, resulting in the need to do later fuel reduction, followed by more fire suppression,… seems like a cycle of management that sustains not ecosystems rather only FS job security.

We believe that high intensity forest manipulation in response to the effects of “successful” fire suppression, which seems to be designed to replace natural fire, will not lend towards restoring functional ecosystems. Rather, logging activities will disrupt the natural forest succession. Fire is a natural and essential component of forest ecosystems, and the presence of naturally functioning wildland fire indicates a high degree of ecosystem function.

Removing overstory trees to mechanically maintain tree separation well away from private lands will unnecessarily “artificialize” the forest ecosystem over too large an area. Once again, this points to the need for the FS to perform landscape level fire management planning that is transparent and part of the public process. Beschta et al., 1995 state, “Land managers should be managing for the naturally evolving ecosystems, rather than perpetuating artificial ones we have attempted to create.”

The DEIS makes vague tree-density claims (“uncharacteristic” natural range, etc.) but doesn’t provide numbers as to what <u>is</u> the normal range. Any forest condition that is maintained through intense mechanical manipulation is not maintaining ecosystem function. We request detailed disclosure of the historical data used to arrive at the DEIS’s assumed “desired conditions.” We don’t believe the proposed management activities are designed to foster the *processes* that naturally shaped the ecosystem and resulted in a range of natural structural conditions, they are merely designed to recreate structural *conditions in a single point* in time that the FS considers "natural." Generally, past process regimes are better understood than past forest structure. How are you factoring in fire, insects, tree diseases, and other natural disturbances in specifying the structural conditions you assume to be representative of the present "uncharacteristic" natural range?

The development of approved fire management plans in compliance with the Federal Wildland Fire Policy was the number one policy objective intended for immediate implementation in the Implementation Action Plan Report for the Federal Wildland Fire Management Policy and Program Review. In general, the FS lags far behind other federal land management agencies that have already invested considerable amounts of time, money, and resources to implement the Fire Policy. Continued mismanagement of national forest lands and FS refusal to fully implement the Fire Policy puts wildland firefighters at risk if and when they are dispatched to wildfires. This is a programmatic issue, one that the current Forest Plan does not adequately consider. Please see Ament (1997) as comments on this proposal, in terms of fire policy and Forest Planning.

The DEIS does not adequately disclose the ecological or economic cumulative impacts of fire suppression. A true no-action alternative would involve no fire suppression activities, since there's never been adequate NEPA on the Lolo NF's admittedly failed fire suppression policy.

Many adverse consequences to soil, ecological processes, wildlife, and other elements of the natural environment are associated with logging, including thinning. (Ercelawn, 1999; Ercelawn, 2000.) For example: "Salvage or thinning operations that remove dead or decayed trees or coarse woody debris on the ground will reduce the availability of forest structures used by fishers and lynx." (Bull et al., 2001.)

The DEIS ignores scientific evidence that even ponderosa pine forests have been found to originate in stand replacing fire events (Arno et al. 1995).

Veblen's (2003) research results question the premises the DEIS puts forth to justify its "uncharacteristic vegetation patterns" discussions, that being to take management activities to alter vegetation patterns in response to fire suppression:

> The premise behind many projects aimed at wildfire hazard reduction and ecological restoration in forests of the western United States is the idea that unnatural fuel buildup has resulted from suppression of formerly frequent fires. This premise and its implications need to be critically evaluated by conducting area-specific research in the forest ecosystems targeted for fuels or ecological restoration projects. Fire regime researchers need to acknowledge the limitations of fire history methodology and avoid over-reliance on summary fire statistics such as mean fire interval and rotation period. While fire regime research is vitally important for informing decisions in the areas of wildfire hazard mitigation and ecological restoration, there is much need for improving the way researchers communicate their results to managers and the way managers use this information.

The DEIS adopts the broad scale landscape assessment and results of the Roads Analysis Process (RAP) as making decisions regarding “desired conditions” and access management, however those decisions have never been subject to the full public review process. Why is the Roads Analysis Process not open to public comment, in terms of providing alternative ways of managing the Fishtrap watershed road system?

The DEIS fails to provide maps of grizzly bear habitat that depict current core, during project core and post project core. Theses maps should include the roads layer and indications of which roads have effective road closures (earthen berms, etc.) as well as the outline of road buffers that delineate core areas.

Grizzly bears would be displaced due to timber sale activities in the short term (while the timber sale is active). The DEIS fails to address the cumulative impacts of the “short term” displacement of bears in BMU 22 due all other recent, ongoing, or foreseeable actions listed in the Cumulative Effects section that have or will take place in BMU 9. DEIS at 3-69.

The DEIS fails to discuss impacts on seasonal habitat. It has been well established in the scientific literature that of the seasonal habitats, spring range is the least available to bears due to high road densities in lower elevation habitat. The timing of den emergence and use of spring habitat is likely dependent on weather patterns, for example how long it takes for the snow pack to melt in higher elevation summer range. Another factor that should be considered is the quality of spring habitat: will it be or is it already highly fragmented? Are desirable spring forage plant species removed/destroyed as a result of logging? The grizzly bear analysis must consider these factors when gauging the impacts on grizzly bears.

The Biological Opinion for the Grizzly Bear Access Management Forest Plan Amendments stipulates non-discretionary Terms and Conditions for areas occupied by grizzly bears outside the Recovery Zone (RZ), to ensure compliance with Section 9 of the ESA. The ORD in the areas outside the RZ must be considered.

All roads opened for log hauling and other timber sale related traffic constitute an open road from a grizzly bears’ perspective, regardless of whether or not “closed” to the public.

The DEIS does not address the recent proliferation of recreational motorized access (ATVs, motorcycles, snowmobiles) and the potential to increase that use in the project area and BMU 22.

The FEIS should discuss and disclose the current extent of motorized recreational use in the BMU and whether it occurs in areas that are supposed to be non-motorized and if so, where, and whether any activities are likely to increase motorized recreational use (both legal and illegal) in the BMU. It should also address the potential impacts on wildlife and fish should motorized recreation be increased as a result of the project.

The Alliance for the Wild Rockies, with other groups, filed an appeal of the ROD approving the Forest Plan Amendment for Motorized Access Management Within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones. Appellants incorporate that appeal, and all its cited literature and exhibits, within these comments, since the Fishtrap project would adversely affect grizzly bears residing in and around the Cabinet-Yaak RZ.

The DEIS's contentions that potential insects and tree diseases in the project area are something to be concerned about ecologically runs counter to more enlightened thinking on such matters. For example, Harvey et al. 1994 state:

> Although usually viewed as pests at the tree and stand scale, insects and disease organisms perform functions on a broader scale.
>
> …Pests are a part of even the healthiest eastside ecosystems. Pest roles—such as the removal of poorly adapted individuals, accelerated decomposition, and reduced stand density—may be critical to rapid ecosystem adjustment
>
> …In some areas of the eastside and Blue Mountain forests, at least, the ecosystem has been altered, setting the stage for high pest activity (Gast and others, 1991). This increased activity does not mean that the ecosystem is broken or dying; rather, it is demonstrating functionality, as programmed during its developmental (evolutionary) history. (Emphasis added.)

We agree that a shift in forest structure including the pattern or arrangement of the Lolo NF forest communities has occurred, and could affect resilience and the sustainability of historic ecological relationships. Our agreement is based upon our awareness of the degree of logging and roadbuilding in recent decades, causing significantly reduced amounts of late successional forest habitat, snags, large woody debris, loss and fragmentation of the remaining mature and late successional interior habitat in the roaded areas. The DEIS discloses that so much of the project area has been heavily logged (Map C-6 and elsewhere) and ignores the heavily logged condition of surrounding landscapes. However, there is no data that indicates that a shift due to increases in tree density is anywhere near as significant a factor in affecting resilience and the sustainability of historic ecological relationships as the past logging and roadbuilding has—and will to an increased degree, if the heavy-handed logging methods as proposed are carried out.

Hessburg and Lehmkuhl (1999) question the assumption that fuel levels are too high for prescribed burning to take place before thinning. Their review also stresses the importance of larger level spatial and temporal issues, not well disclosed in the Fishtrap DEIS, nor understood in limited "treatment" proposals.

The DEIS fails to disclose how much forest—including old growth, by type, has been clearcut, salvaged, intermediate cut, thinned, etc. in the Fishtrap analysis area. This makes the discussion of vegetative historic conditions and LTA analyses of little value.

The cumulative effects analysis is largely a listing of some past projects, there is no meaningful analysis of how all activities have affected or will affect wildlife, fish, water quality or soils. In order for a cumulative effects analysis to be sufficient, the following must be included in an EIS:

- A list of all past projects (completed or ongoing) implemented in the proposed project areas' watersheds.
- An integrated discussion of those projects' impacts on the resources potentially affected by the proposed action.

- The results of all monitoring done in the project areas as committed to in the NEPA documents of those past projects.
- The results of all monitoring done in the proposed project areas as a part of the Forest Plan monitoring and evaluation effort.
- A description of any monitoring, specified in those past project NEPA documents or the Forest Plan for proposed project areas, which has yet to be gathered and/or reported.
- A discussion of how all those projects did, or did not, meet objectives and the needs for which the projects were designed.

It is important that the results of past project-level and forest plan-level monitoring be incorporated into project-level analysis. The project area was logged and roaded in previous projects and by Plum Creek. The NEPA documents for projects on national forest land included monitoring requirements as part of the project. The monitoring information following from those projects would naturally be of prime interest to the public and to the Interdisciplinary Team. The DEIS didn't even have a list of those actions creating the roads and logging units, nor disclose the differential effects of those different projects on all resources of concern. Finally, it fails to disclose if there was any proposed monitoring, specified in those past project NEPA documents or the Forest Plan for proposed project area, which the FS has failed to perform or report on due to funding shortfalls or other problems.

Juday (1978) discusses in detail how the protection of old-growth forests greatly sustains the many uses of our national forests, as mandated by the Multiple Use-Sustained Yield Act and the National Forest Management Act. Reasoned application of this science, as well as the rest of the scientific documents cited in my earlier comments, would improve management of the Fishtrap project area. Although Juday (1978) refers primarily to the mid and low elevation forests of the Coast Ranges and Cascade Mountains of the Pacific Northwest in the article, I believe that most of the discussions on ecological relationships and the ongoing processes in and development of old-growth forests pertain to old growth in this region. Regarding the Northern Region's primary old-growth document (Green, et al. 1992), we see no significant differences in the ecological realm. In fact, Juday (1978) was cited by the Kootenai National Forest during original Forest Plan development, in regard to old growth.

The DEIS fails to demonstrate that the proposed activities would be in compliance with all of the Forest Plan wildlife standards.

Similarly, the DEIS fails to demonstrate compliance with NFMA's population viability provisions. The DEIS's analyses for old-growth Sensitive and Management Indicator Species (MIS) makes no <u>connection</u> between the areas designated for old-growth management and old-growth wildlife species. The existing amounts, block sizes, connectivity, spatial relationships, and integrity free from edge effects and fragmentation are not at all related to old-growth wildlife species' habitat needs, and thus viability.

As far as we're aware, the Lolo NF has never determined minimum viable populations for any MIS or TES species as NFMA requires, nor has it specified the amount and distribution of habitat necessary to maintain viable populations. Nor has it monitored population trends of indicator species, as NFMA requires and in violation of Forest Plan Standards. Although "uncharacteristic natural range" is a driving concept behind the project's purpose and need, the DEIS provides no disclosures of the range of populations of MIS or TES species, nor the historic range of important habitat components and spatial considerations.

With this being mainly a logging project, one would expect that the effects of tree removal on wildlife habitat would be the subject of direct effects analysis. However, the DEIS is lacking in such analyses.

The DEIS indicates that all areas proposed for burning or logging were not surveyed specifically to determine their old-growth characteristics. What is the expected amount of error in such methodology?

At page 3-7 and 3-8, the DEIS states, "Old growth was analyzed forest-wide using 1995-1996 Forest Inventory and Analysis (FIA) data to estimate the percentage of the Lolo National Forest that meets the definition of old growth and to identify the associated confidence interval of that estimate (Czaplewski, 2003)." How many acres of the Lolo NF were sampled for that analysis? Please disclose the average acreage and range of block sizes of the old growth sampled.

USDA Forest Service (2004a) discusses the value of small patches of old-growth habitat and cites scientific studies and lists many adverse impacts from fragmentation of old growth habitat:

> Harvesting or burning adjacent to old growth can remove the edge buffer, reducing the effective size of old growth stands by altering interior habitats (Russell and Jones 2001). Weather-related effects have been found to penetrate over 165 feet into a stand; the invasion of exotic plants and penetration by predators and nest parasites may extend 1500 feet or more (Lidicker and Koenig 1996).
>
> …Harvest or burning in stands immediately adjacent to old growth mostly has negative effects on old growth, but may have some positive effects. Harvesting or burning adjacent to old growth can remove the edge buffer, reducing the effective size of old growth stands by altering interior habitats (Russell and Jones 2001). Weather-related effects have been found to penetrate over 165 feet into a stand; the invasion of exotic plants and penetration by predators and nest parasites may extend 1500 feet or more (Lidicker and Koenig 1996).
>
> … The occurrence of roads can cause substantial edge effects on forested stands, sometimes more than the harvest areas they access (Reed, et al. 1996; Bate and Wisdom, in prep.). Roads that are open to the public expose many important wildlife habitat features in old growth and other forested stands to loss through firewood gathering and increased fire risk.
>
> Effects of disturbance also vary at the landscape level. Conversion from one stand condition to another can be detrimental to some old growth associated species if amounts of their preferred habitat are at or near threshold levels or dominated by linear patch shapes and limited interconnectedness (Keller and Anderson 1992). Reducing the block sizes of many later-seral/structural stage patches can further fragment existing and future old growth habitat (Richards et al. 2002). Depending

> on landscape position and extent, harvest or fire can remove forested cover that provides habitat linkages that appear to be "key components in metapopulation functioning" for numerous species (Lidicker and Koenig 1996, Witmer et al. 1998).

For viability to be insured, the FS must maintain enough old-growth habitat for decades to come on the Lolo NF. There is no information on how much old-growth forest existed before logging nor what the normal historical ranges have been. There is no information on how much has been logged or lost due to road building, land exchange, wildland fire, poorly implemented old growth "restoration treatments", or simple forest succession during Forest Plan implementation. There is no discussion as to the impacts of this cumulative loss of old growth on wildlife species. And there is no disclosure on how much effective old growth is expected to be lost in the future due to these effects.

