APPEAL TO THE REGIONAL FORESTER OF THE U. S. FOREST SERVICE
NORTHERN REGION

NATIVE FOREST NETWORK	)
THE ECOLOGY CENTER	)
ALLIANCE FOR THE WILD ROCKIES	)
	)
APPELLANTS	)
	)
v.	)
	)
DEBORAH L.R. AUSTIN, FOREST SUPERVISOR	)
LOLO NATIONAL FOREST	)
	)
RESPONSIBLE OFFICIAL	)
_____	)

DATED THIS 23RD DAY OF JANUARY, 2006

TO: USDA Forest Service, Northern Region, Attn: Appeal Deciding Officer, P.O. Box 7669, Missoula, MT, 59807.

NOTICE OF APPEAL

DECISION APPEALED:

On December 9, 2005 Lolo National Forest Supervisor and Responsible Official Deborah Austin signed the Fishtrap Record of Decision (ROD), selecting a modified Alternative 2 from the Final Environmental Impact Statement (FEIS). Alternative 2-modified would log 2,260 acres, removing an estimated 12 million board feet of timber. Another 437 acres would have a combination of noncommercial "treatments" that include precommercial thinning, "release and weed" and "grapple scarify and plant." There would also be 0.75 miles of new ("temporary") road construction, 36 miles of roads would be reconstructed, there would be 40 miles of "road maintenance on haul routes," 10 miles of "road maintenance on roads not used for haul, if funding is available," and 151 miles of roads will be decommissioned at three different "closure levels."

Native Forest Network, the Alliance for the Wild Rockies, and the Ecology Center hereby give notice pursuant to 36 CFR 215 that we are appealing Forest Supervisor Deborah Austin's ROD to approve the Fishtrap timber sale. The project area is located on the Plains-Thompson Falls Ranger District of the Lolo National Forest (LNF). The ROD is not in accordance with the legal requirements of the National Environmental Policy Act (NEPA), 42 U.S.C. 4321 et seq., and its implementing regulations, the National Forest Management Act (NFMA) 16 U.S.C. 1600 et seq., and its implementing regulations, the Administrative Procedures Act, (APA) 5 U.S.C. Sec. 706, the Forest Plan for the Lolo National Forest, the Endangered Species Act, the Forest Service Manual, and the Clean Water Act.

As a result of the ROD, appellants, individuals, and members of the above-mentioned groups would be directly and significantly affected by the logging, road construction, and reconstruction. Appellants are conservation organizations working to ensure protection of biological diversity and ecosystem integrity in the Wild Rockies and Inland Northwest bioregion (including the LNF). The individuals and members use the project area for recreation and other forest related activities. The selected alternative would also further degrade the water quality, wildlife and fish habitat. These activities, if implemented, would adversely impact and irreparably harm the natural qualities of the Fishtrap project area, the surrounding area, and would further degrade the watershed and wildlife habitat.

STATEMENT OF REASONS

I. IRRATIONAL RESTORATION RATIONALE IN FEIS CONFOUNDS THE EXPRESSED "PURPOSE AND NEED" AND THEREFORE THE ROD IS ARBITRARY AND CAPRICIOUS.

The FEIS identifies four aspects of the project's purpose and need that are restoration-focused. These are:

- *Restore, maintain, enhance water quality, fish habitat and fish passage to support cold water fish and meet State standards.*
- *Improve grizzly bear habitat within the Cabinet-Yaak Grizzly Bear Recovery Zone to contribute to the recovery of the species. There is a need to meet the standard for core habitat.*
- *Restore/maintain/enhance native "at risk" vegetative communities. Vegetative communities, especially riparian and old growth forests, which include ponderosa pine, western larch, whitebark pine, western white pine, and quaking aspen are diminishing within the bioregion (Northern Region Overview, USDA 1998).*
- *Improve and maintain big game winter range*

(FEIS at 1-2 to 1-7.)

The Forest Service proposes to meet the first two aspects by focusing on the problems created by the existing excessive road network, while the last two aspects are to be met by manipulating vegetation in recognition that fire suppression and logging have thrown the ecosystem out of balance.

The FEIS admits that a major cause of the vegetative "problems" is the Forest Service's fire suppression regime, the outdated "Smokey Bear" paradigm which sees fire not as the rejuvenating natural process it is, but instead a threat to the ecosystem. Unfortunately, the Fishtrap project represents an agency unable to move on from such a pathological world view. The vegetation manipulations are largely designed to replace natural fire with mechanical "treatments" and "prescribed" fires, without any indication if ecosystems can indeed be maintained or restored by such artificial actions.

It is important to recognize that the problematic existing road system in the Fishtrap project area was put in place to begin with for one primary purpose, that being to facilitate timber production.

Likewise, fire suppression actions in locations like the Fishtrap drainage have historically been carried out to protect the commercial timber base. So the agency's decades-long obsession with timber production is the root cause of the "problems" now identified in the Fishtrap FEIS's "Purpose and Need" statement.

Unfortunately, the agency now proposes more of the same, commercial logging on 2,260 acres—over 3½ square miles—to solve the problems caused by logging. Indeed, the only other aspect of the Purpose and Need statement reads:

- *Contribute to short-term and long-term Forest Plan objectives for timber production to provide commodity outputs to local communities.*

The Fishtrap project area is far from any sizeable community, in fact there are no genuine wildland fire threats to any human community in this rather remote part of Western Montana. Unfortunately, the Forest Service refuses to consider how naturally occurring fire can be re-integrated back into the ecosystem. If not here, where outside Wilderness—if even there?

What is "out of balance" here is a political and social system that brings destruction to the natural world in the name of "restoring" it. In fact, the Fishtrap ROD represents an agency that is part of the problem, an agency that proposes inadequate solutions to problems it has been integral in causing, accomplishing mainly the maintenance of the social and political status quo of ecosystem destruction.

A very pertinent question ought to be posed here: is the "Forest Plan objectives for timber production …to local communities" legitimate? A quick look at a map of the area answers that question. Extensive areas of privately owned industrial timberland practically surround the project area. In every direction but the southwest, vast acreages of such industrial timberland are adjacent, to the tune of many tens of thousands of acres. This is land from which timber extraction has been, and continues to be the major factor changing the face of the landscape. **No human community needs increased industrial logging in the Fishtrap project area.** The problem is political.

Politics are the problem. The Forest Service clearly indicates that Congress has not appropriated enough money to restore our national forests. In response to our idea that restoration could be accomplished without a timber sale, the Forest Service responded:

> "Appropriated funding would likely be available for the ecosystem maintenance burning and non-commercial vegetation treatments, such as precommercial thinning. However, watershed and road maintenance funds are currently very limited and there is no anticipation that more money will be allocated to these funds in the near future." (ROD at p. 13.)

Clearly, Congressional action could contribute to a genuine solution, if Congress was not bending over backwards to please timber industry lobbyists/campaign contributors. The agency thus proposes to utilize the returns of timber sales to fund what Congress refuses to do. Indeed the Forest Supervisor states that she proposes to:

> "…implement the Fishtrap project through stewardship contracting (Public Law 108-7) in order to accomplish as much of the identified restoration opportunities on

the ground as possible. **Stewardship contracting (a) allows exchange of goods (i.e. timber) for services**; (b) facilitates land restoration and enhancement efforts by using value of the traded goods for important work on the ground…"
(ROD at p. 11, emphasis added.)

Stewardship contracting is thus presented as a progressive way to accomplish restoration goals. However, from reading the FEIS and ROD, it is very obvious that stewardship contracting will not get the job done in the Fishtrap project area. Very little of the needed road work will be accomplished under the Decision:

"The majority of the restoration needs identified for the entire project area includes application of Best Management Practices (BMPs) on roads needed for future management and decommissioning unneeded roads for a total of more than three million dollars." (ROD at p. 13.) "In total, approximately $3 million of restoration opportunities were identified in the Project Area as a result of completing the Roads Analysis Process. … Because road management and watershed restoration opportunities …far exceeded anticipated revenues, only the highest priority road treatments were selected." (FEIS at p. 6-87, emphasis added.)

What about the needed vegetative restoration? Appellants also asked about that aspect:

"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?"

From the answer provided, it is clear that the Forest Service could not, or refused to answer:

"While a characteristic or 'typical' stand density condition can be described for both mature and old growth stands of the various forest types, they will always vary widely both across time and space. Modifications of stand density are being proposed to make some stands more resilient to future disturbances, primarily fire, but they are not intended to create uniformity in stand conditions or eliminate structural diversity of stands across the landscape. Change at the landscape level from the proposed alternatives is detailed in Table 3.2-5 of the DEIS (page 3-42). Acres of treatments that would modify stand density in both mature and old growth stands are found in Table 2-8 (page 2-18) and pages 3-24 through 3-29 of the DEIS. Descriptions of treatments effects on stand density are found in the glossary in Appendix E. Please also see response to Comment 26." (FEIS at p. 6-10.)

Given an opportunity to fully justify their "logging-as-vegetative restoration" strategy, the agency only evaded the question.

Appellants made another attempt at getting to the validity of the Forest Service's restoration strategy, commenting:

"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?"

The Forest Service's response:

> **"**The simple fact is, that currently, there are not sufficient appropriated watershed or road maintenance funds available to finance a comprehensive portion of the identified watershed restoration opportunities in the project area. As stated on page 2-6 of the DEIS, we did explore various sources of funding for implementation of restoration activities and determined that the best means available to us at the present time is stewardship contracting. …. We did not engage in the 'tail-chasing' approach that you allude to of assessing the total amount of timber harvest receipts needed to pay for all of the identified watershed restoration opportunities**. To do so, would have involved proposing harvest activities that would be likely outside the constraints of other resources." (**FEIS 6-11 – 6-12, emphasis added.)

The purpose of our question was not to set the Forest Service on some "tail-chasing" exercise, and indeed their response precisely proved our point—the management approach utilized to "restore" the Fishtrap project area will never accomplish anywhere near the necessary restoration.