The DEIS's claim that there is "higher than historic amounts of old growth" (2-18) in some landtypes is especially ludicrous given the lack of historic data.

The fact that MA 21 in the project area is being moved around so much and that MA 21 doesn't really correspond to old growth shows just how inadequate the Forest Plan's old-growth wildlife species viability strategy is.

The DEIS does not cite any scientific information on its claims that the FS can enhance or create whitebark pine old growth.

USDA Forest Service (1999a) discussed the relationship between wildlife species and the habitat components found only in mature an old growth forests:

> Fishers occur most commonly in landscapes dominated by mature to old-forest cover." (III-254.) "Fishers prefer habitats with high canopy closure (greater than 80 percent) and avoid areas with low canopy closure (less than 50 percent). …The habitat requirements of fishers are thought to be associated with the physical structure of the forest and associated prey. This structure includes the vertical and horizontal complexity created by a diversity of trees sizes and shapes, light gaps, dead and downed wood and layers of overhead cover. Large-diameter spruce and grand-fir snags and large downed material are used for denning and foraging. Fishers tend to avoid non-forested areas. (III-254.)
>
> Many wildlife species occurring on the IPNF prefer or only occur in mature and old-growth forests. Mature and old forests are more likely than younger forests to provide habitat for species which prefer large trees, structural and biological diversity, and closed canopies, and/or which depend on snags or down logs for nesting, foraging or raising their young. (Id. at III-243.)
>
> Over 40 wildlife species depend on snags (dead trees) for their forage, cover or a place to raise their young. (III-244.)
>
> Existing structurally immature stands could provide old-growth habitat over time if not disturbed or if managed to maintain large, old, diseased and dead structural

> components of the forest within the levels needed to provide suitable habitat. (III-243.)
>
> Most species identified as "Sensitive" by the Forest Service are associated with later successional habitats, or habitat and cover types in short supply (such as cottonwood communities, large standing dead trees or large downed trees.). (III-244.)
>
> Large-diameter snags provide habitat for the greatest variety of cavity users and remain standing longer than smaller snags. (III-244.)
>
> Snags provide den sites for fishers and other mammals, and roosts for several species of bats and owls. (III-244.)
>
> Goshawks have habitat requirements associated with components and attributes of late successional forests. While associated with mature to old growth habitat, they utilize other successional stages. For example, feeding habitat can be found in pole-sized timber stands. …Old growth is important for northern goshawks not only for prey species habitat but also for the large trees that provide the substrate for their substantial nest structures. (III-255.)
>
> In the western United Stares, marten are most abundant in mature to old-growth true-fir or spruce-fir forests and generally avoid open, drier coniferous forest. They prefer forest stands greater than 40 percent tree canopy closure, which protects them from predators and enhances the moist conditions favorable for prey species. (III-257.)
>
> Marten are closely associated with mature to old-growth timber stands, preferring moist habitat types where small mammals are more abundant. American marten prefer stands with greater than 40 percent canopy closure, and tend to avoid those stands with less than 30 percent closure. In addition to a closed canopy, marten require an abundance of large downed logs and snags. This provided secure resting locations, denning habitat and winter access to small mammals living beneath the snow. (III-580, 581.)
>
> Pileated Woodpecker. This species nests and roosts in cavities in large diameter (20 inches diameter or greater) live or dead trees. It selects nest trees in clumps of snags in stands with at least 70% canopy cover. …Pileated woodpeckers feed on beetles, carpenter ants and other insects in live and dead trees, logs and stumps. (III-258.)

The Lolo NF has failed to cite any evidence that its managing for old growth habitat (i.e., logging and burning old growth) strategy will improve old-growth wildlife species' habitats over the short-term or long-term. In regards to this popular FS theory:

> (T)here is the question of the appropriateness of management manipulation of old-growth stands… Opinions of well-qualified experts vary in this regard. As long term results from active management lie in the future – likely quite far in the

> future – considering such manipulation as appropriate and relatively certain to yield anticipated results is an informed guess at best and, therefore, encompasses some unknown level of risk. In other words, producing "old-growth" habitat through active management is an untested hypothesis.

(Pfister et al., 2000, pp. 11, 15 emphasis added). Furthermore the DEIS fails to disclose that the areas "treated" will retain characteristics meeting Northern Region or Forest Plan old growth criteria—and if they won't, how they will at some specified time in the future. Moreover, the Lolo NF has not monitored for the presence of old growth wildlife species in areas previously treated as now proposed. There is no data to lead us to believe anything other than logging and prescribed burning these areas will reduce soil productivity, reduce their natural qualities, reduce their habitat value for wildlife, and reduce their resiliency to subsequent disturbance, such as fire. The DEIS's claims that its "treatments" enhance or hasten the existence of old growth is nothing but a smokescreen for logging old growth.

Since the DEIS treatments generally favor one type of old growth, i.e., one that is characterized by relatively open canopy closure and not very dense with trees, the Lolo NF must disclose which, if any, MIS are to "indicate" for this kind of old-growth habitat, and if none do, designate an MIS.

The DEIS mischaracterizes the old-growth issue as a concern over "old-growth trees" whereas the concern is old-growth forests. The former is a term that's not based in science and that lends to controversial logging in old growth. The regional definitions define old growth as a condition of the forest, not of individual trees. The DEIS must better address this scientific inconsistency.

After logging, how much old growth in the project area would remain "uncharacteristic" in its tree density, in the view of the FS? How much mature forest would remain "uncharacteristic" in its tree density, in the view of the FS?

Lesica (1995) stated that maintaining 10% of forests as old growth may result in extirpation of some wildlife species. This is based on his estimate that 20-50% of low and many mid-elevation forests were in old growth condition prior to European settlement. Is it the Lolo NF's position that maintaining 8% old growth on the Forest is enough to maintain population viability of all species needing old-growth habitat? If so, what scientifically based rationale (i.e., research results) is the Lolo NF relying upon to assert that maintaining 8% old-growth on the Forest is enough to maintain population viability of all species needing old-growth habitat, when no baseline levels (pre-logging) have ever been disclosed? Given the extreme amount of logging done on national forest land in the analysis area, we expect that there had to be at least double the present level of old growth than there is now. The DEIS's analysis fails to deal with that very basic fact.

USDA Forest Service, 2004a at page 3-199 states:

> Across the Interior Columbia River Basin (Quigley, et al. 1996), old forests have declined by 27 to 60 percent over that past 100 years and large residual trees and snags have decreased by 20 percent. Fire exclusion and timber harvest have altered the structure and composition of forests throughout the Basin, resulting in a 60

percent increase in susceptibility to insects, disease, and stand-replacing fires. These changes have contributed to declining habitat conditions for numerous species of wildlife associated with old growth forests.

The Lolo NF is home to the Canada lynx, listed as a Threatened species under the Endangered Species Act (ESA). In December 1999, the Forest Service and Bureau of Land Management completed their "Biological Assessment Of The Effects Of National Forest Land And Resource Management Plans And Bureau Of Land Management Land Use Plans On Canada Lynx" (Programmatic Lynx BA). The Programmatic Lynx BA concluded that the current programmatic land management plans "may affect, and are likely to adversely affect, the subject population of Canada lynx."

The Lynx BA team recommended amending or revising Forest Plans to incorporate conservation measures that would reduce or eliminate the identified adverse effects on lynx. The Programmatic Lynx BA's determination means that Forest Plan implementation is a "taking" of lynx, and makes Section 7 formal consultation on the Lolo NF Plan mandatory, before actions such as the Fishtrap project are approved.

The fact that continued implementation of the Forest Plan constitutes a "taking" of the lynx is not disclosed in the DEIS. Such taking can only be authorized with an incidental take statement, issued as part of a Biological Opinion (B.O.) during of Section 7 consultation. The Lolo NF must incorporate terms and conditions from a programmatic B.O. into a Forest Plan amendment or revision before projects affecting lynx habitat, such as the Fishtrap project, can be authorized.

The Programmatic Lynx BA's "likely to adversely affect" conclusion was based upon the following rationale. Plans within the Northern Rockies:

- generally direct an aggressive fire suppression strategy within developmental land allocations. …this strategy may be contributing to a risk of adversely affecting the lynx by limiting the availability of foraging habitat within these areas.
- allow levels of human access via forest roads that may present a risk of incidental trapping or shooting of lynx or access by other competing carnivores. The risk of road-related adverse effects is primarily a winter season issue.
- are weak in providing guidance for new or existing recreation developments. Therefore, these activities may contribute to a risk of adverse effects to lynx.
- allow both mechanized and non-mechanized recreation that may contribute to a risk of adverse effects to lynx. The potential effects occur by allowing compacted snow trails and plowed roads which may facilitate the movements of lynx competitors and predators.
- provide weak direction for maintaining habitat connectivity within naturally or artificially fragmented landscapes. Plans within all geographic areas lack direction for coordinating construction of highways and other movement barriers with other responsible agencies. These factors may be contributing to a risk of adverse effects to lynx.
- are weak in providing direction for coordinating management activities with adjacent landowners and other agencies to assure consistent management of lynx habitat across the landscape. This may contribute to a risk of adverse effects to lynx.
- fail to provide direction for monitoring of lynx, snowshoe hares, and their habitats. While failure to monitor does not directly result in adverse effects, it makes the detection and

assessment of adverse effects from other management activities difficult or impossible to attain.

- forest management has resulted in a reduction of the area in which natural ecological processes were historically allowed to operate, thereby increasing the area potentially affected by known risk factors to lynx. The Plans have continued this trend. The Plans have also continued the process of fragmenting habitat and reducing its quality and quantity. Consequently, plans may risk adversely affecting lynx by potentially contributing to a reduction in the geographic range of the species.
- The BA team recommends amending or revising the Plans to incorporate conservation measures that would reduce or eliminate the identified adverse effects to lynx. The programmatic conservation measures listed in the Canada Lynx Conservation Assessment and Strategy (LCAS) should be considered in this regard, once finalized.

(Programmatic Lynx BA, at 4.)

The Programmatic Lynx BA notes that the LCAS identifies the following risk factors to lynx in this geographic area:

- Timber harvest and precommercial thinning that reduce denning or foraging habitat or converts habitat to less desirable tree species
- Fire exclusion that changes the vegetation mosaic maintained by natural disturbance processes
- Grazing by domestic livestock that reduces forage for lynx prey
- Roads and winter recreation trails that facilitate access to historical lynx habitat by competitors
- Legal (in Montana) and incidental trapping and shooting
- Predation
- Being hit by vehicles
- Obstructions to lynx movements such as highways and private land development

As evidenced by the fact that the Canada lynx is now listed under the Endangered Species Act, it is clear that the Lolo NF must do more that follow its Forest Plan's weak protections provided for lynx. The Fishtrap DEIS does not demonstrate that the project and its analysis are consistent with all Standards contained in the Lynx Conservation and Assessment Strategy (LCAS).

The project area may well end up being designated as critical habitat. It is thus unreasonable to proceed with further adverse modifications of lynx habitat pending final designation of critical habitat. The DEIS's conclusion that the project would not adversely affect the lynx is not scientifically credible.

The DEIS also fails to adequately address the effects of logging on landscape pattern, which is essential for designation of critical habitat. The LCAS require that the FS:

> Maintain suitable acres and juxtaposition of lynx habitat through time. Design vegetation treatments to approximate historical landscape patterns and disturbance processes.
>
> If the landscape has been fragmented by past management activities that reduced the quality of lynx habitat, adjust management practices to produce forest

> composition, structure, and patterns more similar to those that would have occurred under historical disturbance regimes.

The LCAS sets mandatory Standards that would modify or amend the Forest Plan—steps the Lolo NF has thus far not accomplished. Important Programmatic Standards include:

> Identify key linkage areas that may be important in providing landscape connectivity within and between geographic areas, across all ownerships. (LCAS at 89.)
>
> Develop and implement a plan to protect key linkage areas on federal lands from activities that would create barriers to movement. Barriers could result from an accumulation of incremental projects, as opposed to any one project. (Id.)
>
> Map and monitor the location and intensity of snow compacting activities that coincide with lynx habitat, to facilitate future evaluation of effects on lynx as information becomes available. (LCAS at 83.)
>
> On federal lands in lynx habitat, allow no net increase in groomed or designated over-the-snow routes and snowmobile play areas by LAU.

Among the standards set out in the LCAS are provisions to maintain denning habitat as discussed in the programmatic lynx BO:

> Denning Habitat - Within developmental land allocations, existing Plan direction to maintain old growth habitat was judged to be adequate to provide for lynx denning habitat for all geographic areas except the Great Lakes. (BO at 31.)

However, the Lolo NF cannot meet lynx denning requirements unless it is meeting Forest Plan old-growth requirements. The Programmatic BA's analysis of the ability of the Forest Plans, as "amended" by the LCAS, to prevent a "taking" of the lynx is based upon the Forests' meeting such management standards. As the Lolo NF has not yet proved it is in compliance with old-growth species' viability standards or adequately dealing with forestwide old-growth declines, the project is not in compliance with the LCAS.

The impacts of both winter and non-winter motorized route densities have not been adequately considered. The LCAS states, "the effects of open road densities on lynx are poorly understood" (LCAS at 95).

It is not clear that the Lolo NF has a complete understanding of the current level of use of the project area for snowmobiles. Moreover, the DEIS fails to disclose the expected level of cumulative impacts on lynx from the additional new roads, additional skid trails, and other logging access routes to be constructed in the project area—roads/access routes that could be used by snowmobilers, snowshoers, and cross country skiers long after the logging activities have stopped. These roads/access routes can also impact lynx habitat during other seasons because of increased access for humans.

From Ruggiero, et al. (1999: “Lynx metapopulation dynamics operate at regional scales” (p. 24). Lacking maps and adequate discussion of the connectivity issue in the DEIS, it is impossible to see the landscape features that affect connectivity and metapopulation dynamics within and between LAUs both within and outside the project area, a goal of the LCAS mapping requirement.

The very existence of roads and compacted travel routes from motorized vehicles in snow could adversely affect lynx because of the advantage provided for other predators that normally wouldn’t be in portions of the project area in winter. Rather than taking this as a likelihood, the FS assumes it’s false until proven true, a policy that is consistent with managing for extinction.

Any assumption that a project will not adversely impact the lynx simply because LCAS standards and guidelines are met has never been verified. These management guidelines are merely a guess for lynx management, developed by the FS and other government agencies. There has never been an independent scientific peer review of these guidelines, including by lynx experts such as those who prepared the Ruggiero, et al. (1999) research paper upon which the LCAS is largely based.

We also incorporate the Ecology Center’s April 15, 2004 comments on the Northern Rockies Lynx Amendment DEIS, along with references, within these comments.

Viability of species is not merely an issue of a given project area. As a matter of science, a larger area must be considered. In their response to comments on the Dry Fork Vegetation and Recreation Restoration Project Environmental Assessment, Lewis & Clark National Forest, 2000, the FS acknowledged that viability is not merely a project area consideration, that the scale of analysis must be broader:

> Population viability analysis is not plausible or logical at the project level such as the scale of the Dry Fork Vegetation and Recreation Restoration EA. Distributions of common wildlife species as well as species at risk encompass much larger areas than typical project areas and in most cases larger than National Forest boundaries. (Appendix D at p. 9.)

Ruggiero, et al. 1994 provide guidance for reconciling the disparity between the geographic size of project analyses vs. the needs of species: “The disparity between the scale of a local management action (e.g., a timber sale) and the scale of the ecological response (e.g., species viability) is a fundamental problem in assessing population viability.”

Both Ruggiero, et al. 1994 and Lindenmayer, et al. 1993 provide discussion on why population viability analysis is the best available tool assessing population viability, the latter providing examples of population viability analysis being used for several species of wildlife and one plant species. Lacy and Clark, 1993 provide an example of population viability analysis used to design a computer simulation of risk of extinction of the pine marten.

In a scientific document prepared as a part of ICBEMP, Witmer, Martin, & Sayler (1998) make recommendations which reinforce our comments about population dynamics, population viability analysis, and monitoring. From the Abstract:

> Forest carnivores in the Pacific Northwest include 11 medium- to large-sized mammalian species of canids, felids, mustelids, and ursids. These carnivores have widely differing status in the region, with some harvested in regulated furbearer seasons, some taken for depredations, and some protected because of rarity. Most large carnivores have declined in numbers or range from human encroachment, loss or modification of forest habitat, accidental deaths (e.g., mortality from vehicles), illegal kills, and our inability to adequately monitor and protect populations. Efforts to reverse these trends include new approaches to reduce conflicts with humans, research to better define habitat needs, formation of expert carnivore working groups, and use of Geographic Information System models to predict specific impacts of habitat modifications. <u>Long-term preservation of large carnivores in the region is problematic unless we reduce forest fragmentation and conflicts with humans and improve our ability to quantitatively integrate population dynamics with landscape level habitat requirements.</u> (Emphasis added.)

Forest Plan standards require monitoring of wildlife population trends as scientific methodology becomes available. Methodology exists for determining the presence of indicator and Sensitive wildlife species presence in forest areas and/or for monitoring population levels (Bachman et. al. 1990, Becker 1991, Bull et al. 1990; Copeland 1993, Foresman et. al. 1998, Raphael 1994, USGS 1997, Watson et. al. 1999, Weaver, et al., 1997; Zielinski et. al. 1996, Zielinski et. al. 1995). Some of these techniques, such as snow track surveys, are useful for multiple species in single transects.

The issue of providing for the larger landscape needs of far-ranging forest carnivores (including the grizzly bear, gray wolf, wolverine, fisher, pine marten, lynx, goshawk, etc.) reveals the need to utilize the principles of Conservation Biology on a landscape level. Core areas of relatively undisturbed habitats need to be maintained. Linkages with other core areas need to be established, providing sufficient habitat components so the linkages, or corridors, are functional for genetic interchange purposes. Both core areas and linkages should be the focus of the watershed rehabilitation and recovery discussed above (such as road removal). Buffer zones around core areas should also be recognized in their contribution to habitat needs for these wildlife species.

State-of-the-art conservation biology and the principles that underlie the agency’s policy of “ecosystem management” dictate an increasing focus on the landscape-scale concept and design of large biological reserves accompanied by buffer zones and habitat connectors as the most effective (and perhaps only) way to preserve wildlife diversity and viability (Noss, 1993).

The continued fragmentation of the Lolo NF is a major ongoing concern. It is documented that edge effects occur 10-30 meters into a forest tract (Wilcove et al., 1986). The size of blocks of interior mature and old-growth forest that existed historically before management (including fire suppression) was initiated must be compared to the present condition. Again, this should be a landscape ecology analysis that looks at the larger picture of the fragmentation of habitat in surrounding concentric circles.

The FS has still not sufficiently dealt with the issue of fragmentation, road effects, and past logging on old-growth species' habitat. The DEIS fails to disclose the degree to which edge effects on old growth species' habitat exist, and how much total edge effect would be increased, by the alternatives. Cumulative effects on old-growth habitat and on old-growth associated species include increased fragmentation, reduced older forest patch sizes, increased high-contrast edge, reduced availability of interior habitat, and decreased forested connectivity. Such effects would reduce the ability to provide for the habitat needs of old-growth associated species for decades to come following implementation of the Fishtrap project and other activities in the watershed.

The DEIS's reliance on species recovery plans for the gray wolf and grizzly bear do not result in the species being well-distributed, as NFMA requires.

Mills (1994) points out the necessity of considering habitat fragmentation and current landscape pattern, caused by past logging and road building, for wildlife movements and therefore viability. Mills points out that the FS's use of the term "viable" refers to <u>habitat characteristics</u>, not <u>population dynamics</u>. Mills goes on to explain the range of parameters that must be used to make a scientifically sound assessment of the viability of wildlife species. Population dynamics refers to persistence of a population over time—which is key to making predictions about population viability. Population dynamics include assessing population size, population growth rate, and linkages to other populations and must be included in a scientifically sound Population Viability Analysis (hereafter "PVA"). Ruggiero, et. al. (1994) also point out that a sound PVA must utilize measures of population dynamics. Considering potential difficulties of using population viability analysis at the project analysis area level (Ruggiero, et. al., 1994), the cumulative effects of carrying out multiple projects simultaneously across the Lolo NF makes it imperative that population viability be assessed at least at the forestwide scale (Marcot and Murphy, 1992). Also, <u>temporal</u> considerations of the impacts on wildlife population viability from implementing something with such long duration as a Forest Plan must be considered (id.) but this has never been done by the Lolo NF. It is also of paramount importance to monitor population trends (as mandated by the Forest Plan) during the implementation of the Forest Plan in order to validate assumptions used about long-term species persistence i.e., population viability (Marcot and Murphy, 1992; Lacy and Clark, 1993). Finally, the 1999 draft NFMA planning regulations also recognize the importance of consideration of population dynamics for sustaining species.

USDA Forest Service (2004a) states*:*

> Forested connections between old growth patches …(widths) are important because effective corridors should be wide enough to "contain a band of habitat unscathed by edge effects" relevant to species that rarely venture out of their preferred habitats (Lidicker and Koenig 1996 and Exhibit Q-17). (Page 3-201.)
>
> Timber harvest patterns across the Interior Columbia River basin of eastern Washington and Oregon, Idaho, and western Montana have caused an increase in fragmentation of forested lands and a loss of connectivity within and between blocks of habitat. This has isolated some wildlife habitats and reduced the ability of some wildlife populations to move across the landscape, resulting in long-term loss of genetic interchange (Lesica 1996, U.S. Forest Service and Bureau of Land Management 1996 and 1997). (Page 3-216.)

USDA Forest Service (2004a) discusses the fragmentation effects on old-growth habitat, effects that would be exacerbated by the Fishtrap project without consideration of fragmentation effects on viability in the DEIS:

> Harvest or burning in stands immediately adjacent to old growth mostly has negative effects on old growth, but may have some positive effects. Harvesting or burning adjacent to old growth can remove the edge buffer, reducing the effective size of old growth stands by altering interior habitats (Russell and Jones 2001). Weather-related effects have been found to penetrate over 165 feet into a stand; the invasion of exotic plants and penetration by predators and nest parasites may extend 1500 feet or more (Lidicker and Koenig 1996). On the other hand, adjacent management can accelerate regeneration and sometimes increase the diversity of future buffering canopy.
>
> The occurrence of roads can cause substantial edge effects on forested stands, sometimes more than the harvest areas they access (Reed, et al. 1996; Bate and Wisdom, in prep.). Roads that are open to the public expose many important wildlife habitat features in old growth and other forested stands to loss through firewood gathering and increased fire risk.
>
> Effects of disturbance also vary at the landscape level. Conversion from one stand condition to another can be detrimental to some old growth associated species if amounts of their preferred habitat are at or near threshold levels or dominated by linear patch shapes and limited interconnectedness (Keller and Anderson 1992). Reducing the block sizes of many later-seral/structural stage patches can further fragment existing and future old growth habitat (Richards et al. 2002). Depending on landscape position and extent, harvest or fire can remove forested cover that provides habitat linkages that appear to be "key components in metapopulation functioning" for numerous species (Lidicker and Koenig 1996, Witmer et al. 1998). Harvest or underburning of some late and mid seral/structural stage stands could accelerate the eventual creation of old growth in some areas (Camp, et al. 1996). The benefit of this approach depends on the degree of risk from natural disturbances if left untreated.
>
> Effects on old growth habitat and old growth associated species relate directly to … "Landscape dynamics—Connectivity"; and … "Landscape dynamics—Seral/structural stage patch size and shapes." (Pages 3-196 to 3-197.)

Harrison and Voller, 1998 state, "connectivity should be maintained at the landscape level." They adopt a definition of landscape connectivity as "the degree to which the landscape facilitates or impedes movement among resource patches." Also:

> Connectivity objectives should be set for each landscape unit. …Connectivity objectives need to account for all habitat disturbances within the landscape unit. The objectives must consider the duration and extent to which different disturbances will alienate habitats. … In all cases, the objectives must acknowledge

> that the mechanisms used to maintain connectivity will be required for decades or centuries.

(Id., internal citations omitted.) Harrison and Voller, 1998 further discuss these mechanisms:

> Linkages are mechanisms by which the principles of connectivity can be achieved. Although the definitions of linkages vary, all imply that there are connections or movement among habitat patches. Corridor is another term commonly used to refer to a tool for maintaining connectivity. …the successful functioning of a corridor or linkage should be judged in terms of the connectivity among subpopulations and the maintenance of potential metapopulation processes. (Internal citations omitted.)

L. Harris discusses connectivity and effective interior habitat of old-growth patches:

> Three factors that determine the effective size of an old-growth habitat island are (1) actual size; (2) distance from a similar old-growth island; and (3) degree of habitat difference of the intervening matrix. …(I)n order to achieve the same effective island size a stand of old-growth habitat that is surrounded by clearcut and regeneration stands should be perhaps ten times as large as an old-growth habitat island surrounded by a buffer zone of mature timber.

L. Harris discusses habitat effectiveness of fragmented old growth:

> (A) 200-acre (80 ha) circular old-growth stand would consist of nearly 75% buffer area and only 25% equilibrium area. …A circular stand would need to be about 7,000 acres (2,850 ha) in order to reduce the 600-foot buffer strip to 10% of the total area. It is important to note, however, that the surrounding buffer stand does not have to be old growth, but only tall enough and dense enough to prevent wind and light from entering below the canopy of the old-growth stand.

L. Harris believes that “biotic diversity will be maintained on public forest lands only if conservation planning is integrated with development planning; and site-specific protection areas must be designed so they function as an integrated landscape system.” Also:

> Because of our lack of knowledge about intricate old-growth ecosystem relations (see Franklin et al. 1981), and the notion that oceanic island never achieve the same level of richness as continental shelf islands, a major commitment must be made to set aside representative old-growth ecosystems. This is further justified because of the lack of sufficient acreage in the 100- to 200-year age class to serve as replacement islands in the immediate future. …(A) way to moderate both the demands for and the stresses placed upon the old-growth ecosystem, and to enhance each island’s effective area is to surround each with a long-rotation management area.

The Fishtrap DEIS falls far short of analyzing and disclosing these fragmentation effects on old-growth species’ viability, caused by the current conditions and by the proposed project.

Logging, roadbuilding and other disturbance associated with the project and other cumulative impacts would affect goshawk nesting, post-fledging family habitat, alternative nesting, foraging, competitors, prey and potential habitat, including areas far from cutting units. Research in the Kaibab National Forest found that goshawk populations decreased dramatically after partial logging, even when large buffers around nests were provided (Crocker-Bedford, 1990). This conflicts with the assumptions in the DEIS.

The DEIS's analysis of goshawks seems to reflect a poor understanding of habitat requirements. Reynolds, et al., provide a basis for a northern goshawk conservation strategy that could be implemented if forestwide habitat considerations were to be truly taken into account. It is essential to viability of goshawks that 20-50% of old growth within their nesting areas be maintained (Id.), yet nothing in the DEIS seems to recognize that scientific research. (See also Suring et al. 1993.) Graham, et al. 1999, USDA Forest Service 2000b, Iverson et al. 1996, and Suring et al. 1993 are more examples of northern goshawk conservation strategies the FS might adopt for this Forest or Region, if emphasis was more appropriately placed on species conservation and insuring viability rather than justification for resource extraction.

USDA Forest Service, 2000b recommends that forest opening greater than 50-60 acres be avoided in the vicinity of goshawks. At least five years of monitoring is necessary to allow for effective estimates of habitat quality (Id.). Research suggests that a localized distribution of 50% old growth should be maintained to allow for viability of goshawks (Suring et al. 1993).

The scientific information provided in Center for Biological Diversity, 2004, also conflicts with the DEIS's analyses and conclusions regarding goshawk viability, and includes vital information on goshawks missing from the DEIS.