Thus, it turns out that Congress's stewardship contracting legislation is often used as yet another backhand method of paying back timber industry contributors. Hold the watershed hostage, demand the exchange of logs for restoration—then never even get the restoration done. In the process, put the professionals in the agency in the position to have to make lofty goal statements the public wants to hear, knowing all the while those goals will be impossible to accomplish. What's needed here is a better solution.

II. OLD GROWTH AND OLD-GROWTH ASSOCIATED WILDLIFE SPECIES.

The Forest Plan contains the following goal: "Provide habitat for viable populations of all indigenous wildlife species and for increasing populations of big-game animals." Forest Plan at II-1. Another goal is: For threatened and endangered species occurring on the Forest, …manage to contribute to the recovery of each species to nonthreatened status." Id. The Forest Plan also contains the following objective:

> The Forest Plan provides habitat for viable populations of the diverse wildlife and fish species on the Forest, with special attention to species dependent on snags, old growth areas, and riparian zones. …Overall, the Forest Plan provides for the maintenance of a diverse mosaic of vegetational development, well distributed across the Forest to insure ecological integrity.

Forest Plan at II-2.

The Forest Plan contains this nondiscretionary Standard:

> 24. All threatened and endangered species occurring on the Lolo …will be managed for recovery to nonthreatened status. Forest Service designated essential habitat will provide interim management direction for those species until critical habitat is designated by the Fish and Wildlife Service.

Forest Plan at II-13. The Fishtrap FEIS and ROD do not demonstrate consistency with Forest Plan standard #24. There is nothing in the FEIS that demonstrates the Forest Service has designated "essential habitat" for the ESA-listed species found in the project area (grizzly bear,

gray wolf, Canada lynx, bull trout) which is mandatory given that the U.S. Fish and Wildlife Service has not yet designated "critical habitat" as defined under the ESA.

The Forest Plan contains the following nondiscretionary standard:

> 25. In the portion of the Forest more than 200 feet from all system roads, sufficient snags and dead material will be provided to maintain 80 percent of the population of snag-using species normally found in an unmanaged Forest.

Forest Plan at II-14. The Fishtrap FEIS and ROD do not demonstrate consistency with Forest Plan standard #25. In fact, Forest Plan Monitoring and Evaluation Reports over the life of the Forest Plan reveal that many timber sales have ever been carried out on the LNF that resulted in snag levels inconsistent with the Forest Plan.

The Forest Plan contains another nondiscretionary standard, #27, which reads in part:

> For plant and animal species that are not threatened or endangered, but where viability is a concern (i.e., sensitive species), manage to maintain population viability.

Forest Plan at II-14. The Fishtrap FEIS and ROD do not demonstrate consistency with this part of Forest Plan standard #27. The FEIS and ROD do not cite the results of any study that truly demonstrates that viable populations of Sensitive species are being maintained forestwide. Nor do the FEIS and ROD cite the results of any study that shows that viable populations of management indicator species are being maintained forestwide.

The lack of clear and scientifically sound management guidance in the Forest Plan results in management that does not ensure viability of species that rely upon the habitat characteristics found in old, relatively untouched forests for habitat needs. For populations to remain viable, and in order to comply with NFMA and its implementing regulations, habitat "must be well distributed so that those individuals can interact with others in the planning area." 36 C.F.R. § 219.19. At a minimum, this means that the offspring of breeding pairs must be able to find each other and find suitable breeding and foraging habitat so that the species can survive. There is nothing in the Forest Plan that provides such assurances, nor do the FEIS and ROD provide such assurances.

The FEIS indicates that the logging approved by the ROD would impact forest that provides habitat for species needing the kind of habitat features found in mature and old-growth forests.

The adjacent Flathead National Forest's Logan Creek Ecosystem Restoration Project Final EIS[1] 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.

[1] That FEIS is included in the References cited portion of this appeal as "USDA Forest Service, 2004a."

From a Northern Region old growth species guidance document (USDA Forest Service, 1990) entitled "Old-growth Habitats and Associated Wildlife Species in the Northern Rocky Mountains":

> In northwestern Montana, McClelland (1977) described a general trend of increased species richness in cavity-nesting birds from young to old-growth stands of larch and Douglas-fir. Old growth was particularly important in providing an adequate number of suitable nesting trees for cavity-nesters. (P. 6.)

Also, "Species in the Northern Region… thought to prefer old-growth components for breeding or feeding" include northern goshawk, flammulated owl, white-headed woodpecker, pileated woodpecker, black-backed woodpecker, fisher, marten, and wolverine. (Id., page 7.) "Of 48 old-growth-associated species occurring in the Northern Region, about 60 percent are thought to require stands larger than 80 acres." (Id., p. 8.) And, "The greater vertical and horizontal diversity found within an old-growth stand allows for niche specialization by wildlife. Although the individual wildlife species occurring may not be unique to old-growth stands, the assemblage of wildlife species and the complexity of interactions between them are different than in earlier successional stages." (Id., p. 2.)

There are over 58 species of wildlife on the adjacent Kootenai NF that rely or depend upon old-growth habitat for such purposes as breeding, feeding, thermal cover, or hiding cover.[2]

The FEIS alludes to a Forest Plan "standard" of 8%, however there is no such "standard" in the Forest Plan itself—only some discretionary guidance for 8% old growth found in the Forest Plan EIS. There is significant doubt as to the adequacy of this discretionary 8% old-growth guideline. Lesica (1996) stated that the Northern Region of the FS's general goal of maintaining 10% of forests as old growth may extirpate some 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.

The Kootenai[3] National Forest's 2005 Northeast Yaak EIS at p. 3-35 indicates that 22% old growth is at the lower limit for "reference conditions." This is based upon the KNF's analysis of forestwide "Vegetative Response Units" (VRUs). See Figure 1.

[2] USDA Forest Service. 1991. Forest Service Manual. Title 2400 – Timber Management. Kootenai National Forest Supplement No. 85.

[3] The Kootenai National Forest is immediately adjacent to the Fishtrap project area.

Figure 1.

Amount of Kootenai National Forest in 150+ years age class by Vegetative Response Unit (VRU)

VRU	% of KNF in VRU (acres)		Pre-1900 Condition % (acres)		Existing Condition (acres)	
1	1%	(25,532)	40-70%	(10,213-17,872)	22%	(5,617)
2	16%	(408,513)	20-50%	(81,702-204,256)	15%	(61,277)
3	9%	(229,789)	15-40%	(34,468-91,916)	12%	(27,575)
4	9%	(229,789)	10-40%	(22,979-91,916)	7%	(16,085)
5	27%	(689,366)	25-55%	(172,342-379,151)	12%	(82,724)
6	<1%		35-65%		41%	
7	20%	(510,642)	15-45%	(76,596-229,789)	14%	(71,490)
8	<1%		35-65%		10%	
9	10%	(255,321)	5-10%	(12,766-25,532)	8%	(20,426)
10	2%	(51,064)	40-60%	(20,426-30,638)	22%	(11,234)
11	<1%		40-60%		28%	
Total	94%*	(2,553,209**)	17-42%	(431,492-1,071,070)	12%	(296,428)

*Not including VRUs 6, 8, and 11 which are each said to be <1% of KNF (USDA Forest Service, 1999) .
**Figure from Forest Service data indicating total KNF acres.

Source: USDA Forest Service, 1999. Vegetation Response Unit Characterizations and Target Landscape Prescriptions, Kootenai National Forest, 1999.

Appellants' comments on the DEIS asked, "…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…"? The LNF's response clearly indicates that they have no scientific basis for their 8% guideline. Given that historic conditions are the subject of much of the project's "Purpose and Need", for the LNF to fail to disclose the historic range of old growth conditions is to ignore issues extremely relevant to wildlife population viability.

Of course, the Fishtrap FEIS and ROD argue that it doesn't really matter—all Fishtrap project "treatments" for old growth are designed to "maintain" or "restore" old growth. In fact, the Forest Plan requires the LNF to monitor the results of such old-growth "treatments," to monitor habitat for old-growth MIS and as monitoring technology becomes available, population trends will be monitored. The LNF has been negligent in its duties to complete such monitoring, rendering its claims to be "maintaining" or "restoring" old growth noncredible.

The Lolo NF has failed to cite any evidence that its managing for old growth habitat (i.e., "maintain" or "restore") 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. <u>In other words, producing "old-growth" habitat through active management is an untested hypothesis.</u>

(Pfister et al., 2000, pp. 11, 15 emphasis added).

Certainly, the technology for monitoring populations of the Lolo's old-growth management indicator species (MIS) has been available. The Lolo is participating in goshawk surveys. As far as the pileated woodpecker, Forest Service researcher E. Bull has done that for years (*see* Bull et al., 1990 for one example).

Also, the "treatments" in forest that the LNF says is not currently old growth is problematic from an old-growth associated wildlife species' habitat standpoint. There is no evidence that the logging will do much else than degrade it. Snags are typically cut down for safety reasons in logged areas. Artificially manipulating stand structure by removing some or most of the largest trees would obviously deplete habitat components, immediately and for unknown decades into the future. The LNF's claims that its "treatments" enhance or hasten the existence of old growth is little but a smokescreen for logging.

In fact, the FEIS's "forest health" claim to virtue for logging is assailed by the scientific literature. Veblen (2003) states:

> 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 FEIS states:

> At the forest-wide scale, 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 and Bush et al. 2003). …. The FIA data estimates the percentage of old growth on all forested lands on the Lolo National Forest is 11.6 percent (Bush et al. 2003).