Goshawks are often associated with a thick overstory cover and areas with a large number of large trees. For example, Hayward and Escano (1989) recommend an overstory canopy between 75 and 80%. According to the BE/BA for the Keystone Quartz EIS in the Beaverhead-Deerlodge NF, "Goshawks prefer vegetation structure that permits them to approach prey unseen and to use their flight maneuverability to advantage (Widen, 1989, Beier and Drennan 1997)…"

The issue of fragmentation should have been more thoroughly considered with respect to goshawks. Other edge-adapted species may compete with the goshawk and displace the goshawk if adequate amounts of forest interior habitat is not provided. Crocker-Bedford (1990) recommends that a foraging area of >5000 acres of dense forest, in which no logging is permitted, be designated for goshawks, with additional areas of 2500-5000 acres of more marginal habitat designated beyond this 5,000 acre foraging area.

The DEIS failed to disclose and analyze the uncertain and precarious population status of the fisher, as described in Witmer, et al., 1998:

> The status of the fisher in the Western United States is poorly known but generally perceived as precarious and declining. This is a serious issue alone, but it also is a component of the larger problem of the decline of biological diversity. Recovery of species of concern must necessarily focus on the population level, because this is the scale at which genetic variation occurs and because population [sic] are the constituent elements of communities and ecosystems. Systematic habitat alteration and overexploitation have reduced the historical distribution of fishers in suitable habitat in the interior Columbia basin to isolated and fragmented populations. Current populations may be extremely vulnerable to local and regional extirpation

> because of their lack of connectivity and their small numbers (Id. at 14, internal citations omitted).

The proposed Fishtrap project would adversely impact fisher habitat. Habitat elements for natal and maternal dens are found in large diameter logs or snags. These would be reduced in stands intensively managed for timber. "Though the post-treatment stand condition would not be 'clear cuts', they would be fairly open and Jones (1991) did not expect to find substantial fisher hunting use of plantations by fishers until canopy approached 80% and 10-15 feet respectively (depending on snow depths)" (Flathead NF's Spotted Beetle EA, p. 3-62). The extensive logging, snag removal and other activities associated with the Fishtrap project would negatively affect fisher habitat. Movement, denning, resting areas, genetic diversity, and other aspects of fisher life cycles and fisher survival could be impacted by the project; the FS does not fully consider these elements of the project or adequately mitigate their impacts. A finding of no significant impact is not warranted.

Jones (undated) and Johnsen, 1996) provides examples of beginning developments of conservation strategies for the fisher, something the FS has so far neglected for this Sensitive species.

Regarding another Lolo NF Sensitive species, the black-backed woodpecker, Cherry (1997) states:

> The black-backed woodpecker appears to fill a niche that describes everything that foresters and fire fighters have attempted to eradicate. For about the last 50 years, disease and fire have been considered enemies of the 'healthy' forest and have been combated relatively successfully. We have recently (within the last 0 to 15 years) realized that disease and fire have their place on the landscape, but the landscape is badly out of balance with the fire suppression and insect and disease reduction activities (i.e. salvage logging) of the last 50 years. Therefore, the black-backed woodpecker is likely not to be abundant as it once was, and continued fire suppression and insect eradication is likely to cause further decline.

Past actions were, unfortunately consistent with this policy. Past timbre management "focused on removing larger, mature trees or lodgepole pine infested with bark beetles" (3-22). And unfortunately, the Fishtrap project would further that failed policy. Nowhere does the DEIS disclose the impacts on woodpeckers and other species that rely on agents causing tree mortality.

The Region 1 black-backed woodpecker assessment (Hillis et al., 2003) notes that the black-backed woodpecker depends upon the very forest conditions that the FS so often vilifies:

> Black-backed woodpeckers occupy forested habitats that contain high densities of recently dead or dying trees that have been colonized by bark beetles and woodborer beetles (Buprestidae, Cerambycidae, and Scolytidae). These beetles and their larvae are most abundant within burned forests. In unburned forests, bark beetle and woodborer infested trees are found primarily in areas that have undergone natural disturbances, such as wind-throw, and within structurally diverse old-growth forests. (Internal citations omitted.)

> …Black-backed woodpeckers also occur in unburned landscapes Bull et al.1986, Goggans et al. 1987, Bate 1995, Hoffman 1997, Weinhagen 1998, Steeger and Dulisse in press, Taylor unpublished data). Taylor's observations of black-backed woodpeckers in unburned forests in northern Idaho suggest that they may occur at substantially lower densities in unburned forests, but no rigorous comparisons between black-backed woodpecker densities in burned and unburned forests have been done. Hutto (1995) hypothesized that black-backed woodpeckers reproduce at *source* reproductive levels in burns, but may drop to *sink* reproductive levels in the intervening periods between large burns.

Dolan (1998a,b) states in regards to impacts on the black-backed woodpecker due to fire suppression and post-fire logging states:

> It seems that we have a huge cumulative effects problem here, and that each salvage sale removes habitat that is already very limited. We are having trouble avoiding a "trend to federal listing" call for the BBWO in salvaging burns, unless comparable acres of fire-killed dead are being created through prescribed burns.

The comments by other biologists attached to Dolan, 1998a,b reveal that the FS has yet to design a consistent, workable, scientifically defensible strategy to ensure viable populations of the black-backed woodpeckers. The fire suppression and "salvage" logging policies of the Lolo NF are the biggest threat to black-backed woodpecker population viability on the Forest, unfortunately in failing to create a conservation strategy the cumulative impacts of the Lolo NF's ongoing fire suppression policy will remain unexamined.

Lofroth (1997) in a study in British Columbia, found that wolverines use habitats as diverse as tundra and old-growth forest. Wolverines are also known to use mid- to low-elevation Douglas-fir forests in the winter (USDA Forest Service, 1993). Please explain why this scientific information should be discounted for the purposes of the Fishtrap project.

The Lolo NF provides inadequate management strategies to insure viability of the pine marten. Ruggerio, et al. (1998) and Bull and Blumton, 1999, indicate that vertical and horizontal diversity provided by snags and large down woody debris are important habitat characteristics for the pine marten, another old-growth wildlife species. The DEIS at 3-170 says that the "Lolo National Forest Coarse Woody Debris Guide (2003) contains specific recommendations and prescriptions for coarse woody debris retention by forest habitat type and other environmental features" however the FS is avoiding public and scientific review of such guidelines. The treatments proposed for this project would reduce the availability of prey species for the marten.

Old growth allows martens to avoid predators, provides resting and denning places in coarse woody debris and large diameter trees, and allows for access under the snow surface. USDA Forest Service, 1990 is summary of old-growth habitat needs of martens reviewed research suggesting that martens prefer forest stands with greater than 40% tree canopy closure and rarely venture more than 150 feet from forest cover, particularly in winter. It also cites research suggesting that at least 50% of female marten home range should be maintained in mature or old growth forest. Also, consideration of habitat connectivity is essential to ensuring marten viability: "To ensure that a viable population of marten is maintained across its range, suitable habitat for individual martens should be distributed geographically in a manner that allows interchange of individuals between habitat patches (Ibid.).

The FS has otherwise recognized the need for updated guidelines for the pine marten: "Apply snag and down woody material guidelines from the Upper Columbia River Basin Assessment to improve marten habitat" (USDA Forest Service 2000c, p. 39).

The flammulated, boreal owl and the great gray owl are species of concern that are sensitive to logging and other management activities. The Lolo NF provides inadequate management strategies to insure their viability. See, for example, Hayward and Verner, 1994. The DEIS is misleading in its contention that the burning "treatments" will in fact result in improved or maintained flammulated owl habitat:

> The quality of the available habitat would improve dramatically with prescribed burning. Within 1003 and 957 acres, respectively for Alternatives 2 and 3, herbaceous plants would increase and the moths and other insects that need these plants would concurrently increase, thus improving forage conditions. (DEIS at 3-83.)

The DEIS does not address logging impacts, however in regards to another timber sale it states: "(T)he Border Peak project …improved the majority of habitat for flammulated owls." The DEIS cites no monitoring that confirms such speculative claims.

How long after the proposed logging will habitat be suitable for flammulated owls, and how long will these conditions persist?

The DEIS also dismisses project and cumulative effects on habitat for boreal toads, particularly upland habitat and the connectivity it provides between breeding habitats. This does not make sense, since such small populations that are likely to persist are especially susceptible to the further fragmentation effects of this proposal, and vulnerable to extirpation due to isolation of smaller populations.

The paltry number of snags and green tree replacements to be retained in some logging units and the failure to specify snags of adequate size contrasts with scientifically determined habitat needs acknowledged elsewhere by the FS. The DEIS doesn't even refer to recently developed Regional snag guidelines (USDA Forest Service, 2000d. Harris (1999) and ICBEMP DSEIS Appendix 12 present scientific information that contrasts greatly with the DEIS on this topic—please state why this scientific information is not applicable to the Fishtrap project.

The high density of snags and defective trees within old growth (Green et al. 1992) would likely be substantially eliminated with the planned logging. And the DEIS does not disclose how many old logging units in the project area are deficient in snags, another vital and necessary component of old-growth habitat. Forest Plan monitoring over the years indicates the Lolo NF failed to meet snag requirements for wildlife species.

Bull, et al., 1997 state:

> This document presents new information on the retention and selection of trees and logs most valuable to wildlife.

> …Current direction for providing wildlife habitat on public forest lands does not reflect this new information. Since the publication of Thomas and others (1979), new research suggests that to fully meet the needs of wildlife, additional snags and habitat are required for foraging, denning, nesting, and roosting. Although we do not suggest specific numbers or snags to retain by forest type, tow recent studies indicate that viable woodpecker populations occurred in areas with about four snags per acre.
>
> We suggest that the next step in snag management should involve creating a model that incorporates the new information on woodpecker foraging substrates (live trees, snags, and logs), home range sizes, number and characteristics of roost trees, multiple occupancy of snags, and needs for other habitat structures. Once this information is incorporated, the model may suggest changes to guidelines that specify numbers of snags and other habitat features by forest type and geographic area. Additional information on fall rates of snags, foraging needs of black-backed and three-toed woodpeckers, relation of the density of woodpeckers to that of secondary cavity nesters, and relation of snag density to woodpecker density would greatly improve the model.

The adjacent IPNF (USDA Forest Service, 2000c) has also recently called for updated snag guidelines: "Apply snag and down woody material guidelines from the Upper Columbia River Basin Assessment to improve marten habitat" (p. 39). Although that report doesn't state what those guidelines should be, we welcome the FS's acknowledgment of scientific evidence that reveals the IPNF's (and the similar Lolo NF) guidelines inadequate.

The DEIS does not adequately consider that snags may be cut down for safety reasons during logging operations (due to OSHA regulations. The DEIS fails to disclose <u>the amount of</u> snag loss expected because of safety concerns and also skyline corridors and other methods of log removal—the loss could be more significant that disclosed, because the DEIS doesn't provide any idea the degree of snag loss due to these concerns. The paucity of snag habitat in previously logged areas is no doubt at least partially attributed to concerns over logger safety.

The degree to which pileated woodpeckers prefer larger trees/snags for nesting is not recognized by the DEIS. Also, USDA Forest Service, 1990 states, "To provide suitable pileated woodpecker habitat, strips should be at least 300 feet in width…" The DEIS also ignores many structural habitat components necessary for the pileated woodpecker. USDA Forest Service, 1990 indicates that measurements of the following variables are necessary to determine quality and suitability of pileated woodpecker habitat:

- Canopy cover in nesting stands
- Canopy cover in feeding stands
- Number of potential nesting trees >20" dbh per acre
- Number of potential nesting trees >30" dbh per acre
- Average DBH of potential nest trees larger than 20" dbh
- Number of potential feeding sites per acre
- Average diameter of potential feeding sites

The preferred very large diameter of nesting trees for the pileated woodpecker recognized by USDA Forest Service, 1990 (and ignored by the snag retention strategy in the DEIS) is notable. McClelland and McClelland, 1999 found similar results in their study in northwest Montana, with the average nest tree being 73 cm. (almost 29") dbh. With the value of trees—live, dead, and down—being so disproportionately high the larger the size they attain, one might think that limiting the size of trees for removal would be important. The DEIS doesn't recognize such a basic concept. The DEIS effectively provides no commitments for leaving specific numbers and sizes of largest trees favored by so many wildlife species.

It is also unclear as to how it's possible for the DEIS to estimate, without any field survey validation, the amount of existing snags and coarse woody debris.

The anthropocentric assumption that wildlife can simply shift to and survive (3-93) in areas that are not being "treated" while their habitats are being logged is totally lacking in scientific validity.

The FS has stated: "Well distributed habitat is the amount and location of required habitat which assure that individuals from demes, distributed throughout the population's existing range, can interact. Habitat should be located so that genetic exchange among all demes is possible." (Mealey, 1983.) This cited document also provides guidance as to how habitat for the pileated woodpecker must be distributed for populations to persist.

The IPNF's Forest Plan provides an example of better management directives for the pileated woodpecker than does this DEIS. IPNF's Forest Plan Wildlife Standard #10f requires "One or more old-growth stands per old-growth unit should be 300 acres or larger. Preference should be given to a contiguous stand; however, the stand may be subdivided into stands of 100 acres or larger if stands are within one mile. The remaining old-growth management stands should be at least 25 acres in size. Preferred size is 80 plus acres." IPNF Forest Plan at II-29. This and other IPNF old growth Standards are based upon what the IPNF recognizes are pileated woodpecker habitat needs:

> To retain a viable population of pileated woodpeckers on the IPNF … our recommendations are:
>
> 1. Retain 10 percent old-growth throughout the Forests.
> 2. Distribute the old-growth so that old-growth compartments with 5 percent old-growth retain at least 5 percent old-growth. All old-growth stands 25 acres should be retained in old-growth compartments containing less than 5 percent old-growth.
> 3. In each 10,000 acre unit at least 300 acres should be managed specifically for pileated woodpeckers. To maximize benefits to other species as well as pileateds the 300 acres should be either contiguous or divided into subunits no smaller than 100 acres. The subunits should be within approximately two square miles.
> 4. The areas managed for pileated woodpeckers should be at least 200 yards wide.

5. Areas selected for old-growth management for pileated woodpeckers should also be close to water. Old-growth larch stands are highly recommended for pileated woodpecker management.

(Forest Plan EIS Appendix 27 at p. II-40.) Please explain the contrast between the Fishtrap DEIS's discussion of habitat needs for the pileated woodpecker with those scientific references.

Since the Fishtrap DEIS provides inadequate analysis regarding the size and quality of habitat blocks needed by the pileated woodpecker, the analysis completely fails to disclose the quantitative or qualitative significance of cumulative effects due to past logging in the area.

B.R. McClelland has extensively studied the pileated woodpecker habitat needs. To quote a March 12, 1985 letter from B.R. McClelland to Flathead NF Supervisor Edgar B. Brannon:

> Co-workers and I now have a record of more than 90 active pileated woodpecker nests and roosts, …the mean dbh of these trees is 30 inches… A few nests are in trees 20 inches or even smaller, but the minimum cannot be considered suitable in the long-term. Our only 2 samples of pileateds nesting in trees <20 inches dbh ended in nest failure… At the current time there are many 20 inch or smaller larch, yet few pileateds selected them. Pileateds select old/old growth because old/old growth provides habitat with a higher probability of successful nesting and long term survival. They are "programmed" to make that choice after centuries of evolving with old growth.

We request that you apply research from McClelland (1977), which states:

> (The Pileated Woodpecker) is the most sensitive hole nester since it requires old growth larch, ponderosa pine, or black cottonwood for successful nesting. The Pileated can be considered as key to the welfare of most hole-nesting species. If suitable habitat for its perpetuation is provided, most other hole-nesting species will be accommodated.
>
> Pileated Woodpeckers use nest trees with the largest dbh: mean 32.5 inches;
>
> Pileated Woodpeckers use the tallest nest trees: mean 94.6 feet;
>
> The nest tree search image of the Pileated Woodpecker is a western larch, ponderosa pine, or black cottonwood snag with a broken top (status 2), greater than 24 inches dbh, taller than 60 feet (usually much taller), with bark missing on at least the upper half of the snag, heartwood substantially affected by Fomes laracis or Fomes pini decay, and within an old-growth stand with a basal area of at least 100 sq feet/acre, composed of large dbh classes.
>
> A cluster analysis based on a nine-dimensional ordination of nest tree traits and habitat traits revealed close association between Yellow-bellied Sapsuckers, Mountain Chickadees, and Red-breasted Nuthatches. These three species plus the Pileated Woodpecker and Hairy Woodpecker are relatively grouped by coincident occurrence in old growth. Tree Swallows, Black-capped Chickadees, and Common

Flickers are separated from the above five species by their preference for more open areas and their frequent use of small dbh nest trees.

Limiting Factors
In old-growth, western larch-Douglas-fir forests, snags or culls suitable for nest sites do not seem to be generally limiting. … Probably no single factor limits hole nesters, but rather a complex interplay of factors. Either nest trees or food supply may be limiting in logged areas.

We also urge you to consider the "Management Implications" McClelland, 1977 makes.

McClelland, et al., 1979 state:

> (Most) species found optimum nesting habitat in stands with a major component of old growth, particularly larch. Mean basal area for pileated woodpecker nest sites was 150 square feet per acre. (McClelland. B.R. and others, 1979)
>
> In western larch-Douglas-fir forests, nest sites of pileated woodpeckers appear to be limited to areas with an old-growth component. The feeding territory used by one pair on a year-round basis is large, between 500 and 1,000 acres.
>
> Many large snags are being cut for firewood. Forest managers should limit firewood cutting to snags less than 15 inches in d.b.h. and discourage use of larch, ponderosa pine, and black cottonwood. Closure of logging roads may be necessary to save high-value snags. Logging slash can be made available for wood gatherers.

The DEIS makes claims about treatments may effect wildlife species in the "long term" (4-111) and short-term (4-112). It also makes similar temporal statements in other places, for other species. However, "long term" and "short-term" are not operationally defined, making such discussions to vague to be meaningful.

Enumeration of and monitoring of specific small, non-game birds and animal populations that are important in keeping destructive insect populations at low levels are not disclosed in the DEIS.

The DEIS also fails to adequately disclose the cumulative impacts of the ever-increasing motorized recreational use on wildlife species—both legal and illegal.

Continuing unexplained is why the FS has not taken the steps necessary to insure viability, like follow NFMA and Forest Plan monitoring requirements by performing population surveys, or like follow its own directives and design **conservation strategies** for Sensitive species:

> The companion approach to the coarse filter is the "fine filter" analysis in which conservation strategies are used for individual species or groups of species to contribute to population viability. The fine filter approach narrows the focus to those species that require habitat that may be outside the historic range of variation (HRV). (Kootenai NF's AMS Technical Report p. 49, emphasis added.)

According to official FS policy, the FS "must develop conservation strategies for those sensitive species whose continued existence may be negatively affected by the forest plan or a proposed project." FSM 2670.45. According to FS experts, population viability analysis is not plausible or logical, from a scientific standpoint, at the project level such as the scale of a timber sale(s), absent some tiering to a larger-scaled study. Distributions of common wildlife species as well as species at risk encompass much larger areas than typical project areas (often referred to as "landscape scales"). The FS has failed to tier the viability analyses for Sensitive species that would be impacted by the Fishtrap project to a landscape analysis of species viability that would allow for some assurances to the public that species viability is currently being insured in spite of continued habitat destruction and/or alteration.

An example of a regional multi-species conservation strategy came about in the 1990s when in Region 6, the eastside forest plans were amended in 1994 with the "eastside screens" and the Interior Columbia Basin Ecosystem Management Project (ICBEMP) found that large old trees were below historic levels across the Columbia Basin and should be protected. The "eastside screens" Amendments were in response to scientific information that the forest plans were inadequate to assure population viability of old-growth species and other wildlife. These "eastside screens" limited logging to trees less than 21" diameter at breast height (dbh), except in rare circumstances.

The FS has admitted that the use of database habitat information, as the Lolo NF relies heavily upon for project analyses, is suspect: "Habitat modeling based on the timber stand database has its limitations: the data are, on average, 15 years old; canopy closure estimates are inaccurate; and data do not exist for the abundance or distribution of snags or down woody material…" (U.S. Forest Service, 2000c). How similar in quality is the Lolo NF's database information? What wildlife analysis or modeling used for Fishtrap relies on the TSMRS or other database? On average, how old is the Lolo NF's database information? Please indicate the Lolo NF's level of agreement with the IPNF on this issue.

Unfortunately, region-wide the FS has failed to meet Forest Plan old-growth standards, does not keep accurate old-growth inventories, and has not monitored population trends in response to management activities as required by Forest Plans and NFMA (Juel, 2003).

The DEIS reveals no baseline or quantitative population data for the Sensitive species or their habitats. The agency has failed to obtain or maintain any past or current hard population or inventory or monitoring data for the Sensitive species at issue in the project area or for the Lolo NF as a whole. Distribution, status and population trends have not been determined. FSM 2670.45. Viability cannot be assured without first establishing population objectives. FSM 2670.22(3) and 2672.1 and 32. These objectives have not been established. 36 CFR 219.12(d), 219.27(a)(5&6).

The DEIS doesn't genuinely contain a cumulative effects analysis for wildlife species. Effects, either adverse or beneficial, of past management activities are not disclosed. There is no discussion of the connection between the major individual management actions carried out in the past, and the environmental harms or benefits.

The DEIS doesn't explicitly state the funding mechanisms that would be used to carry out all the post-logging slash ("fuel") treatment. How certain would each funding source be, i.e., how likely is it that slash could remain untreated?

Also, the DEIS does not state the expected time frame for treating all slash (nor for other "fuel" treatments, such as prescribed burning outside logged areas).

The fact that so many water quality and fisheries standards and other forest plan direction are not presently being met or have been violated in Fishtrap Creek means that most of the DEIS's standard mitigation and modeling assumptions cannot be relied upon for maintaining and improving water quality and population viability.

Mass failures easily travel through INFISH buffer strips causing huge amounts of sediment increases into streams. Since INFISH and BMPs have failed to prevent degradation of water quality and aquatic habitats, more logging and road building with implementation of INFISH and BMPs cannot be relied upon to prevent further water quality degradation.

It is extremely important that an EIS disclose the environmental baseline for watersheds. Generally, this means their condition before development or resource exploitation was initiated, not the condition represented by the no-action alternative. For example, the baseline condition of a stream means the habitat conditions for fish and other aquatic species prior to the impacts of road building, logging, livestock grazing, etc. Therefore, proper disclosure of baseline conditions would mean estimates of stream stability, pool frequency conditions, water temperature range—essentially the values of Riparian Management Objectives along with such parameters as sediment levels. When such information is provided, comparison with the current conditions (after impacts of development) will aid in the assessment of cumulative effects of all alternatives.

The DEIS fails to use the best science concerning road densities and bull trout. The US Fish and Wildlife Service's Bull Trout Interim Conservation Guidance states:

> Bull trout are less likely to use streams in highly roaded areas for spawning and rearing, and where found in highly roaded areas are less likely to be at strong population levels. Bull trout strongholds in the Interior Columbia River Basin showed a very strong (P=0.0001) negative correlation with road densities. **The average road density in bull trout strongholds was 0.45 mi/mi^2**, which is considerably less than the standard 2-3 mi/mi2 reported as adequate for populations of anadromous salmonids. **Bull trout populations classified as "depressed" had an average watershed road density of 1.4 mi/ mi^2** and **bull trout typically were absent in an average road density of 1.7 mi/ mi^2**. Although some variability in these patterns was apparent the association was strong, suggesting that bull trout are exceptionally sensitive to the direct, indirect, or cumulative effects of roads. (From information contained in the ICBEMP aquatic assessment by Quigley et al. 1997, emphasis added.)

Road densities exceed the level needed to support healthy populations of bull trout. One bull trout conservation objectives is to: "Manage or reduce negative effects of roads to habitat in bull trout watersheds by repairing and relocating roads, and by **decreasing current road densities"** (emphasis added). The proposed project does not adequately meet this objective.

Another major problem with the water models is that they fail to take into account the extreme peak flow increases due to the high density of roads in the project area. Kootenai Forest Hydrologist Steve Johnson, states, "Impacts from roads basically fall into three areas: introduced sediment into streams; snowmelt re-direction and concentration; and surface flow production." (Johnson, 1995)

Johnson (1995) discusses how "snowmelt re-direction and concentration and surface flow production" increase peak flow amounts <u>multiplicatively</u> by the presence of roads in a drainage. The DEIS fails to acknowledge the degree to which roads increase peak flows <u>above the amounts models estimate</u>.

Johnson (1995) adds, "For the roads we no longer actively use, our dwindling road maintenance budget will make it difficult to maintain the culvert crossings. When these fail during storm and runoff events, tremendous amounts of sediment can be delivered directly to the channel and from there down to lower streams with significant beneficial uses such as sensitive fish habitat." The DEIS fails to disclose the significance of this foreseeable lack of maintenance, and the direct, indirect and cumulative effects poorly maintained roads have on water quality.

Johnson (1995) also pointed out that an old road design that utilized ditches on the inside of the road greatly increases drainage efficiency, causing peak flows to go far beyond any modeled predictions. The very existence of the current road network is causing major water quality impacts.

The FS is fond of claiming that application of best management practices (BMPs) will assure that water quality is maintained meeting or exceeding State and Federal standards. It is totally misleading to state that BMPs will assure water quality will be maintained, when present conditions are in many locations already in violation of the standards. BMPs were either ineffective or must have been violated—which is it?

The failure of BMPs is obviously implicated in this watershed. Beschta et al. (2004) state:

> It is perhaps widely accepted that "best management practices" (BMPs) can reduce damage to aquatic environments from roads. Time trends in aquatic habitat indicators indicate, however, that BMPs fail to protect salmonid habitats from cumulative degradation by roads and logging (Espinosa et al. 1997.) Ziemer and Lisle (1993) note a lack of reliable data showing that BMPs are cumulatively effective in protecting aquatic resources from damage.

Also, the extreme contrast between streams in roaded areas vs. unroaded areas that you've found on the Lolo (Riggers, et al. 1998) is also a testament to the failures of the BMP prophylactic approach.

The DEIS failed to provide a genuine watershed-wide cumulative effects analysis for Fishtrap Creek and the Thompson River. Effects from the Fishtrap project and other nearby management activities would be cumulative in these streams. Population viability for TES/MIS fish species is not merely a subject for the overly limited project area boundaries.

The DEIS claims that it considers the limitations of LOLOSED but then it goes right ahead and ignores them in its analyses and discussions. A prime example is the biggest paragraph on 3-115. Such a discussion presupposes a certain amount of accuracy in the model—accuracy the DEIS in other places says exists to some vague, limited extent.

The DEIS states that most jammer roads appear to be well vegetated, and that no culverts would remain on such roads that are to be decommissioned, however the DEIS fails to disclose how many of those abandoned roads have water crossings that are not hydrologically neutral. Also, the DEIS's apparent assumptions about the integrity of jammer roads is not well-founded. The Ecology Center commented on the Lolo Post-Burn project and included the website at: http://www.wildrockies.org/teci/Lolo-Post-Burn/ The Lolo NF would do well to learn from the lessons of the fires of 2000 and their own responses in terms of road work, as illustrated in that website.

The DEIS fails to disclose the sediment yield due to simply increase use of the roads due to logging and administrative traffic. From an investigation of the Bitterroot Burned Area Recovery Project, hydrologist Rhodes (2002) notes, "On all haul roads evaluated, haul traffic has created a copious amounts of mobile, non-cohesive sediment on the road surfaces that will elevate erosion and consequent sedimentation, during rain and snowmelt events."

Nothing in the DEIS even considered obliterating more roads. Isn't the Roads Analysis Process supposed to consider each important resource in making decisions on keeping or obliterating roads, and involve the public in those decisions?

The DEIS's watershed analysis relies, to a great degree, upon the ECA (Equivalent Clearcut Acres) modeling procedure. Please consider the fact that the FS's own research (King, 1989) is critical about the accuracy of a peakflow model, similar to the ECA method, in estimating increases in peakflows from logging and roads in nearby northern Idaho. King (1989) examined the veracity of a model for changes in peakflow as a function of ECA. He found that the ECA model consistently underestimated measured increases in flow caused by roads and logging.

The ECA model outputs are also inadequate to disclose the effects of the alternatives and cumulative effects on peakflows and resultant impacts on aquatic resources, because the model estimates changes in average monthly peakflow caused by logging and roads. Does the DEIS's analysis only discusses cumulative and alternative effects on these average monthly peakflows? King (1989) clearly noted that estimates of average monthly peakflows triggered by logging and roads are not adequate for estimating likely changes in channel conditions and sediment transport caused by logging and roads. He noted:

> …the largest 7 or 8 days of streamflow account for the majority of the bedload movement…Average monthly streamflows are usually not a good index of bedload transport, and 'changes in average annual monthly peakflows have no meaningful effect on sediment transport' (Megahan, 1979) and are thus poor indicators of changes in channel-forming flows.