The FIA old-growth data cited does not provide any information on the block size, spatial relationship, nor integrity (i.e., unfragmented, interior forest quality) of old-growth areas that make up the estimated 11.6%. Once again, the Forest Plan provides inadequate guidance for such important ecological considerations. The Forest Plan for the adjacent Kootenai National Forest recognizes minimum block sizes:

> A unit 1,000 acres would probably meet the needs of all old growth related species (Munther et al 1978) but does not represent a realistic size unit in conjunction with most other Forest management activities. On the other hand, units of 50-100 acres

> are the smallest acceptable size in view of the nesting needs of pileated woodpeckers, a primary excavator and an old growth related species (McClelland, 1979). However, managing for a minimum size of 50 acres will preclude the existence of species which have larger territory requirements. "In fact, Munther et al (1978) report that units of 80 acres will meet the needs of only about 79 percent of the old growth dependent species. Therefore, while units of a minimum of 50 acres may be acceptable in some circumstances, 50 acres should be the exception rather than the rule. Efforts should be made to provide old growth habitat in blocks of 100 acres or larger.

(KNF Forest Plan at Appendix 17-9.)

Open roads exist in and fragment old growth, resulting in firewood cutting that destroys snag habitat and reduces recruitment of down woody debris in old growth. The degree to which that is a factor for old growth in the project area is not disclosed in the FEIS.

The FS has still not sufficiently dealt with the issue of fragmentation, road effects, and past logging on old-growth species' habitat. The FEIS fails to disclose the degree to which artificially-induced edge effects on old-growth species' habitat exist, and how much total edge effect would be increased, by Alternative 2-modified. 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.

The continued fragmentation of the LNF 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 forest that existed historically before management (including fire suppression) was initiated must be compared to the present condition. 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).

(Pp. 3-201.) Also,

> 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).

(Id. at 3-216.)

USDA Forest Service, 2004a further discusses the fragmentation effects on old-growth habitat, effects that would be exacerbated by the Fishtrap timber sale:

> 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."

(USDA Forest Service, 2004a at 3-196 and 3-197.)

Harrison and Voller, 1998 assert "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.)

Harris, 1984 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.

Harris, 1984 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.

Harris, 1984 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.

Furthermore, the FEIS ignores the fact that some types of old growth are maintained by low intensity disturbances (Arno, Smith & Krebs 1997; Habeck 1990; Habeck 1988)—the "process" of natural fire mentioned elsewhere in this Statement of Reasons. The FS's own studies disclose that mixed severity fires are also key to the development of some old-growth types ("Northern Region Overview," USDA Forest Service, 1998-1999). Thus, the development of mature forests to old growth is also being retarded by logging and fire suppression. The issue of old-growth mixed conifer—a type that contains a significant component of Western larch—is being ignored. USDA Forest Service (1998-1999) identifies Western larch as a "forest type at risk" with "36% loss" within the Columbia River Basin. Causes listed are "fire exclusion and past harvest." Logically then, the value for old-growth wildlife species is enhanced by fires, but the FS's management strategy attempts to substitute logging and fire suppression for the natural ecosystem processes, without knowing the true landscape effects of such a "manipulate and control" regime.

Wildlife biologist B.R. McClelland has for many years studied the relationship of cavity nesting birds, particularly the pileated woodpecker, to this very same larch-containing old-growth habitat. See: McClelland and McClelland, 1999; McClelland et al. 1979; and McClelland, 1977.

Looking at the management strategy inherent in the FEIS, the LNF's intention is to continually substitute fire suppression, logging, and prescribed fire treatments for natural fire—whose exclusion has led to larch being a "forest type at risk"! This is significant "new information" at the programmatic level that the Forest Plan and its EIS failed to consider.

If the LNF were study the Northern Region Overview, connect the dots and disclosed the obvious conclusions, it would be clear that the proposed logging to prevent the effects of wildfire is, and has been, severely detrimental to cavity nesting species, particularly the pileated woodpecker. This is the very best indicator for the kind of forest the FS proposes to avoid allowing to develop via prescribed natural fire. From USDA Forest Service, 1998-1999, pp. 25-26, under Western larch:

> Mixed severity fire intervals of 40-90 years followed by lethal fires on a 100-200 year + time frame are within the historical range of disturbance to which the seral species are adapted. In the absence of mixed severity fire or some stand thinning, on moist sites, larch is replaced by more shade tolerant species by 90-140 years. With thinning or mixed severity fire, larch can maintain site dominance for 200+ years.
>
> …(M)ixed severity fire often served to maintain or even increase the larch dominance in stands. Residual large tree cover (less than 20% canopy cover) after large stand replacing fire was common. This large tree residual structure (emergent structure) occurring singly or in small groups has declined in many areas. In addition, the areal extent of this cover type has decreased significantly. In many areas where a mix severity fire regime helped maintain a more diverse landscape structure with larger trees, the current landscapes are in a more homogenized landscape condition.
>
> …The loss of mixed-severity fire will result in much less recruitment of the type of mixed seral and climax species old growth type communities found in the past. There is also a risk of continued loss of the areal extent of the type due to the lack of mixed severity fire disturbance in early and mid-seral structural stages and a current lack of canopy openings large enough for successful larch regeneration in the mid and late successional communities.

The Fishtrap FEIS falls far short of analyzing and disclosing these effects on old-growth species' viability, caused by the current conditions and by the Fishtrap timber sale.

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). There is no Regional policy or strategy the FS is actively pursuing to assure species viability across the region, as the

Forest Supervisors and Regional Forester are shirking their duties as expressed in Forest Service directives.

A recent look at European forests (whose management model is one on which the U.S.'s is largely based) reveals what researchers here in the U.S. are discovering, but which policy makers and decisionmakers resist acknowledging. Dudley and Vallauri, 2004 state:

> Up to a third of European forest species depend on veteran trees and deadwood for their survival. Deadwood is providing habitat, shelter and food source for birds, bats and other mammals and is particularly important for the less visible majority of forest dwelling species: insects, especially beetles, fungi and lichens. Deadwood and its biodiversity also play a key role for sustaining forest productivity and environmental services such as stabilising forests and storing carbon.
>
> Despite its enormous importance, deadwood is now at a critically low level in many European countries, mainly due to inappropriate management practices in commercial forests and even in protected areas. Average forests in Europe have less than 5 per cent of the deadwood expected in natural conditions. The removal of decaying timber from the forest is one of the main threats to the survival of nearly a third of forest dwelling species and is directly connected to the long red list of endangered species. Increasing the amounts of deadwood in managed forests and allowing natural dynamics in forest protected areas would be major contributions in sustaining Europe's biodiversity.
>
> For generations, people have looked on deadwood as something to be removed from forests, either to use as fuel, or simply as a necessary part of "correct" forest management. Dead trees are supposed to harbour disease and even veteran trees are often regarded as a sign that a forest is being poorly managed. Breaking up these myths will be essential to preserve healthy forest ecosystems and the environmental services they provide.
>
> In international and European political processes, deadwood is increasingly being accepted as a key indicator of naturalness in forest ecosystems. Governments which have recognised the need to preserve the range of forest values and are committed to these processes can help reverse the current decline in forest biodiversity. This can be done by including deadwood in national biodiversity and forest strategies, monitoring deadwood, removing perverse subsidies that pay for its undifferentiated removal, introducing supportive legislation and raising awareness.

The LNF's reliance on snag retention guidelines is outmoded. It focuses on structures left after logging, instead of maintaining the natural processes that result in snag habitat. McClelland (undated) states:

> The snags per acre approach is not a long-term answer because it concentrates on the products of ecosystem processes rather than the processes themselves. It does not address the most critical issue--long-term perpetuation of diverse forest habitats, a mosaic pattern which includes stands of old-growth larch. **The processes that produce suitable habitat**

> **must be retained or reinstated by managers. Snags are the result of these processes (fire, insects, disease, flooding, lightning, etc.)**. (Emphasis added.)

And Hutto, 1995 addresses the *processes* topic, talking about fire in that case:

> Fire is such an important creator of the ecological variety in Rocky Mountain landscapes that the conservation of biological diversity [required by NFMA] is likely to be accomplished only through the conservation of fire ***as a process***…Efforts to meet legal mandates to maintain biodiversity should, therefore, be directed toward maintaining processes like fire, which create the variety of vegetative cover types upon which the great variety of wildlife species depend. (Emphasis added.)

The LNF's snag retention guidelines and the Northern Region Snag Management Protocol (USDA Forest Service, 2000d), lack peer-review and validation from post-implementation monitoring. Harris (1999) and ICBEMP DSEIS Appendix 12 also present scientific information that notably contrasts with the LNF on this topic.

Bull et al., 1997 criticize the FS continuing refusal to consider more factors in using outdated guidelines that would leave too few snags on logged areas. The scientific information in Bull et al., 1997 seriously calls into question the LNF snag standards and guidelines.

The FEIS does not adequately consider that snags may be cut down for safety reasons during logging operations due to OSHA regulations. The FEIS fails to disclose <u>how much</u> snag loss would be 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 FEIS doesn't provide any idea the degree of snag loss due to these concerns.

Mills (1994), criticized a wildlife analysis performed by the Forest Service for a timber sale in the Kootenai National Forest. 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 which 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. Finally, the 1999 draft NFMA planning regulations also recognize the importance of consideration of population dynamics for sustaining species.

The issue of providing for the larger landscape needs of far-ranging forest carnivores (including old-growth dependent species and the grizzly bear and gray wolf) 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 (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 stated 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).

For wildlife species' habitat analyses, the LNF relies upon a database (TSMRS) of timber stand examination information documented by stand examiners who are not necessarily wildlife biologists. This has led to inaccurate designations of old growth on some national forests, as well as invalid assumptions by biologists doing habitat analyses for timber sales. The LNF does not reconcile its use of timber stand database for wildlife habitat analyses and the fact that others in the agency have discredited such use:

> 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… . (USDA Forest Service, 2000c.)

The LNF ignores the facts of the ongoing controversy surrounding "treating" old growth and still maintaining the habitat for old-growth wildlife species. 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.

Regarding the FEIS's discussions on omission of fire from ecosystems, Baker and Ehle, 2001 present theory and empirical results that suggest that fire-history data have uncertainties and biases when used to estimate the population mean fire interval (FI) or other parameters of the fire regime. From their Abstract:

> Present understanding of fire ecology in forests subject to surface fires is based on fire-scar evidence. We present theory and empirical results that suggest that fire-history data have uncertainties and biases when used to estimate the population mean fire interval (FI) or other parameters of the fire regime. First, the population mean FI is difficult to estimate precisely because of unrecorded fires and can only be shown to lie in a broad range. Second, the interval between tree origin and first fire scar estimates a real fire-free interval that warrants inclusion in mean-FI calculations. Finally, inadequate sampling and targeting of multiple-scarred trees and high scar densities bias mean FIs toward shorter intervals. In ponderosa pine (*Pinus ponderosa* Dougl. ex P. & C. Laws.) forests of the western United States,

> these uncertainties and biases suggest that reported mean FIs of 2–25 years significantly underestimate population mean FIs, which instead may be between 22 and 308 years. We suggest that uncertainty be explicitly stated in fire-history results by bracketing the range of possible population mean FIs. Research and improved methods may narrow the range, but there is no statistical or other method that can eliminate all uncertainty. Longer mean FIs in ponderosa pine forests suggest that (*i*) surface fire is still important, but less so in maintaining forest structure, and (*ii*) some dense patches of trees may have occurred in the pre-Euro-American landscape. Creation of low-density forest structure across all parts of ponderosa pine landscapes, particularly in valuable parks and reserves, is not supported by these results.

The FEIS does not close what fire history methodology it uses, does not acknowledge the limitations of its fire history methodology, and does not disclose adequate project-area data it's fire history methodology relies upon.

In response to NFMA's viability provisions, the Forest Service Manual outlines the need to design and implement conservation strategies for Sensitive and other species for which viability is a concern. The Forest Service Manual at FSM 2621.2 states:

> To preclude trends toward endangerment that would result in the need for Federal listing, units must develop conservation strategies for those sensitive species whose continued existence may be negatively affected by the forest plan or a proposed project.

Since the LNF is not meeting species viability requirements, it is critical for the FS to take steps to develop a multiple species conservation strategy for the LNF.

For single species such as the goshawk, there are conservation strategies for the Southwest U.S. (Reynolds et al., 1992 and Crocker-Bedford, 1990), the Utah strategy (Graham et al., 1999), strategies for Alaska (Suring et al., 1993) and the Black Hills National Forest (USDA Forest Service, 2000b). The Northern Region's guidance, USDA Forest Service (1990), could have gotten the FS moving in the right direction, however the agency ignores what that document recommends for a goshawk conservation strategy on the LNF.

The Idaho Panhandle National Forests' Forest Plan provides an example of better management directives for the pileated woodpecker. 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.

IPNF Forest Plan EIS Appendix 27 at p. II-40.

Also, "To provide suitable pileated woodpecker habitat, strips should be at least 300 feet in width …" (USDA Forest Service, 1990).

The EIS also ignores many structural habitat components necessary for the pileated woodpecker. USDA Forest Service, 1990 indicates 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

This preferred diameter of nesting trees for the pileated woodpecker recognized by R-1 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. The pileated woodpecker's strong preference for trees of rather large diameter is not adequately considered in the FEIS. The FEIS provides no firm commitments for leaving specific numbers and sizes of largest trees favored by so many wildlife species, resorting instead to vague statements in descriptions of the "treatments" proposed.

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 <u>minimum</u> 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 <u>old</u>/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.

McClelland (1977), 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.
>
> (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)
>
> 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 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.) That document also provides guidance as to how habitat for the pileated woodpecker must be distributed for populations to persist.

For the fisher, scientific bases for conservation strategies are found in Witmer, et al., 1998, Jones (undated), and Johnsen, 1996. A multi-species approach for forest carnivores is illustrated in Ruggiero, et al., 1994.

For the pine marten, USDA Forest Service (1990), Ruggiero, et al. (1998) and Bull and Blumton, 1999 form some basis for marten conservation strategies.

Since fire exclusion is assumed to be a culprit, the LNF needs to take a hard look at its fire policies. 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. Ament (1997) comments on this perspective, in terms of fire policy and Forest Planning.

Regarding an LNF 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.

The Region 1 black-backed woodpecker assessment (Hillis et al., 2002) notes that the black-backed woodpecker depends upon the very forest that the premises of this project abhor:

> 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.

This project is, as discussed in the FEIS, part of the LNF's fire substitution strategy. Hutto, 1995 states: "Fires are clearly beneficial to numerous bird species, *and are apparently necessary for some.*" (p. 1052, emphasis added.) Hutto, 1995 whose study keyed on forests burned in the supposedly disastrous 1988 season, noted:

> Contrary to what one might expect to find immediately after a major disturbance event, I detected a large number of species in forests that had undergone stand-replacement fires. Huff et al. (1985) also noted that the density and diversity of bird species in one- to two-year-old burned forests in the Olympic Mountains, Washington, *were as great as adjacent old-growth forests*…
>
> …Several bird species seem to be relatively *restricted* in distribution to early post-fire conditions… I believe it would be difficult to find a forest-bird species more restricted to a single vegetation cover type in the northern Rockies than the Black-backed Woodpecker is to early [first 6 years] post-fire conditions.

(Emphasis added).

Regarding the recently issued "U.S. Forest Service Region One Black-Backed woodpecker Assessment" (Hillis et al., 2002) we point out the following salient points:

- "The relatively minor decline in existing habitat compared to the mean HRV for the entire 1940 to 2000 time period… simplistically interpreted, might suggest that black-backed woodpeckers are at no risk." **"That conclusion is likely grossly understated…"** (p. 13. emphasis added).
- "Burned habitats lost to timber salvage have not been considered… (Ibid.)
- "Policy-makers also may need to reevaluate the priorities for salvage logging burned areas… Even in 'high burn' periods… adverse impacts on black-backed woodpeckers can result from relatively modest amounts of salvage logging." (Ibid. p. 14.)
- *Managers should recognize the need for decadence in unburned forests.* For black-backed woodpeckers, this is especially important in trees that are otherwise healthy, dying, or recently dead." (Ibid. p. 15.)

We now refer to the very first management recommendation at the end of Hillis et al., (2002):

> Considering both the departure from historically available habitat and the increased interval between large fires, **these findings suggest the black-backed woodpecker may be at substantial risk in USFS Region One**. This conclusion suggests that *Region One policy-makers should recognize the need for retaining moderate and high severity fires on substantial acreages at normal intervals when land use and fire suppression decisions are made.* (Italicized in orig., p. 14.)

This recommendation is significant in that it recognizes that there is still substantial risk to the viability of black-backed woodpeckers <u>following recent large wildland fires in this region.</u> In subsequent years, there have been fires in the Northern Rockies but not a substantial as in 2000;

and in any case the FS has yet to consider the viability of the black-backed woodpecker in the context of this landscape scale.

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. Fire suppression, insect and disease suppression, and "salvage" logging policies of the FS 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 IPNF's ongoing fire suppression policy will remain unexamined.

The FS has yet to design a consistent, workable, scientifically defensible strategy to ensure viable populations of the black-backed woodpeckers. The cumulative impacts of the LNF's ongoing fire suppression policy are also not adequately considered.

Logging and other disturbance associated with the Fishtrap timber sale and other cumulative impacts could affect northern goshawk nesting, post-fledging family habitat, alternative nesting, foraging, competitors, prey and potential habitat, including areas away from cutting units. Research in the Kaibab National Forest found that goshawk populations decreased dramatically even after partial logging and even when large buffers around nests were provided (Crocker-Bedford, 1990).

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).

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 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.

An average goshawk home range is about 6,000 acres and includes 180 acres for nesting (divided into several 15-30 acre alternative nest stands) within a 640 acre post-fledgling family area of relatively dense, structurally diverse older forests, and another 5,400 acres of forest with relatively high canopy closures for foraging. (Reynolds et al., 1992).

Reynolds et al., 1992 recommend protecting habitat around 3 nests and 3 alternative nest sites against adverse impacts in each home range, since goshawks commonly utilize different nest sites from year to year.

While Reynolds et al., 1992 do not preclude logging in goshawk territories, it is equally true that they recommend ratios of 20% each in the mid-aged forest, mature forest, and old forest Vegetative Structural Stage (VSS) classes in the post-fledging family areas (PFAs) and foraging areas (ER 125), with 100% in VSS classes 5 & 6 for nest areas, in order to support continued goshawk productivity. The FEIS does not discuss the levels of mid-aged, mature, and old forest in the affected goshawk territories pre- and post-project implementation.

The FEIS does not adequately consider cumulative effects on upland habitat for boreal toads. This does not make sense, since such small populations that are likely to persist are especially susceptible to fragmentation and extirpation due to isolation of smaller populations. See Maxell, 2000. In fact, the FEIS has no genuine analysis of cumulative impacts of logging activities on boreal toads at all.

From Ch. 3 p. 173 of the Bristow Area Restoration Project EA, Kootenai National Forest, (USDA Forest Service, 2003a):

> Little quantitative data are available regarding the boreal toad's use of upland and forested habitats. However, boreal toads are know to migrate between the aquatic breeding and terrestrial nonbreeding habitats (TNC Database 1999), and that juvenile and adult toads are capable of moving over 5 km between breeding sites (Corn et al. 1998[4]). It is thought than juveniles and female boreal toads travel farther than the males (Ibid). A study on the Targhee National Forest (Bartelt and Peterson 1994) found female toads traveled up to 2.5 kilometers away from water after breeding, and in foraging areas, the movements of toads were significantly influenced by the distribution of shrub cover. Their data suggests that toads may have avoided macro-habitats with little or no canopy and shrub cover (such as clearcuts). Underground burrows in winter and debris were important components of toad selected micro-sites in a variety of macro-habitats. The boreal toad digs its own burrow in loose soil or uses those of small mammals, or shelters under logs or rocks, suggesting the importance of coarse woody debris on the forest floor. …(T)imber harvest and prescribed burning activities could impact upland habitat by removing shrub cover, down woody material, and/or through compaction of soil.