King (1989) also stated:

> Thus, it is the relatively few high flow days that have the potential for shaping the channel. Increases in short duration high flows following harvesting and road building are more important in terms of potential channel erosion and bedload transport than increases in longer duration high flows such as the maximum mean monthly streamflows… (emphasis added).
>
> Therefore, increases in short-duration highflows are more important than longer duration highflows in shaping the channel, and any procedure to estimate streamflow responses and set limits on harvesting should focus on these shorter duration highflows.

King (1989) clearly indicates that the DEIS's estimates of effects on average monthly peakflows is inadequate for determining the effects of the alternatives and cumulative effects on peakflows and resultant impacts on channel erosion, bedload transport, sedimentation, bank erosion, fish habitat, fish survival, and downstream flooding impacts. Certainly, the lack of models' proven reliability and validity indicate the need for an alternative that would create no more of the WQLSs' probable sources and probable causes, which include sediment induced by logging, road building, and simply present road conditions.

The DEIS's analysis of changes in monthly peakflow is not a surrogate for estimates of daily and instantaneous peakflows triggered by the alternatives and in combination with the cumulative effects of the existing road network and past logging. These peakflow attributes, which are ignored in the EIS, are most important for determining the likely effects on channels and sediment transport triggered by logging and roads (King, 1989). Average peakflows are not of greatest concern. Sediment transport and channel change are greatly affected during extreme events.

Within portions of this region, rain-on-snow (ROS) events during the fall, winter and spring months have been found to be a dominant mechanism causing peak flows (MacDonald and Hoffman, 1995). The DEIS fails to disclose that the modeling the DEIS relies upon does not estimate the effects of ROS events and other instantaneous peak flow events, which the DEIS itself discloses may result in significant damage to project area watersheds.

The DEIS does not provide any analysis of the synergistic cumulative effects of openings created by roads and logging. This includes their spatial relations, their juxtaposition, considering such factors as slope, road drainage system condition, aspect, elevation, etc.

What is the scientific basis for the ECA model's assumption, "As a general rule, an increase in ECAs greater than 30 percent could potentially create water yields in excess of Forest Plan Standards." (DEIS at 3-105)? Conversely, for the model's assumption of lower or acceptable risk at lesser canopy removal levels? Have the water quality models used on the Lolo NF ever been adequately validated on the Forest?

The DEIS at 3-98 point out that the LOLOSED model was also derived from the WATBAL model. A peer-reviewed study of WATBAL by Hickey (1997) has documented that the WATBAL model consistently underestimates the amount of sediment actually reaching streams. Hickey, R. 1997. Please disclose how the development of LOLOSED has dealt with these limitations of WATBAL.

How are sediment effects of logging truck use modeled?

There is inadequate disclosure of the present and expected levels of fine and bedload sediment transport and deposit for analysis area streams. The present conditions concerning the two are not distinguished from each other in terms of cumulative effects.

The tables showing sediment by alternative provide inadequate explanation of the sediment sources of “existing” sediment.

There are virtually no numbers given concerning bedload sediment, which create aggradation and the filling in of important fish habitat pools, and other. There is no data on long-term stability of stream channels, which relates to impacts of past management and thus fish habitat and RMOs.

The DEIS does not disclose the values of all Riparian Management Objectives. It does not disclose the present trends of RMO values based on cumulative impacts. Whether conditions are improving or worsening has not been determined.

The DEIS fails to justify allowing motorized equipment to impact RHCAs, and this is especially unreasonable since water quality already fails to meet Clean Water Act/Montana standards and is so vital for bull trout (Priority Stream).

The DEIS does not utilize up-to-date fish population surveys and surveys of fish habitat conditions. The FS has failed to obtain or maintain adequate population or inventory or monitoring data for the native fish species at issue in the project areas or for the Lolo NF as a whole. Distribution, status and population trends have not been determined. The FS hasn’t even determined the minimum viable population of MIS fish species, as NFMA requires.

The DEIS does not compare the stream temperatures with any scientific research on bull trout and tolerance of elevated temperature.

Why does the FS not survey for fry emergence as suggested by Rieman and McIntyre, 1993 (DEIS at 3-131), since that is such an important factor for maintaining populations?

Why does the DEIS fail to relate modeled sediment estimates vs. the amounts measured at the monitoring stations?

The DEIS at 3-135 and 136 mentions existing undersized culverts, but does not clearly identify all their locations—pre-project and post-project.

How many of the 287 perennial stream crossings (DEIS at 3-136) are chronic significant erosion sources? How many intermittent or ephemeral perennial stream crossings are there, how many are likewise problems? How many of all these categories would remain on the landscape for each alternative under various funding scenarios?

The DEIS fails to disclose the risk of resulting chronic watershed impacts of continuing sub-standard roads. Even if all roads were to be brought up to BMP standards, it is clear that more maintenance will be needed in following years, without the funding to achieve it.

The DEIS does not disclose the degree to which its, and general Lolo NF commitments, for watershed restoration, road maintenance, and road obliteration will be completed in a reasonable time frame, which means that project activities could simply cause additional damage to project area streams that the DEIS fails to properly analyze, and road densities will not decrease or stay the same to accomplish necessary reductions of impacts on wildlife and fish.

The condition of the headwater streams that feed into the fish inhabited reaches is an important component. If the stability of the headwater is removed and it is supplying bed load material instead of food sources, the fishery is in for problems. Small headwater streams are particularly sensitive to large logged openings, a fact not adequately considered by the DEIS.

It makes no sense for the action alternatives to leave fish passage barriers in place, given the DEIS's disclosures of such extreme impacts on fish populations because of the barriers.

The discussion on impacts on water quality due to expected herbicide use is totally lacking in detail. This DEIS cannot simply incorporate another non-programmatic NEPA document.

The DEIS does not disclose how soon any roads that finally get maintenance in return for logging will return to their presently (or similar) poor condition. It simply presents the effects of needed maintenance as essentially permanent in its beneficial effects.

The DEIS presents no information on the impacts of livestock grazing on the national forest land in the project area, neither within the allotment boundaries nor for grazing that historically occurred before those allotment boundaries were established. The DEIS simply assumes that there is no residual significant damage to soils, vegetation, and water quality because the allotment is retired. A recent FS document, the Skalkaho Grazing Allotment EA admits that this cannot merely be assumed:

> Whether or not the amount of soil damage associated with this alternative will allow for recovery of riparian soil conditions is not certain. We do not have research based soil recovery models available to evaluate the rate of soil recovery with similar stocking reductions and seasonal restrictions ...

(Skalkaho Grazing Allotment EA, Bitterroot NF at IV-5)

The Skalkaho Grazing Allotment EA mentions that data gathering on a similar, nearby allotment shows that merely reducing the level of grazing has <u>not</u> resulted in less compacted soils in <u>over five years.</u>

Nor does the DEIS adequately disclose the cumulative effects of livestock grazing on lands of other ownership in the Fishtrap Creek watershed.

The DEIS does not disclose how past management has impacted soil productivity in the Fishtrap project area. One reason why this is especially pertinent is that a major premise of the project is that old-growth will develop in logged areas. However, at some level of soil damage old growth may not develop in any reasonably expected time frame, due to the complex interrelationships upset or obliterated by the management activities.

The DEIS lists the Forest Hydrologist as a soil scientist on the ID Team, we wonder what his specific qualifications are that would make him qualified to act as a soil scientist.

AT 3-166 the DEIS discloses that there have been mass failures and it blames them on roads in certain landtypes. The DEIS does not indicate how many miles of roads on such landtypes would still exist post-project.

The DEIS is confusing where it use the same term, natural recovery value, for different variables regarding old roads (3-181).

The DEIS assumes that just because badly located roads have existed for a while, creating a pathological social expectation that roads damaging streams are acceptable (3-184), alternatives to actually deal with these problems are not warranted. This is one more reason why the FS's logging-for-watershed-restoration management regime should be rejected.

The DEIS calls the proposed roads "temporary" in most places but further reading shows that the FS will treat at least some of them as permanent.

Even if roads have no culverts, they may have damaging stream crossings that will be allowed to erode without full removal (DEIS at 3-187, first paragraph). No cumulative effects discussion considers this.

What proof does the FS have that present roads can be "treated" to be "lower maintenance" (3-187)?

The DEIS fails to disclose the accuracy or reliability of the timber stand database for estimating current soil conditions. Is it the FS's position that all past logging in the project areas is accurately reflected by the Lolo NF's surveying of the TSMRS?

It is clear that the intent of the Regional Soil Quality Standards is that the FS must, in each case, consider the cumulative effects of both past and proposed soil disturbances to assure the desired soil conditions are met. This includes impacts from activities that include logging, firewood gathering, livestock grazing, and motorized recreation impacts, for under Definitions the Standards state:

> Activity Area. A land area affected by a management activity to which soil quality standards are applied. Activity areas must be feasible to monitor and include harvest units within timber sale areas, prescribed burn areas, grazing areas or pastures

within range allotments, riparian areas, recreation areas, and alpine areas. All temporary roads, skid trails, and landings are considered to be part of an activity area.

Further down at FSM 2554.1, the Soil Quality Standards state:

1. Detrimental Soil Disturbance. These disturbances includes the effects of compaction, displacement, rutting, severe burning, surface erosion, loss of surface organic matter, and soil mass movement. At least 85 percent of an activity area must have soil that is in satisfactory condition. Detrimental conditions include:

Compaction. Detrimental compaction is a 15 percent increase in natural bulk density. The cumulative effects of multiple site entries on compaction should also be considered since compacted soils often recover slowly.

Rutting. Wheel ruts at least 2 inches deep in wet soils are detrimental.

Displacement. Detrimental displacement is the removal of 1 or more inches (depth) of any surface soil horizon, usually the A horizon, from a continuous area greater than 100 square feet.

Severely-burned Soil. Physical and biological changes to soil resulting from high-intensity burns of long duration are detrimental. This standard is used when evaluating prescribed fire. Guidelines for assessing burn intensity are contained in the Burned-Area Emergency Rehabilitation Handbook (FSH 2509.13).

Surface Erosion. Rills, gullies, pedestals, and soil deposition are all indicators of detrimental surface erosion. Minimum amounts of ground cover necessary to keep soil loss to within tolerable limits (generally less than 1 to 2 tons per acres per year) should be established locally depending on site characteristics.

Soil Mass Movement. Any soil mass movement caused by management activities is detrimental.

3. Monitoring Methods. Visual methods are generally used to make initial evaluations of the effects of management activities on soils. The major objective of soil quality monitoring is to ensure that ecologically sustainable soil management practices are being applied. In most cases, qualitative estimates will be considered sufficient. The use of photo points provides good documentation and is recommended. Measurements and detailed sampling are used to calibrate visual methods and to conduct investigations where visual methods are inadequate or where benchmark or statistically valid sampling is required.

a. Areal Extent Sampling. Estimates of the percent of an activity area affected by detrimental soil disturbance can be made visually or by transecting. If statistically valid techniques are needed for benchmark sites, determine sample size and transect design using procedures described in Howes, Hazard, and Geist 1983.

b. Soil Sampling Techniques. Soil displacement, rutting, severely burned soil, erosion, mass movement, and above-ground organic matter can be observed and measured.

Another part of the problem is that the FS is using measurement of areal extent of damage, or percent detrimental disturbance over an activity area, as a proxy for impacts on soil productivity.

The FS is simply dodging the entire issue of maintaining soil productivity as NFMA mandates. It should be noted that the FS assumes that maintaining soil productivity is achieved simply by limiting detrimental disturbance to no more than 15% of an Activity Area (logging or "treatment" unit). Unfortunately, the scientific adequacy of the FS's methodology for maintaining soil productivity on the Lolo NF has never been demonstrated. The FS's determination that it may permanently damage the soil on 15% of an activity area and still meet NMFA and planning regulations is arbitrary. The DEIS does not cite any scientific basis for adopting the 15% numerical limit.

Furthermore, the DEIS fails to cite the results of soil productivity monitoring. The Soil and Water Conservation Practices Handbook (FSH 2509.22) defines "Soil Productivity" as "The capacity of a soil to produce a specific crops such as fiber and forage, under defined levels of management. It is generally dependent on available soil moisture and nutrients and length of growing season." The DEIS fails to deal with the very basic question that the Forest Plan monitoring item asked: What are the quantitative effects of management activities on the productivity of the land?

The DEIS discloses some quantitative data purported to demonstrate compliance with the numerical Northern Region Soil Quality Standards. There are at problems with the data provided. For one, the DEIS fails to demonstrate that the boundaries of previously impacted activity areas (cutting units, for example) that are included at least partially within proposed Fishtrap timber sale units have been kept constant for the necessary purpose of calculating detrimental disturbance. So old activity areas with disturbance greater than 15% could potentially have the quantities diluted by boundary changes result in inclusion of unimpacted or less impacted areas. This would amount to gerrymandering simply to get around the quantitative Standard and mislead the public. The only way for there to be any meaning to the numerical standards in cases where logging is proposed over previously disturbed soils and where activity area boundaries are not kept constant is if a qualified soil scientist actually performs site-specific field measurements to measure the existing percentages of detrimental soil disturbance within the already-established boundaries of activity areas.

Secondly, the precision, or amount of error, in the measures of detrimental disturbance for activity areas is not disclosed. The DEIS misrepresents them as precise measurements when in fact they are estimates, based upon sampling that inherently has an amount of error.

The DEIS fails to disclose the implications of various landtype limitations for detrimental soil impacts. It also fails to cite the results of any monitoring using landtypes as a factor.

The DEIS does not disclose the locations and sizes of proposed log landings, which is important because of the extreme amount of soil and other disturbance that occurs on these sites—they will be essentially industrialized for the long-term, despite "mitigation." Despite the Regional Soil Quality Standards requiring that log landings be included in calculations of percent detrimental soil disturbance, there is no indication in the DEIS that was done.

The DEIS does not measure or provide scientifically sound estimates of detrimental soil disturbance from off-road vehicle use and livestock grazing.