Montana Fish, Wildlife & Parks, 2005 (a more recent version of the above cite "TNC Database, 1999") also discuss boreal toad habitat:

> Habitats used by boreal toads in Montana are similar to those reported for other regions, and include low elevation beaver ponds, reservoirs, streams, marshes, lake

[4] Cited and included as Maxell et al., 1998 herein.

shores, potholes, wet meadows, and marshes, to high elevation ponds, fens, and tarns at or near treeline (Rodgers and Jellison 1942, Brunson and Demaree 1951, Miller 1978, Marnell 1997, Werner et al. 1998, Boundy 2001). Forest cover in or near encounter sites is often unreported, but toads have been noted in open-canopy ponderosa pine woodlands and closed-canopy dry conifer forest in Sanders County (Boundy 2001), willow wetland thickets and aspen stands bordering Engelmann spruce stands in Beaverhead County (Jean et al. 2002), and mixed ponderosa pine/cottonwood/willow sites or Douglas-fir/ponderosa pine forest in Ravalli and Missoula counties (P. Hendricks personal observation).

Elsewhere the boreal toad is known to utilize a wide variety of habitats, including desert springs and streams, meadows and woodlands, mountain wetlands, beaver ponds, marshes, ditches, and backwater channels of rivers where they prefer shallow areas with mud bottoms (Nussbaum et al. 1983, Baxter and Stone 1985, Russell and Bauer 1993, Koch and Peterson 1995, Hammerson 1999). Forest cover around occupied montane wetlands may include aspen, Douglas-fir, lodgepole pine, Engelmann spruce, and subalpine fir; in local situations it may also be found in ponderosa pine forest. They also occur in urban settings, sometimes congregating under streetlights at night to feed on insects (Hammerson 1999, P. Hendricks personal observation). Normally they remain fairly close to ponds, lakes, reservoirs, and slow-moving rivers and streams during the day, but may range widely at night. Eggs and larvae develop in still, shallow areas of ponds, lakes, or reservoirs or in pools of slow-moving streams, often where there is sparse emergent vegetation. Adult and juvenile boreal toads dig burrows in loose soil or use burrows of small mammals, or occupy shallow shelters under logs or rocks. At least some toads hibernate in terrestrial burrows or cavities, apparently where conditions prevent freezing (Nussbaum et al. 1983, Koch and Peterson 1995, Hammerson 1999).

Maxell et al., 1998 state:

> We believe that the status of the Boreal toad is largely uncertain in all Region 1 Forests. …Briefly, factors which are a cause for concern over the viability of the species throughout Region 1 include: (1) a higher degree of genetic similarity within the range of Region 1 Forests relative to southern or coastal populations; (2) a general lack of both historical and current knowledge of status in the region; (3) indications of declines in areas which do have historical information; (4) low (5-10%) occupancy of seemingly suitable habitat as detected in recent surveys; (5) some evidence for recent restriction of breeding to low elevation sites and; (6) recent crashes in boreal toad populations in the southern part of its range which may indicate the species' sensitivity to a variety of anthropogenic impacts.

III. SOIL AND LAND PRODUCTIVITY

Sec. 6. of the National Forest Management Act states:

> (g) As soon as practicable, but not later than two years after enactment of this subsection, the Secretary shall in accordance with the procedures set forth in section

553 of title 5, United States Code, promulgate regulations, under the principles of the Multiple-Use, Sustained-Yield Act of 1960, that set out the process for the development and revision of the land management plans, and the guidelines and standards prescribed by this subsection. The regulations shall include, but not be limited to-

(3) specifying guidelines for land management plans developed to achieve the goals of the Program which-

(E) insure that timber will be harvested from National Forest System lands only where-

(i) soil, slope, or other watershed conditions will not be irreversibly damaged;

NFMA regulations at 36 C.F.R. § 219.27 (Management requirements) state*:*

(a) Resource protection. All management prescriptions shall--

(1) Conserve soil and water resources and not allow significant or permanent impairment of the productivity of the land;

(b) Vegetative manipulation. Management prescriptions that involve vegetative manipulation of tree cover for any purpose shall--

(5) Avoid permanent impairment of site productivity and ensure conservation of soil and water resources;

In order to meet NFMA and NFMA regulations' mandates to protect soil productivity, the LNF adopted the Soil Quality Standards from Forest Service Manual R-1 Supplement FSM 2500-99-1 (hereinafter, "SQS.") The SQS requires the Forest Service to delineate specific geographic areas called "activity areas" for the purpose of predicting, measuring, monitoring, and analyzing impacts on soil productivity from management activities. The SQS includes a mandatory Standard that requires the Forest Service to maintain 85% of an activity area in a satisfactory soil condition.

It is clear that the intent of the SQS 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, since 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 SQS 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.

It is not clear at all that the LNF actually made proper estimates of existing detrimental disturbance based on scientifically sound methodology, using experts adequately qualified to assess the complexities of soil qualities and cumulative impacts, which could accurately reflect existing soil productivity limitations and damage, plus Fishtrap project soil impacts. For example, Table 3.7-4 discloses estimates based on "extent of mapped jammer roads and logging system records" (FEIS at 3-204) instead of surveys of units (activity areas) yielding numerical measures of detrimental disturbance.

Detrimental soil conditions exist on old roads and other travelways, including jammer roads. (FEIS at 3-199 – 3-202.) The FEIS does not quantify such past detrimental disturbance within the boundaries of any previously established activity areas in conformance to the SQS,

attributing their detrimental conditions as areal extent within those bounds. Instead, the FEIS dilutes their numerical impacts by discussing them as percent of the "project area" (3-202).

It's still possible that past activity areas overlap with Fishtrap timber sale "treatment" units, which means if past activity areas exceed standards the percentages of existing damage could be diluted by the use of the new activity area boundaries. This problem arises specifically because the FEIS does not disclose the percent of existing detrimental disturbance within previously established activity area boundaries.

How difficult would it be for the FS to provide estimates of current detrimental disturbance in previously established activity areas, based upon monitoring performed on the Forest? The FEIS fails to disclose the level of non-consistency of old activity areas with the SQS 15% areal extent detrimental disturbance standard.

The FEIS also fails to disclose the amount, in acres, of detrimental soil disturbance that exists in each of the Project Area watersheds. Although this is not specifically called for in the Standards, it is certainly a cumulative effects issue. The SQS states that all such areas including those not properly analyzed within an activity area are to be analyzed "on a watershed basis using models and other watershed analysis techniques." The fact of the extremely high road densities in project area watersheds means that cumulative loss of soil productivity in terms of total acres occupied by roads in each watershed is an important cumulative effects issue. The same for the previous log landings, powerlines, and other management features.

The amount of hydrologically altered or non-functioning soils in any given watershed would provide some basis for assessment of watershed cumulative impacts and the SQS even recognize this. Whereas the LNF sees merit in disclosing total percent project area detrimentally disturbed by old jammer roads, it avoids making estimates of total detrimental disturbance in the project area watersheds by all compaction, displacement, burning, erosion, etc. sources such as roads, landings, old skid trails, livestock trampling, old slash fires, etc. The FEIS fails to link the current and cumulative soil disturbance across thousands of acres in the Project Area to the impacts on water quantity and quality.

The FEIS admits that logging in five Fishtrap units will exceed the SQS 15% standard, and relies upon "post-harvest mitigation to insure" SQS are met. (FEIS at 3-208.)[5] However, the FEIS fails to cite the results of monitoring of such "post-harvest mitigation" to insure its efficacy in either reducing either detrimental disturbance (the proxy for soil productivity) or soil productivity itself. The FEIS fails to cite the results of any monitoring that shows the mitigation measures have been effective at adequately restoring soil productivity on those soils formerly displaced, compacted, and often burned at log landings. The FEIS does not cite any specific monitoring evidence that shows the LNF has used them in the past to bring activity areas that exceed the SQS 15% standard into compliance.

[5] Tables 3.7-7 and 3.7-8 reveal that several other units are expected to have "total potential percent detrimental condition" post-logging of 14%, which means that they are likely within the measurement error range and therefore some are likely to exceed the SQS 15% standard.

The FEIS relies upon other mitigation measures to avoid exceeding the 15% SQS standard, yet the FEIS does not cite any specific monitoring evidence that shows the LNF has adequately and effectively used them in the past to meet quantitative standards.

The Bitterroot National Forest reports, "It is acknowledged that the effectiveness of soil restoration treatments may be low, often less than 50 percent." (USDA Forest Service, 2005b at p.3.5-20.) Mitigation techniques such as ripping and subsoiling to reduce compaction may alleviate a minor percentage of compaction, but produce soil mixing and contribute to erosion and displacement, which are not factored into the equation. Soil mixing is well documented in agricultural soils research to be quite harmful to productivity. The absence of accounting for soil mixing in the factors contributing to detrimental soil damage renders the proposal inadequate to protect soil and land productivity required by NFMA. It may also result in increased disturbance causing an increase in weed infestation. This is not disclosed or mitigated.

The FEIS must discuss the effectiveness of proposed soil mitigation measures. There is reason to doubt their effectiveness. For example, "Monitoring of winter-logging soil effects conducted by the Forest Soil Scientist on the Bitterroot National Forest over the past 14 years has shown that 58% of the ground-based, winter-logged units failed to meet Region 1 Soil Quality Standards. Winter-logging resulted in an average of 16% detrimentally damaged soil." (USDA Forest Service, 2005b, p. 3.5-21.)

Forest Plan monitoring item 4-3 was designed to require monitoring of the effects of soil disturbance and displacement on land productivity. The reports do not present quantified information on detrimental soil disturbance in Activity Areas, nor quantified information on degradation of land productivity itself.

The FEIS fails to disclose the implications of all landtype (i.e., "LSIs") limitations for detrimental soil impacts. Some landtypes are rated as "sensitive". Yet their implications neither for the definition of areal extent of detrimental disturbance nor soil/land productivity were discussed. Finally, the FEIS fails to disclose the results of monitoring of past actions on these various landtypes, that would reveal the differential levels of soil impacts of the various logging activities carried out in the past (and now proposed with this new project).

The FEIS also does not demonstrate that post-project cutting units will have amounts of fine or coarse woody debris that is within the ranges recommended by the Graham, et al., 1994 guidelines (cited in the SQS), as necessary to maintain soil nutrient levels and long-term productivity. The FEIS also does not adequately quantify soil productivity reductions and losses in project area watersheds because it fails to disclose the areas that are below the historic range of fine and coarse woody debris.

The LNF is relying upon SQS that have not been validated to comply with NFMA requirements. The LNF merely assumes that it can irretrievably damage soils on 15% of every activity area in a watershed, plus maintain any level of road density it desires for logging and other management activities, without any scientific basis. The LNF has yet to go far enough to understand soil productivity responses in relation to the amount of damage its Standards allow.

A big part of this problem is that in perfunctorily following its Standards, the LNF has never gotten to the heart of this issue which is to "not allow significant or permanent impairment of the productivity of the land." 36 C.F.R. § 219.27(a)(1). The LNF has stated that "…long-term soil productivity is defined as the capacity of a given site to sustain plant growth.[6]" The LNF has never undertaken objective scientific measures of soil productivity.

The amount of detrimental soil disturbance would increase with the implementation of Alternative 2-modified, therefore soil productivity would be reduced. Some activities, such as log landing construction and intensive log skidding would essentially permanently reduce the productivity of the soil on those sites directly affected.

The Forest Plan 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 LNF being infested with noxious weeds. The Sheep Creek Salvage FEIS (USDA Forest Service, 2005a) states at p. 173:

> Noxious weed presence may lead to physical and biological changes in soil. Organic matter distribution and nutrient flux may change dramatically with noxious weed invasion. Spotted knapweed (*Centaurea biebersteinii D.C.*) impacts phosphorus levels at sites (LeJeune and Seastedt, 2001) and can hinder growth of other species with allelopathic mechanism. Specific to spotted knapweed, these traits can ultimately limit native species' ability to compete and can have direct impacts on species diversity (Tyser and Key 1988, Ridenour and Callaway 2001).

The LNF has no idea how the productivity of the land been affected in Fishtrap activity areas, the project area, and forestwide due to noxious weed infestations, nor how that situation is expected to change.

The FS is avoiding the entire issue of maintaining soil productivity. As indicated in the SQS 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. Nowhere does the FS cite adequate scientific basis for adopting 15% as a numerical limit—it is simply arbitrary.

The LNF dedicates skid trails to limit the areas of compaction experiencing long-term detrimental compaction and therefore losses in soil productivity. Again, we object to the lack of any meaningful limitation, on a watershed basis, of the amount of soils so damaged permanently or long-term. Again, the SQS's failures are revealed by allowing permanent reductions in soil productivity over arbitrarily-decided levels inside "activity areas" and unlimited amounts of areal extent damage due to roads, landings, etc. outside activity areas. Essentially, the FS's management scheme has committed vast areas of the LNF to permanent losses or reductions in soil productivity, without explaining or quantifying the resultant losses in timber yield, ecological dysfunction due to other vegetative alternations, and disruptions in hydrologic functioning. This does not satisfy NFMA's requirements to maintain soil productivity, and

[6] Lolo Post Burn FEIS at 3-29.

reveals an agency, although rooted firmly within the Department of Agriculture, unable to maintain the basis for all sustainable agriculture—**soil productivity**.

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 FEIS. 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 FEIS's interpretation of them) is that they do not set any rational limits for cumulative loss in soil productivity outside the activity areas of the proposed timber sale. There is nothing in the FEIS that itemizes the various kinds and levels of disturbance in the various disturbed sites in each project area watershed. The FEIS that 38% of the project area has already been logged. It seems the FS's position is that areas that have experienced significant losses of soil productivity from logging, 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 SQS 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). 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.

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 FS's methodology for assuring soil productivity losses are consistent with NFMA.

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 LNF to be able to make accurate predictions about the effects of soil compaction in Fishtrap timber sale activity areas.

Following a study by Cullen et al., (1991) which was carried out on the adjacent Kootenai and Flathead NFs, 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 adjacent 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 SQS recognizes that soil quality standards must be validated, requiring 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, SQS 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 the SQS define it, have ever been monitored on the LNF 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.

The SQS superseded 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 FS 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 the SQS) 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 LNF, despite Forest Plan monitoring requirements.

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 meet Forest Plan goals for assuring that the forest is producing a sustained yield of timber, or to allow for the development of effective old-growth forests—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.

Lacy, 2001 examines the importance of soils for ecosystem functioning and points out the failure of most regulatory mechanisms to adequately address the soils issue:

> Soil is a critical component to nearly every ecosystem in the world, sustaining life in a variety of ways—from production of biomass to filtering, buffering and transformation of water and nutrients. While there are dozens of federal environmental laws protecting and addressing a wide range of natural resources and issues of environmental quality, there is a significant gap in the protection of the soil resource. Despite the critical importance of maintaining healthy and sustaining soils, conservation of the soil resource on public lands is generally relegated to a diminished land management priority. Countless activities, including livestock grazing, recreation, road building, logging, and mining, degrade soils on public lands. This article examines the roots of soil law in the United States and the handful of soil-related provisions buried in various public land and natural resource laws, finding that the lack of a public lands soil law leaves the soil resource underprotected and exposed to significant harm. To remedy this regulatory gap, this article sketches the framework for a positive public lands soil protection law. This article concludes that because soils are critically important building blocks for nearly every ecosystem on earth, an holistic approach to natural resources protection requires that soils be protected to avoid undermining much of the legal protection afforded to other natural resources.

The article goes on:

> Countless activities, including livestock grazing, recreation, road building, logging, mining, and irrigation degrade soils on public lands. Because there are no laws that directly address and protect soils on the public lands, consideration of soils in land use planning is usually only in the form of vaguely conceived or discretionary guidelines and monitoring requirements. This is a major gap in the effort to provide ecosystem-level protection for natural resources.

> The rise of an "ecosystem approach" in environmental and natural resources law is one of the most significant aspects of the continuing evolution of this area of law and policy. One writer has observed that there is a
>
> > fundamental change occurring in the field of environmental protection, from a narrow focus on individual sources of harm to a more holistic focus on entire ecosystems, including the multiple human sources of harm within ecosystems, and the complex social context of laws, political boundaries, and economic institutions in which those sources exist.[7]
>
> As federal agencies focus increasingly on addressing environmental protection from an holistic perspective under the current regime of environmental laws, a significant gap remains in the federal statutory scheme: protection of soils as a discrete and important natural resource. **Because soils are essential building blocks at the core of nearly every ecosystem on earth, and because soils are critical to the health of so many other natural resources—including, at the broadest level, water, air, and vegetation—they should be protected at a level at least as significant as other natural resources.** Federal soil law (such as it is) is woefully inadequate as it currently stands. It is a missing link in the effort to protect the natural world at a meaningful and effective ecosystem level.
>
> … This analysis concludes that the lack of a public lands soil law leaves the soil resource under-protected and exposed to significant harm, and emasculates the environmental protections afforded to other natural resources.

(Emphasis added.) The problems Lacy (2001) identifies of regulatory mechanisms certainly exists in Regional and Forest-level standards and other guidance applicable for this Project.

Another big problem is that the LNF 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.

In sum, the FEIS 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.

IV. VEGETATION MANIPULATIONS UNPROVEN AS BIG GAME HABITAT "ENHANCEMENT"

We commented that: "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

[7]Michael M. Wenig, How "Total" Are "Total Maximum Daily Loads"?—Legal Issues Regarding the Scope of Watershed-Based Pollution Control Under the Clean Water Act, 12 TUL. ENVTL. L.J. 87, 89 (1998). There are, however, major questions to ask of what exactly is the focus of "ecosystem management" in some agency plans—the ecosystem or the management? See, e.g. Michael C. Blumm, Sacrificing The Salmon: A Legal And Policy History Of The Decline Of Columbia Basin Salmon (2000) (forthcoming) (manuscript at 359–63, on file with author).

populations." The LNF's failure to provide a response that supports this portion of the FEIS's "purpose and need" reveals to us that big-game habitat is used as an issue to support logging, not as a genuine ecosystem goal.

V. WATER QUALITY AND FISHERIES

Subsequent to the preparation of the Draft EIS, the LNF determined that Fishtrap Creek in the project area is no longer a Water Quality Limited Segment (WQLS) under the meaning of the Clean Water Act or Montana water quality regulations and standards. How this determination was made is not adequately disclosed. Despite the degradation and the water quality and fish habitat problems acknowledged in the DEIS, apparently some unknown source of data now nullifies the LNF's responsibilities under law and regulation to prepare a Total Maximum Daily Load (TMDL) for Fishtrap Creek. This is arbitrary. It ignores the ongoing degradation due to existing management conditions, the continuing depressed (and apparently, declining) population status of native trout in Fishtrap Creek, and the likelihood of continuing funding shortfalls for road maintenance and upgrades to meet BMP standards.

The FEIS acknowledges:

> The longevity of road maintenance activities varies, however most treatments (with some level of annual or routine care) will last ten to twenty years, or more. … Depending upon future management, the beneficial effects could be considered to be indefinite. … Annual maintenance will continue to play an essential role in retaining the restored road characteristics…
>
> On page 1-8 of the Fishtrap DEIS, the agency acknowledged the decline in road maintenance budgets and the need for decommissioning unneeded roads in the project area. … Road treatments were recommended and prioritized for implementation.
>
> …In fact, approximately one-third of the roads in the project area were recommended for decommissioning. …. Although (because of limited funds) not all of the recommendations generated by the RAP were carried forward into the Fishtrap project (DEIS, page 2-6), these opportunities are available for consideration by the agency in future projects."

The Lolo NF and Regional Office have admitted that during even large-scale projects, not all problem sites are restored up to BMP standards (Lolo BMP Memo), thus allowing chronic, persistent watershed damage to continue indefinitely. Even if all roads were to be brought up to BMP standards, it is clear that more maintenance will be needed in later years, without the LNF identifying the needs nor the funding to achieve them.