The FS is avoiding the entire issue of maintaining soil productivity. As indicated in FSM 2500-99-1 and FSH 2509.18, the FS assumes that maintaining soil productivity is achieved simply by limiting detrimental disturbance to no more than 15% of an activity area (cutting unit). Unfortunately, the scientific adequacy of the FS's methodology for maintaining soil productivity on has never been demonstrated. The FS's determination that it may permanently damage the soil on 15% of an activity area and still meet NMFA and planning regulations is arbitrary. Neither the DEIS, the Forest Plan, nor the FSM 2500-99-1 cite adequate scientific basis for adopting 15% as a numerical limit—it is simply arbitrary.

The chemical and biological make-up of the specific soils in the project area, and their ability to withstand detrimental disturbance that lowers soil productivity is not a subject adequately taken up by the DEIS. Harvey et al., 1994 state:

> The ...descriptions of microbial structures and processes suggest that they are likely to provide highly critical conduits for the input and movement of materials within soil and between the soil and the plant. Nitrogen and carbon have been mentioned and are probably the most important. Although the movement and cycling of many others are mediated by microbes, sulfur phosphorus, and iron compounds are important examples.
>
> The relation between forest soil microbes and N is striking. Virtually all N in eastside forest ecosystems is biologically fixed by microbes... Most forests, particularly in the inland West, are likely to be limited at some time during their development by supplies of plant-available N. Thus, to manage forest growth, we must manage the microbes that add most of the N and that make N available for subsequent plant uptake. (Internal citations omitted.)

The FS has essentially admitted that it is in the dark as far as doing scientific research on soil productivity changes following management activities. In response to comments on the Black Ant Salvage DEIS, Lewis & Clark NF, the FS states:

> Soil Quality Standards "provide benchmark values that indicate when changes in soil properties and soil conditions would result in significant change or impairment of soil quality based on available research and Regional experience" (Forest Service Manual 2500, Region 1 Supplement 2500-99-1, Chapter 2550 – Soil Management, Section 2554.1).
>
> A formal research study, the "Long Term Soil Productivity Study," is currently being conducted by the Research Branch of U.S. Department of Agriculture, Forest Service to validate these soil quality standards.

(USDA Forest Service, 2002a.)

A problem with the soil quality standards (and the DEIS's interpretation of them) is that they do not set any rational limits for cumulative loss in soil productivity <u>outside the activity areas</u> of the proposed timber sale. There is nothing in the DEIS that itemizes the various kinds and levels of disturbance in the various disturbed sites in each project area watershed. It seems the FS's position is that areas that have experienced significant losses of soil productivity from roads, log landings, off-road vehicle use, and private land activities can be virtually unlimited in any project area or watershed, regardless of what new is proposed.

It is clear that the intent of the Regional Soil Quality Standards is that the FS must, in each case, consider the cumulative effects of both past and proposed soil disturbances to assure that soil productivity will be maintained. This includes impacts from activities that include logging, motorized vehicle use, etc. Such cumulative effects analysis found in the Soil and Water Conservation Practices Handbook (FSH 2509.22), adopted as a Standard under the KNF Forest Plan. FSH 2509.22 states:

> Practice 11.01 – Determination of Cumulative Watershed Effects
> OBJECTIVE: To determine the cumulative effects or impact on beneficial water uses by multiple land management activities. Past, present, or reasonably foreseeable future actions in a watershed are evaluated relative to natural or undisturbed conditions. Cumulative impacts are a change in beneficial water uses caused by the accumulation of individual impacts over time and space. Recovery does not occur before the next individual practice has begun.
>
> EXPLANATION: The Northern and Intermountain Regions will manage watersheds to avoid irreversible effects on the soil resource and to produce water of quality and quantity sufficient to maintain beneficial uses in compliance with State Water Quality Standards. Examples of potential cumulative effects are: 2) excess sediment production that may reduce fish habitat and other beneficial uses; 3) water temperature and nutrient increases that may affect beneficial uses; 4) compacted or disturbed soils that may cause site productivity loss and increased soil erosion; an 5) increased water yields and peak flows that may destabilize stream channel equilibrium.
>
> IMPLEMENTATION: As part of the NEPA process, the Forest Service will consider the potential cumulative effects of multiple land management activities in a watershed which may force the soil resource's capacity or the stream's physical or biological system beyond the ability to recover to near-natural conditions. A watershed cumulative effects feasibility analysis will be required of projects involving significant vegetation removal, prior to including them on implementation schedules, to ensure that the project, considered with other activities, will not increase sediment or water yields beyond or fishery habitat below acceptable limits. The Forest Plan will define these acceptable limits. The Forest Service will also coordinate and cooperate with States and private landowners in assessing cumulative effects in multiple ownership watersheds.

Further, Adams and Froehlich (1981) provide reasons why impacts beyond the directly compacted 15% of an area must be considered in any reasonable definition of soil productivity:

> Since tree roots extend not only in depth but also in area, the potential for growth impact also becomes greater as compaction affects more of the rooting area. In a thinned stand, for example, you can expect the greatest growth impacts in residual trees that closely border major skid trails or that have been subject to traffic on more than one side of the stem.

In other words, when an Activity Area reaches 15% detrimentally impacted soils via compaction, tree growth outside the skid trail, or beyond the compacted area, is affected. This is ignored in the DEIS.

For a study done on the Kootenai and Flathead National Forests, soil scientists measured soil bulk densities, macropore porosities, and infiltration rates using paired observations of disturbed vs. undisturbed soils. They discovered that although "the most significant increase in compaction occurred at a depth of 4 inches… some sites showed that maximum compaction occurred at a depth of 8 inches… (and) Furthermore, ... subsurface compaction occurred in glacial deposits to a depth of at least 16 inches." (Kuennen, Edson, and Tolle, 1979.) The FS does not have enough soil bulk density and other compaction monitoring data collected at the adequate soil depths and in enough sites on the KNF to be able to make accurate predictions about the effects of soil compaction in Lower Big Creek project activity areas.

Following a study by Cullen et al., (1991) which was carried out on the Kootenai NF and the Flathead NF, the authors concluded: "This result lends support to the general observation that most compaction occurs during the first and second passage of equipment." And Page-Dumroese (1993), in a FS research report investigating logging impacts on volcanic ash-influenced soil in the Idaho Panhandle NF, states, "Moderate compaction was achieved by driving a Grappler log carrier over the plots twice." Page-Dumroese (1993) also cited other studies that indicated: "Large increases in bulk density have been reported to a depth of about 5 cm with the first vehicle pass over the soil." Williamson and Neilsen (2000) assessed change in soil bulk density with number of passes and found 62% of the compaction to the surface 10cm to come with the first pass of a logging machine. In fine textured soils Brais and Camire (1997) demonstrated that the first pass creates 80 percent of the total disturbance to the site.

Adams and Froehlich (1981) state, "Unfortunately, little research has yet been done to compare the compaction and related impacts caused by low-pressure and by conventional logging vehicles."

The Northern Region recognizes that soil quality standards must be validated. FSM 2500-99-1 requires that Forest Supervisors must:

- Assess … whether (soil quality standards) are effective in maintaining or improving soil quality;
- Evaluate the effectiveness of soil quality standards and recommend adjustments to the Regional Forester; and
- Consult with soil scientists to evaluate the need to adjust management practices or apply rehabilitation measures.

This all implies that monitoring must be undertaken. Furthermore, FSM 2500-99-1 recognizes that soil productivity is defined not merely in terms of the absence of meeting the 15% standard. "Soil Function" is defined thus:

> Primary soil functions are: (1) the sustenance of biological activity, diversity, and productivity, (2) soil hydrologic function, (3) filtering, buffering, immobilizing, and

> detoxifying organic and inorganic materials, and (4) storing and cycling nutrients and other materials.

And "Soil Quality" is defined as "The capacity of a specific soil to function within its surroundings, support plant and animal productivity, maintain or enhance water and air quality, and support human health and habitation."

Neither soil function nor soil quality, as FSM 2500-99-1 defines it, have ever been monitored on the KNF following management activities. This has long-term implications for sustained timber production as well as the ecological relationships in the soil upon which timber production so very much depends. Unfortunately, the FS seems to have only interpreted monitoring requirements in terms of maintaining no more than 15% of activity areas in a detrimentally disturbed condition.

The Forest Management Handbook at FSH 2509.18 directs the FS to do validation monitoring to "Determine if coefficients, S&Gs, and requirements meet regulations, goals and policy" (2.1 – Exhibit 01). It asks what we are asking: "Are the threshold levels for soil compaction adequate for maintaining soil productivity? Is allowing 15% of an area to be impaired appropriate to meet planning goals?" The Ecology Center recently asked the Northern Region if they have ever performed this validation monitoring of its 15% Standard, in their February 26, 2002 Freedom of Information Act request to the Regional Forester, requesting:

> The Forest Management Handbook at FSH 2509.18 provides the Forest Service with examples of validation monitoring to "Determine if coefficients, S&Gs, and requirements meet regulations, goals and policy." It asks "Are the threshold levels for soil compaction adequate for maintaining soil productivity? Is allowing 15% of an area to be impaired appropriate to meet planning goals?" We request all documentation of validation monitoring by the Forest Service in the Northern Region that answers those two questions.

The Regional Office's reply letter stated that there is no documentation that responds to this request.

FSM 2500-99-1 superceded similar directives issued in 1994 (FSH 2509.18). Both versions of these Regional directives have required implementation and effectiveness monitoring. But as the Regional Office's reply to the Ecology Center FOIA indicates, the DEIS is unable to cite the results of any monitoring, required by the Standards, to provide a basis for assuming the Standards actually protect soil productivity.

Page-Dumroese et al. 2000 (an earlier version of which is cited in FSM 2500-99-1) emphasize the importance of validating soil quality standards using the results of monitoring:

> Research information from short- or long-term research studies supporting the applicability of disturbance criteria is often lacking, or is available from a limited number of sites which have relative narrow climatic and soil ranges. …Application of selected USDA Forest Service standards indicate that blanket threshold variables applied over disparate soils do not adequately account for nutrient distribution within the profile or forest floor depth. These types of guidelines should be

> continually refined to reflect pre-disturbance conditions and site-specific information. (Abstract.)

Soil productivity can only be protected if it turns out that the soil Standards work. To determine if they work, the FS would have to undertake objective, scientifically sound measurements of what the soil produces (grows) following management activities. But the FS has never done this on the KNF, despite Forest Plan monitoring requirements.

The DEIS relies upon mitigation measures and vague soil restoration measures, yet fails to disclose the reliability of those measures for actually protecting soil productivity and water quality. The DEIS cites the results of no research nor scientific monitoring supporting the use of the proposed restoration and mitigation measures.

It is reasonable to expect that in order for the FS to assure that soil productivity is not or has not been significantly impaired, to assure that the forest is producing a sustained yield of timber (to meet Forest Plan goals), for one example, tree growth must not be significantly reduced by soil-disturbing management activities. Grier and others (1989), in a FS General Technical Report, adopted as a measure of soil productivity: "the total amount of plant material produced by a forest per unit area per year." (P. 1.) And they cite a study finding "a 43-percent reduction in seedling height growth in the Pacific Northwest on primary skid trails relative to uncompacted areas" for example. And in another FS report, Adams and Froehlich (1981) state:

> Measurements of reduced tree and seedling growth on compacted soils show that significant impacts can and do occur. Seedling height growth has been most often studied, with reported growth reductions on compacted soils from throughout the U.S. ranging from about 5 to 50 per cent.

Another big problem is that the DEIS largely relies on the FS's track record of relying upon Best Management Practices (BMPs) to base its claims that soil productivity will be maintained following logging practices. However, BMP monitoring does not even attempt to measure post-project soil productivity, since the audits are not scientifically designed to do so. Nor does it result in quantitative measures of detrimental disturbance, or soil productivity, which are the most relevant factors here.

The DEIS also does not measure or provide estimates of detrimental soil disturbance from off-road vehicle use. Alexander and Poff (1985) note that activities such as ORVs and motorcycles cause significant soil compaction.

The DEIS fails to recognize research that indicates skyline logging can do more damage that it projects. Alexander and Poff (1985) reviewed literature and found that as much as 10% to 40% of a logged area can be disturbed by skyline logging. They state:

> There are many more data on ground disturbance in logging, but these are enough to indicate the wide diversity of results obtained with different equipment operators, and logging techniques in timber stands of different composition in different types of terrain with different soils. Added to all these variables are different methods of investigating and reporting disturbance.

In sum, the DEIS does not rely upon scientifically credible data or analysis, so the Decision to cause more soil disturbance, resulting in unknown losses in soil productivity, is arbitrary and capricious.

The DEIS does not adequately disclose the complete picture of the entire spectrum of recreational use in the Fishtrap watershed.

Since adoption of the Forest Plan for the Lolo NF, conditions on and around the Forest have changed “significantly” in both NFMA and NEPA terms.

Sec. 6. Section 6 of the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended, states under section (f): Plans developed in accordance with this section shall- (5) be revised (A) from time to time when the secretary finds conditions in a unit have significantly changed, but at least every fifteen years, and (B) in accordance with the provisions of subsections (e) and (f) of this section and public involvement comparable to that required by subsection (d) of this section. (Emphasis added.)

NFMA implementing regulations at 36 C.F.R. § 219.10(f) and (g) deal with amending and revising forest plans:

> (f) *Amendment.* The Forest Supervisor may amend the forest plan. Based on an analysis of the objectives, guidelines, and other contents of the forest plan, the Forest Supervisor shall determine whether a proposed amendment would result in a significant change in the plan. If the change resulting from the proposed amendment is determined to be significant, the Forest Supervisor shall follow the same procedure as that required for development and approval of a forest plan. If the change resulting from the amendment is determined not to be significant for the purposes of the planning process, the Forest Supervisor may implement the amendment following appropriate public notification and satisfactory completion of NEPA procedures.
>
> (g) *Revision.* A forest plan shall ordinarily be revised on a 10-year cycle or at least every 15 years. It also may be revised whenever the Forest Supervisor determines that conditions or demands in the area covered by the plan have changed significantly or when changes in RPA policies, goals, or objectives would have a significant effect on forest level programs. In the monitoring and evaluation process, the interdisciplinary team may recommend a revision of the forest plan at any time. Revisions are not effective until considered and approved in accordance with the requirements for the development and approval of a forest plan. The Forest Supervisor shall review the conditions on the land covered by the plan at least every 5 years to determine whether conditions or demands of the public have change significantly. (Emphasis added.)