In reality, the FEIS's analyses failed to adequately deal with the effects of any unmaintained, poorly maintained roads left on the landscape, and roads needing other BMP upgrades. The analysis doesn't adequately disclose the ongoing impacts of roads that are lower in priority or

may not get proper attention. Consider: "…not all treatments could be implemented within the Fishtrap project because of financial limitations." (FEIS at 6-56.)

Also:

> Most of the crossings have been visited and classified for condition by transportation planning staff. These data and observations were used in the roads analysis process to help prioritize where some of the biggest road/crossing problems were and consequently where some of the greater watershed benefits from remedy lay (project file- road analysis). As discussed in the DEIS (page 2-6), not every problem on every stream can be treated with this project due to lack of funding. The alternatives in this project represent different strategies for treatment with different potential benefits and well as residual problem areas left on the landscape." (FEIS at 6-73, 74.)

Also, the FEIS does not consider the cumulative effects of storm events that can cause severe sediment inputs and severe instream channel erosion and habitat modifications. The FEIS states:

> There was no intention in the hydrologic analysis to evaluate peak flow effects using a model; specifically not any road related contributions to peak flow. The model-based portion of the hydrology analysis was based on effects driven by calculated average annual precipitation and runoff; roads are accounted for in that analysis as non-recovering, 100 percent impervious surfaces that deliver all the precipitation or snowmelt water that falls on them and thus adds substantially to the total amount runoff is increased. Because the input variable is average annual input, the model does not attempt to calculate a peak flow component which is so independently variable.
>
> (S)ummer rainstorms, rain-on-snow events and rapid snowmelt may cause localized increases in runoff from uplands. Although, these events may indeed result in damage. It is not the purpose, however, of the hydrology analysis to predict instantaneous precipitation or runoff conditions. Thunderstorms, rain-on-snow, rain-on-frozen soil, and rapid snowmelt are all probabilistic events that may or may not occur and may or may not produce a watershed response that may or may not be damaging. The hydrologist can choose other methods to evaluate any potential effects from these events.

Elevated peakflows contribute to downstream flooding and increase the magnitude and extent of flood damage. Elevation of downstream flows also increases downstream channel erosion and sediment transport. Even relatively slight increases in downstream flooding greatly increase downstream erosion and sediment transport because they are exponentially related to streamflow (King, 1989).

The Fortine EIS, Fortine RD, KNF, 2004, at p. 3-75) states that "Peak flow increases resulting from forest management activities are important because peak flows provide the maximum energy for erosion, transport, and deposition of sediment in stream channels."

Within 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). Ferguson's, (2000) work shows that the area is subject to ROS, and explains the mechanisms and potential stream effects.

The FEIS fails to disclose that the LOLOSED model does not estimate the effects of ROS events and other instantaneous peak flow events, which the FEIS itself acknowledges may result in significant damage to project area watersheds.

The FEIS also ignores the FS's own research (King, 1989) on the accuracy of a peakflow model, similar to the Fishtrap FEIS's methodology, 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 Equivalent Clearcut Area (ECA). King found that the ECA model consistently underestimated measured increases in flow caused by roads and logging.

Yet, "…the ECA indicator is one that can help indicate changes in streamflow timing and magnitude, which can affect bedload dynamics." (FEIS at 6-70).

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. King (1989) 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.

In his research in nearby northern Idaho, which is clearly relevant to the project area, 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.** (Emphasis added.)

However the FEIS states, "…collection of bedload data was not attempted." (FEIS at 6-59.)

ROS events can lead to further stream channel degradation, due to the large increases in runoff over a short time. Massive sediment delivery to the system occurs during high discharge events typically associated with rain-on-snow conditions. The FEIS fails to adequately consider the

effects of these weather-related instantaneous peak flow events, as they interact with the heavily logged and roaded conditions of the project area watersheds.

In a letter to the Kootenai National Forest, dated February 6, 1995, Johnson (1995) discusses how "snowmelt re-direction and concentration and surface flow production" increase peak flow amounts multiplicatively by the presence of roads in a drainage, especially during storm or other extreme runoff events. The FEIS fails to acknowledge the degree to which roads increase peak flows.

Johnson 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 FEIS 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.

We have pointed out the fact that use of such models as LOLOSED is not accompanied by a disclosure that include the amount of precision or error inherent in such models. In the case of LOLOSED, the LNF responds that it is merely comparing, not "predicting" with LOLOSED. However, the LNF apparently does not understand the difference, as the FEIS's analyses read as though quite predictive—even using numerical estimates without stating how much error may be in the estimates. For example, we commented:

> 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 Forest Service's response was:

> Figure 3.5-2 (DEIS page 3-111) displays calculated sediment outputs from roads, timber harvest, and natural sediment sources for a period of six years as a result of Alternative 2. The road component of sediment displayed in the figure includes both the reduction in sediment from road decommissioning and BMP implementation as well as the "chronic" long-term sediment from the entire road system.

The Forest Service, in a recent case on the Kootenai National Forest, CV-02-200-M-LBE, included the following language in their "Response to Motion for Preliminary Injunction" brief the concerned a scientific report. "Dr. Schloeder's purported 'statistical analysis' reports no confidence intervals, standard deviations or standard errors in association with its conclusions."

Appellants hold the LNF to the same high standards that the Forest Service expects from those who disagree with their own analyses. The Forest Service's high standards require that the LOLOSED statistical outputs with "confidence intervals, standard deviations or standard errors in association with its conclusions" be clearly presented in NEPA documents. The Fishtrap FEIS does not provide 'confidence intervals, standard deviations or standard errors in association with

its conclusions' as they relate to the accuracy of the model and therefore the scientific validity of the model is uncertain.

NFMA regulations at 36 CFR 219.19, Fish and Wildlife Resource, includes the following regulations. "Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area. For planning purposes a viable population shall be regarded as one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area. In order to insure that viable populations will be maintained, habitat must be provided to support, at least, a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area."

The FEIS states that native trout populations in Fishtrap Creek are "at numbers/densities much lower than historically observed" (3-145). The LNF does not confirm there are viable populations of native fish species in analysis area streams. Obviously, ongoing and cumulative habitat degradation does not meet NFMA regulations that require viable populations must be maintained. Will present populations, with recent declines (Id.) turn out to be nonviable, as shown by responses to the recent droughts (Id.)? The Lolo NF doesn't know.

The FS assumes that the implementation of BMPs will sufficiently mitigate any water quality problems that would result with Alternative 2. The entire issue of BMPs has been repeatedly clouded by the FS. The Lolo NF and Regional Office have admitted that during projects such as this, not all problem sites are restored up to BMP standards (Lolo BMP Memo).

It is erroneous to assume that BMPs will assure water quality will be maintained, if present conditions are in many locations already in violation of the standards. The failure of BMPs is seriously implicated in the scientific literature. 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.

Additionally, a 1999 USDA Office of the Inspector General Report concluded that reliance of speculative mitigation measures in order to reach a FONSI significantly compromised environmental quality. "Office of the Inspector General, U.S. Department of Agriculture., Evaluation Report No. 08801-10-At: Forest Service Timber Sale Environmental Analysis Requirements "(1999). The OIG conclude that: "Applicable mitigation measures contained in 10 of 12 decision notices and referenced environmental assessments reviewed, were not always implemented.

The fact that the water bodies in the analysis area do not fully support beneficial uses indicates previous BMP mitigation measures did not prevent degradation of water quality and fisheries habitat in the watersheds.

The FEIS also fails to disclose the values of Riparian Management Objectives for project area streams, which by implication the INFISH/Forest Plan requires. In fact, the FEIS basically discusses how the INFISH default RMOs are not valid for the Lolo NF, yet adopts a substitute set or procedure that seems to mean the LNF believes it has unlimited discretion to basically disregard RMOs.

Since RMOs are whatever the FS wants them to be, there is no Forest Plan strategy for evaluation cumulative effects. What's left of INFISH is merely prophylactic. Unable to determine how previous management activities have affected RMO values, FEIS projections are basically uninformed "professional" judgments.

The FEIS states regarding fish passage barriers: "Map 3-5 in Appendix A displays the existing fish passage barrier locations and crossing locations. By looking at maps 2-2 (Alternative 2 roads) and 2-4(Alternative 3 roads) one can see where the crossings would be removed under each respective action alternative." (FEIS at 6-73.) It's very hard to tell comparing those maps, however a point can be made that, if INFISH allows continuing fish passage barriers despite standards that "address" them, this is another of its failures.

To appellants, the above reasons mean that INFISH itself is invalid. NFMA requirements to maintain viable populations of bull trout, westslope cutthroat trout and other native fishes are not met with the existing regulatory mechanisms.

VI. INVENTORIED AND UNINVENTORIED ROADLESS LANDS

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 adjacent Lolo National Forest. A reading of Riggers et al., 1998 (cited in the FEIS) informs the reader as to the importance or roadless areas in maintaining water quality on the Lolo NF. Even small parcels in unroaded condition assist in maintaining watershed integrity. Yet, Alternative 2-modified would punch in a new road and log hundreds of acres of roadless.

The FEIS pretends there is some biological or other tangible difference between uninventoried roadless lands and inventoried roadless areas (IRAs), yet fails to disclose just what those real, tangible differences are. In fact, there are none. This problem is compounded by the fact that the FEIS does not clarify roadless boundary issues. Previous roadless inventories, both RARE II and during preparation of the Lolo Forest Plan, left out unroaded areas adjacent to inventoried areas. The FEIS discusses two uninventoried, unroaded areas, yet there the maps stop short at the project area boundary even though there is contiguous unroaded land outside. With the controversy—both social and scientific—surrounding the roadless issue, to exclude from an FEIS a map of all inventoried and uninventoried roadless lands makes no sense and constitutes a violation of NEPA.