Additionally, the fifteen-year mandatory due date for Revision of the Lolo NF Forest Plan is past.

Indeed, conditions have changed significantly, to the point where the Forest Plan can no longer be genuinely represented as responsive to present conditions. The Forest Plan EIS is no longer valid.

Since the signing of the Forest Plan Record of Decision (Forest Plan ROD), at least two species that occur on the Lolo NF have been listed under the Endangered Species Act (ESA). These include the bull trout and the Canada lynx. Furthermore, the U.S. Fish and Wildlife Service has made a determination that the grizzly bear, considered to be a “Threatened” species throughout its present range, is warranted to be uplisted to “Endangered” status in the Cabinet-Yaak ecosystem, which includes a part of the project area. This is largely due to the fact that population levels remain so low as to not constitute a viable population.

Furthermore, the Forest Plan Amendment process in still not complete for the lynx.

Since the signing of the Forest Plan ROD, many thousands of acres of the Forest have been affected by wildland fires. The wildland fires have likely affected thousands of acres of old-growth habitat, and other mature forest habitat used by old-growth wildlife species. The impacts on the soil, water, wildlife habitat, and vegetation wrought by these fires have significantly changed conditions on the Forest beyond any level contemplated or anticipated by the Forest Plan EIS.

The impacts of both fire suppression have also been quite significant, beyond any disclosures in the Forest Plan EIS. Results of scientific assessments of the Lolo NF are included in the Interior Columbia Basin Ecosystem Management Project (ICBEMP) EIS and accompanying documents. These results suggest vast changes in vegetation have resulted from successful fire suppression.

The FS has never provided adequate protection for designated old-growth MIS as the Forest Plan and NFMA require, resulting in a widespread loss of the snag habitat due to firewood cutting and other activities adjacent to open roads.

Typical EIS and EA “Purpose and Need” statements for timber sale in recent years rely heavily upon decisions made outside the public process regarding “desired conditions.” All decisions regarding what ought to be “desired conditions” were made prior to the NEPA phase. These so-called “desired conditions” relate to Landtype Associations (LTAs) and have at best indirect relevance to the Forest Plan Management Areas (MAs). These “desired conditions” are significantly different than those considered in the development of the Forest Plan, and therefore these decisions have never been subject to public, other government agency, and scientific peer review as required by NFMA and NEPA regulations and the Section 7 consultation requirements under ESA.

Furthermore, the impacts of fighting fires is quite significant, as demonstrated for recent fires in project file documents and in Burned Area Emergency Rehabilitation (BAER) reports. Other impacts include those on wildlife resulting from the opening of large areas of otherwise secure habitat when firefighting is occurring, as road gates are opened and berms are removed, allowing unlimited access when Forest Plan Standards or other requirements normally require the roads to be closed. Again, these impacts were not disclosed in the Forest Plan EIS.

We are constantly reminded that maintenance of the road system on the Lolo NF is sorely behind schedule. It is very evident because practically every timber sale NEPA document, including Fishtrap, contains a Purpose and Need statement regarding the bad condition of roads in the project area. This is also reflected in the new Roads Policy as adopted late in President Clinton's second term of office.

The overwhelming sentiment on the part of the American Public for protecting all Roadless Areas from resource extraction, clearly demonstrated during the public comment process for the Roadless Policy during President Clinton's second term of office, is not recognized in any planning documents supporting the Forest Plan ROD.

The Forest Plan also never anticipated nor disclosed the degree to which land management activities, including timber production grazing, and management of recreational activities, would lead to vast areas of the Forest being infested with noxious weeds.

The 1995 Federal Wildland Fire Management Policy and Program Review (FWFMPPR) mandated that the FS prepare a Fire Plan for the Lolo NF, yet no such Fire Plan development has seen the NEPA light of day since the FWFMPPR policy was adopted in 1995. Also, the Fire Plan adopted by Congress last year following the 2000 fire season has major Planning-level implications that the FS has not responded to for management of the Lolo.

Clearly, this Forest Plan is out-of-date and in dire need of revision. The practice of relying upon Plan level decisions, such deferring to Management Area designations as the DEIS does, is seriously misguided by the current Forest Plan.

The DEIS doesn't include the results of monitoring of noxious weed infestation from past management actions in the Lolo NF, nor does it give an indication of the effectiveness of the various noxious weed treatments to be carried out in the foreseeable future in the project area. The latest proof of the Lolo NF's failure is demonstrated by the July 16, 2004 "Proposal to Improve Weed Management on the Lolo National Forest."

One of the biggest problems with the FS's failure to deal forthrightly with the noxious weed problem on a forestwide basis is that the long-term costs are never adequately disclosed or analyzed. The public is expected to continuously foot the bill for noxious weed treatments—the need for which increases yearly as the Lolo NF continues the large-scale propagation of weeds, and fails to monitor the effectiveness of all its noxious weed treatment plans to date. There is no guarantee that the money needed for the present management direction will be supplied by Congress, no guarantee that this amount of money will effectively stem the growing tide of noxious weed invasions, no accurate analysis of the costs of the necessary post-treatment monitoring, and certainly no genuine analysis of the long-term costs beyond those incurred by site specific weed control actions.

The DEIS also fails to disclose the risks of the herbicides that would be used.

The FS often makes a case for logging as a way to reduce insect and disease damage to timber stands. As far as we are aware, the FS has no empirical evidence to indicate its “treatments” for “forest health” decrease, rather than increase, the incidence of insects and diseases in the forest. Since the FS doesn’t cite research that proves otherwise in its NEPA analyses, we can only conclude that “forest health” discussions are unscientific and biased toward logging as a “solution.” Please consider the large body of research that indicates logging, roads, and other human caused disturbance promote the spread of tree diseases and insect infestation.

For example, multiple studies have shown that annosus root disease (Heterobasidion annosum, formerly named Fomes annosus), a fungal root pathogen that is often fatal or damaging for pine, fir, and hemlock in western forests, has increased in western forests as a result of logging (Smith 1989). And researchers have noted that the incidence of annosus root disease in true fir and ponderosa pine stands increased with the number of logging entries (Goheen and Goheen 1989). Large stumps served as infection foci for the stands, although significant mortality was not obvious until 10 to 15 years after logging (Id.).

The proportion of western hemlock trees infected by annosus root disease increased after precommercial thinning, due to infection of stumps and logging equipment wounds (Edmonds et al. 1989, Chavez, et al. 1980).

Armillaria, a primary, aggressive root pathogen of pines, true firs, and Douglas-fir in western interior forests, spreads into healthy stands from the stumps and roots of cut trees (Wargo and Shaw 1985). The fungus colonizes stumps and roots of cut trees, then spreads to adjacent healthy trees. Roots of large trees in particular can support the fungus for many years because they are moist and large enough for the fungus to survive, and disease centers can expand to several hectares in size, with greater than 25% of the trees affected in a stand (id.). Roth et al. (1980) also noted that Armillaria was present in stumps of old-growth ponderosa pine logged up to 35 years earlier, with the oldest stumps having the highest rate of infection.

Filip (1979) observed that mortality of saplings was significantly correlated to the number of Douglas-fir stumps infected with Armillaria mellea and laminated root rot (Phellinus weirii). McDonald, et al. (1987) concluded the pathogenic fungus Armillaria had a threefold higher occurrence on disturbed plots compared to pristine plots at high productivity sites in the Northern Rockies. Those authors also reviewed past studies on Armillaria, noting a clear link between management and the severity of Armillaria-caused disease.

Morrison and Mallett (1996) observed that infection and mortality from the root disease Armillaria ostoyae was several times higher in forest stands with logging disturbance than in undisturbed stands, and that adjacent residual trees as well as new regeneration became infected when their roots came into contact with roots from infected stumps.

Precommercial thinning and soil disturbance led to an increased risk of infection and mortality by black-stain root disease (Leptographium wageneri) in Douglas-fir, with the majority of infection centers being close to roads and skid trails (Hansen et al. 1988). Also another Black-stain root disease (Verticicladiella wagenerii) occurred at a greater frequency in Douglas-fir trees close to roads than in trees located 25 m or more from roads (Hansen 1978). Witcosky et al.

(1986) also noted that precommercially thinned stands attracted a greater number of black-stain root disease insect vectors.

Complex interactions involve mechanical damage from logging, infestation by root diseases, and attacks by insects. Aho et al. (1987) saw that mechanical wounding of grand fir and white fir by logging equipment activated dormant decay fungi, including the Indian paint fungus (Echinodontium tinctorium).

Trees stressed by logging, and therefore more susceptible to root diseases are, in turn, more susceptible to attack by insects. Goheen and Hansen (1993) reviewed the association between pathogenic fungi and bark beetles in coniferous forests, noting that root disease fungi predispose some conifer species to bark beetle attack and/or help maintain endemic populations of bark beetles.

Goheen and Hansen (1993) observed that live trees infected with Laminated root rot (Phellinus weirii) have a greater likelihood of attack by Douglas-fir beetles (Dendroctonus pseudotsugae). Also, Douglas-fir trees weakened by Black-stain root disease (Leptographium wageneri var. pseudotsugae) are attacked and killed by a variety of bark beetle species, including the Douglas-fir bark beetle (D. pseudotsugae) and the Douglas-fir engraver (Scolytus unispinosis) (id.).

The root disease Leptographium wageneri var. ponderosum predisposes ponderosa pine to several bark beetle species, including the mountain pine beetle (D. ponderosae) and the western pine beetle (D. brevicomis) (Goheen and Hansen 1993).

A variety of root diseases, including black-stain, Armillaria, and brown cubical butt rot (Phaeolus schweinitzii), predispose lodgepole pine to attack by mountain pine beetles in the interior west. The diseases are also believed to provide stressed host trees that help maintain endemic populations of mountain pine beetle or trigger population increases at the start of an outbreak (Goheen and Hansen 1993).

Grand and white fir trees in interior mixed-conifer forests have been found to have a high likelihood of attack by the fir engraver (Scolytus ventralis) when they are infected by root diseases, such as laminated root rot, Armillaria, and annosus (Goheen and Hansen 1993).

More western pine beetles (Dendroctonus breviformis) and mountain pine beetles (D. ponderosae) were captured on trees infected by black-stain root disease (Ceratocystis wageneri) than on uninfected trees (Goheen et al. 1985). The two species of beetle were more frequently attracted to wounds on trees that were also diseased than to uninfected trees. They also noted that the red turpentine beetle (Dendroctonus valens) attacked trees at wounds, with attack rates seven-to-eight times higher on trees infected with black-stain root disease than uninfected trees. Spondylis upiformis attacked only wounded trees, not unwounded trees (Id.).

The economics analysis is completely inadequate. There is no itemized disclosure of costs vs. benefits, nor a Present Net Value (PNV) discussion. The economics analysis must also disclose the long-term costs of carrying out this extra-Forest Plan fire risk management scheme, since the project’s success must be measured over many treatment cycles.

The DEIS fails to consider in any analysis the amounts of timber coming off of land in the same market area, in lands of all ownership. Yet it presents timber production as an extreme need!

What the economics analysis **does** disclose is the huge waste of resources represented by NEPA documentation of a timber sale, whereas otherwise the money would go a long ways towards doing the needed restoration work. The economics analysis also seems to hide the fact that the timber sale portion of the project is not a benefit to the restoration-paying public—it is simply a huge loss.

The fact that restoration is such a high priority in this watershed is a reason why there is a strong need for the EIS to contain an itemized appraisal of the costs of all these needs ($3 million, DEIS at 2-6). The FS has arbitrarily prioritized restoration tasks via alternative, even though the proposed stewardship contracting could include areas outside the narrowly defined project area. The "decisions" (DEIS at 2-7) must be open to public comment.

It seems that most of the road decommissioning the DEIS takes credit for would be roads the FS has to do little active work. Again, the DEIS is so opaque on the subject of road decommissioning and prioritization, the public is left in the dark.

Thank you for your attention to these concerns. Please keep each organization on your list to receive further mailings on the proposal. Also, please mail to the Ecology Center copies of the Biological Evaluations/Assessments for all Threatened, Endangered, Proposed, and Sensitive fish, wildlife, and plant species, as well as USFWS Biological Opinions and concurrence letters for this proposed project, as soon as they are available.

We incorporate the Ecology Center's March 23, 2000 letter to the Lolo NF Forest Supervisor, as comments on the Fishtrap DEIS. We also incorporate our organizations' comments on the Forest Plan revision, as comments on the Fishtrap DEIS. Some can be found at: http://maps.wildrockies.org/ecosystem_defense/Federal_Agencies_TECI/Forest_Service/Region_1/Lolo_NF/Plan%20Revision/ Please place a copy of those documents in the Project File as responsive to your request for comments on the Fishtrap DEIS. The contents of the letters are based upon many years of experience in the public involvement process on the Rexford Ranger District, the Lolo NF and the national forests of the region as a whole.

It is our intention that you include in the record and review all of the literature and other incorporated documents we've cited herein. **Please contact us if you have problems locating copies of any of them.** Please keep each organization on the list to receive all future mailings regarding this project proposal.

We conclude this comment letter with this passage from Frissell and Bayles (1996):

> Most philosophies and approaches for ecosystem management put forward to date are limited (perhaps doomed) by a failure to acknowledge and rationally address the overriding problems of uncertainty and ignorance about the mechanisms by which complex ecosystems respond to human actions. They lack humility and historical perspective about science and about our past failures in

management. They still implicitly subscribe to the scientifically discredited illusion that humans are fully in control of an ecosystemic machine and can foresee and manipulate all the possible consequences of particular actions while deliberately altering the ecosystem to produce only predictable, optimized and socially desirable outputs. Moreover, despite our well-demonstrated inability to prescribe and forge institutional arrangements capable of successfully implementing the principles and practice of integrated ecosystem management over a sustained time frame an at sufficiently large spatial scales, would-be ecosystem managers have neglected to acknowledge and critically analyze past institutional and policy failures. They say we need ecosystem management because public opinion has changed, neglecting the obvious point that public opinion has been shaped by the glowing promises of past managers and by their clear and spectacular failure to deliver on such promises.

Sincerely,

/s/

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