Also, the idea of doing separate analyses for the vaguely defined "unroaded" areas and contiguous or noncontiguous inventoried roadless lands make no sense. Since the existing inventoried roadless area boundaries were often adopted arbitrarily, analyzing effects on

wilderness characteristics of all roadless acres—whether inventoried, uninventoried, uninventoried contiguous with inventoried, or any combination—was clearly called for in this analysis. Again, with all the controversy surrounding the roadless issue, to analyze impacts on uninventoried roadless lands separate from inventoried roadless areas is completely illogical and constitutes a violation of NEPA. The FEIS even recognizes that one "unroaded" area is immediately adjacent to an IRA, yet the combined areas are not considered as one.

The FEIS also fails to consider the fact that the two separate unroaded areas it considers are geographically connected. Even if that narrow connection were ecologically invalid, the areas or would certainly be ecologically connected if the road recovery it proposes takes place.

Nothing is discussed as far as the possibility that the uninventoried roadless areas may be eligible for later inclusion as inventoried roadless under the upcoming Revised Forest Plan or as eligible for Wilderness designation.

Proposing logging and road building activities in roadless areas of any status may irretrievably alter their wilderness characteristics. It is at this time, when a project EIS is prepared to discuss the issue of potential impacts on roadless, that such analyses should have taken place. The American public, in the context of commenting on the Roadless Rule proposal, has clearly spoken against adverse impacts on roadless areas.

It is well established that logging in an uninventoried area is an "irreversible and irretrievable" commitment of resources that "could have serious environmental consequences" Smith v. U.S. Forest Service, 33 F.3d 1072, 1078 (9th Cir. 1994). The FEIS failed to address the effects of logging and roading the uninventoried roadless areas on their characteristics vis-à-vis potential for future wilderness or inventoried roadless area designation. The discussion of the impact on uninventoried roadless areas was superficial. There was no analysis of the project's impact on the unique values of uninventoried roadless areas, which the FS has previously acknowledged. The FEIS and ROD did not constitute the "hard look" requirement with respect to the environmental impact of logging and roading uninventoried roadless areas.

VII. CUMULATIVE EFFECTS

The discussion about past and ongoing activities is far too cursory for understanding cumulative effects. We believe that in order to properly assess cumulative effects, as per the Ninth Circuit's *Lands Council v. Powell* decision, the FS must not only quantify the acres and point to locations of past and ongoing actions, but the FS must also state the goals of the projects and if those goals were met, indicate if any assumptions underlying those projects' "purpose and need" statements were correct, and disclose significant monitoring information related to potentially similar impacts from the Fishtrap project proposal.

Indeed, past logging activities have in many ways led to the current proposal's stated purpose and need.

We contend there is lack of a comprehensive cumulative effects analysis in the FEIS of the past logging activities in the cumulative effects analysis area. The level of analysis in the FEIS does not meet the requirements of NEPA at 40 CFR 1508.7 and 40 CFR 1508.8.

VIII. GRIZZLY BEAR

A. The DEIS Fails to Adequately Address the Cumulative Effects of Past and Ongoing Actions

The DEIS fails to adequately address the cumulative effects of past timber harvest and road construction on grizzly bear habitat, security and population viability, water quality, stream channel stability, fish habitat and fish populations.

According to a recent ruling by the Ninth Circuit Court of Appeals, the Forest Service is required to include time, type, place and scale of past timber sale activities, including a detailed explanation of how harvest methods and road construction affected the environment. See *Lands Council v. Powell*, 395 F3d 1015-1046 (9th Cir. 2005). The DEIS fails to include this information.

Based on *Lands Council v. Powell,* the Forest Service must chronicle the increase in road density and fragmentation due to logging and road building associated with past projects and describe the cumulative impacts on affected wildlife species' habitat, security and population viability.

The DEIS merely provides a map (M-8) of past harvest by decade (which does not show the Intermediate harvest units) and discusses in general terms the impacts of past timber sale activities on grizzly bears. DEIS at 3-73. The DEIS points out that open road density has been reduced and core has been increased in BMU 15 since 1993 but fails to analyze the cumulative effects on grizzly bears of increased total road densities and reduction of security as a result of specific timber sales over the last 30 years. DEIS at 3-73.

The DEIS states that the "boundary for cumulative effects and making the effects determination is the recovery zone." DEIS at 3-69. However, no cumulative effects analysis for the Cabinet-Yaak Grizzly Bear Recovery Zone ("CYRZ") is included in the DEIS. The entire CYRZ should be analyzed in determining the cumulative effects of major projects such as Northeast Yaak ("NE Yaak") on the CY grizzly bear population.

The DEIS even fails to address the cumulative impacts on bears from concurrent or consecutive timber sale activities in adjacent BMUs. The DEIS mentions the fact that the Garver timber sale is currently active. Will the NE Yaak and Garver sales be active simultaneously? The Forest Service must address the potential cumulative adverse impacts to bears due to displacement from active timber sales in these adjacent BMUs.

The DEIS provides no analysis of what effect the current project may have on the area given the past reduction and fragmentation of security that has already occurred. Simply stating that past degradation has in fact occurred, while providing no analysis of how the

proposed project may impact already degraded habitat and reduced security for the grizzly bear and other wildlife, falls into the category of a perfunctory and therefore, inadequate analysis.

B. The Grizzly Bear Analysis is Deficient

The FEIS relies on compliance with stipulations in the 2004 Grizzly Bear Access Management Forest Plan Amendment Biological Opinion ("2004 BO") to conclude that the Fishtrap project is not likely to adversely affect grizzly bears. The standards adopted by the Forest Service in the Access Amendment ROD and in the Terms and Conditions in the US Fish and Wildlife Service ("FWS") 2004 BO will fail to protect and restore the small Cabinet-Yaak grizzly population for the following reasons:

1. The 2004 BO failed to consider the recent high grizzly mortality rate in the CYRZ
As mentioned in the KNF's Northeast Yaak DEIS (2005), mortality rates have increased dramatically in the Cabinet-Yaak Grizzly Bear Recovery Zone (CYRZ) since 1998, the same year that the FWS determined that the Cabinet-Yaak population was warranted for uplisting to Endangered status. The population (estimated to be 30-40 bears) has been in precipitous decline for the last few years. In all, 20 grizzlies are known to have died in the CYRZ 1999- 2003. This includes 10 human-caused mortalities (an average of 1.7/yr), 6 of which were females (an average of 1.3/ yr). The additional 9 mortalities included 2 females and 7 cubs (gender unknown). Kasworm et al., Cabinet-Yaak Grizzly Bear Recovery Area 2003 Research and Monitoring Progress Report, 2004. p.2. The high number (rate) of female deaths exceeds thresholds in the Grizzly bear Recovery Plan and is of particular concern.

The current high density of roads is a direct result of ongoing timber extraction. Grizzly bear researchers have established a direct connection between high road densities and grizzly bear avoidance of habitat, which results in harm to bears. In addition, the high density of roads increases the potential for bear – human encounters which often result in dead bears. The Fishtrap project would not bring the Core area up to Standards, and although the FWS apparently goes along with this scheme, it ignores the cumulative ongoing "take" it represents in the CYRZ.

Roads provide access for poachers and black bear hunters. The grizzly mortalities from 1998-2003 included poaching, hunter mistaken identity and self defense. Road closures, especially gates, are notoriously ineffective, especially with the recent explosion of ORV use in national forests. This was not considered in the effects analysis for the grizzly bear.

2. The standards and the FWS conclusion in the 2004 BO that the standards would avoid jeopardy to the CY grizzly bears are not based on the "best available science"
The core and open and total road density standards (55/33/26) were derived from an unpublished 1997 research report by Wayne Wakkinen and Wayne Kasworm. As we have pointed out past comments, the 1997 Wakkinen /Kasworm report ("W/K 1997") is rife with problems that raise serious question about its scientific integrity.[8]

[8] Problems with the report include: an insufficient sample size (only 6 females were studied, one of which was a subadult during the study period), the fact that 2 of the females were killed shortly after the study period, and the fact that the researchers admittedly failed to look at whether areas with lower road density

Furthermore, the standards derived from the report were based on averaged data from a population that was likely in decline. Peer reviewers of W/K 1997 pointed out that it is inappropriate to use an average of existing conditions to set standards when the sampled population is in decline. The selected Access Management standards basically maintain the status quo, e.g., existing level of security, for the endangered and declining CY grizzly population.

The use of the best available scientific knowledge and highest integrity would have dictated higher levels of protection for these increasingly imperiled populations. Under Section 7 of the ESA and the NFMA, the Forest Service has a non-discretionary duty to ensure the long term viability and recovery of threatened and endangered species. The Forest Service fails to comply with that mandate. Once again the bears take a back seat to logging.

3. Implementing the chosen alternative would displace grizzly bears during the timber sale. Like other large timber sales in the CYRZ, the Fishtrap project calls for shifting road closures and core boundaries before, during and/or after the sale. The number of changes in bermed and gated roads displayed in the Access Management Plan is indicative of the potential of the Fishtrap project to displace bears from secure habitat. The FEIS acknowledges but then makes light of the fact that bears are likely to be displaced by the disturbance during the timber sale. Displacement from preferred habitat due to roads and human disturbance has the potential to adversely affect grizzly bear feeding, breeding and sheltering and constitutes "taking" under Section 9 of the ESA.

RELIEF REQUESTED

The analysis and decision-making process supporting the Fishtrap ROD's selection of Alternative 2-modified is inadequate. The impacts on the environment are unacceptable. Appellants request the Fishtrap ROD be withdrawn. If the LNF wishes to further carry out management activities in the Fishtrap project area, it must prepare a Supplemental Environmental Impact Statement that remedies all the violations of Federal and State laws, policies, and regulations identified in this Statement of Reasons.

Submitted respectfully for the appellants:

/s/

Jeff Juel
The Ecology Center
314 N. 1st Street
Missoula, Montana 59802
406-728-5733

And on behalf of:

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and more core were available to the bears, or if they were merely selecting the most secure areas and lowest road densities available.

Michael Garrity
Alliance for the Wild Rockies
P.O. Box 505
Helena, Montana 59624
406-459-5936

Matthew Koehler
Native Forest Network
P.O. Box 8251
Missoula, Montana 59807
406-542-7343

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