April 1, 2019

Sent via email to: appeals-northern-regional-office@fs.fed.us

To: Objection Reviewing Officer
USDA Forest Service Northern Region
26 Fort Missoula Road
Missoula, MT 59804

Pursuant to 36 CFR Part 218, Alliance for the Wild Rockies (AWR) files this Objection to the Final Environmental Impact Statement (FEIS) and Draft Record of Decision (ROD) for the Bog Creek Road Project. This project is proposed for the Bonners Ferry and Priest Lake Ranger Districts on the Idaho Panhandle National Forests (IPNF) and the Responsible Official is Forest Supervisor Jeanne Higgins.

The ROD's Selected Alternative is modified from the FEIS's Alternative 3, and is described by the ROD (pp. 4-5):

1. The road repair and maintenance of Bog Creek Road between the existing gate on Forest Service Road (FSR) 1013 and 2546 within the Blue-Grass BMU and change in designation for Bog Creek Road from *seasonally restricted* to *administrative open* (as-needed administrative motorized access) are retained as proposed in Alternative 3 (Modified Proposed Action). A special use permit will be required for private property access to Continental Mine. The special use permit will be authorized in conjunction with this decision and will be structured to allow for unlimited trips from the west side on Bog Creek Road and will require compliance of trip counts from the east side (within the seasonally restricted use designation criteria in coordination with the Forest Service). Terms of the special use permit will require that access and egress to the private property is direct and will not allow for use of public lands along the road corridor at any time. The direct, indirect, and cumulative effects of *administrative open* access on Bog Creek Road are disclosed in the FEIS.

2. The change in designation for approximately 5.5 miles of Blue Joe Creek Road (FSR 2546) from *seasonally restricted* to *administrative open* designation is retained as proposed in the Modified Proposed Action. This change will allow for access to private property (Continental Mine) as per the special use permit as described above as well as allow for unlimited trips on the Blue Joe Creek Road that will be authorized in conjunction with this decision. The direct, indirect, and cumulative effects of *administrative open* access on Blue Joe Creek Road are disclosed in the FEIS.

3. The motorized road closure of seasonally restricted FSRs 2464 (Lower), 2464 (Upper), 1322, 1322A, 1013D, 1013C, 1388A, and 2.7 miles of FSR 2253 is retained as proposed in Alternative 3. Modifications to Alternative 3 include motorized closure of FSR 1388. This establishes grizzly bear core area habitat to meet the Access Amendment standards in the Blue-Grass BMU. Under the Selected Alternative, FSR 636 will remain as *seasonally restricted, but with very limited access*. The livestock permittee has several

salting locations along FSR 636 that are visited periodically. The number of trips will be limited to six and will be counted as per the current condition in the No-Action Alternative; no additional trips or motorized use will be authorized. The direct, indirect, and cumulative effects of maintaining FSR 636 as *seasonally restricted* are disclosed in the FEIS.

4. Although FSR 1388 will be closed to motorized use, snowmobile use will be allowed on this road. To meet Access Amendment standards for core habitat, the closure of FSR 1388 is needed as a modification to Alternative 3 to offset the retention of FSR 636 as seasonally restricted. The 1388 route is currently a designated snowmobile route, and this use will be maintained because use does not conflict with the active bear year. The direct, indirect, and cumulative effects of continuing to allow snowmobile use on FSR 1388 are disclosed in the FEIS.

The ROD would implement the 2015 Revised Forest Plan. In carrying out its mission, AWR has participated in the public processes concerning management of the IPNF since the early days of (original) 1987 Forest Plan implementation, and has taken legal action at times to force the Forest Service (FS) to manage the IPNF in conformance with environmental laws such as the Endangered Species Act (ESA), the National Forest Management Act (NFMA), and the National Environmental Policy Act (NEPA). AWR also fully participated in the public process as the FS developed its Revised Forest Plan, including commenting at every stage and submitting a formal objection. And because the FS provided essentially no relief in response to the formal objection, we incorporate the documentation of our participation in the Revised Forest Plan public process within this Objection (See "RFP process" subfolder included with digital submission of this Objection.) By implementing the Revised Forest Plan with the Bog Creek Road project, the FS would be violating laws and regulations.

On November 28, 2011 the Forest Service issued the Record of Decision for the Revised Forest Plan Amendments for Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones on the Kootenai, Idaho Panhandle and Lolo National Forests (aka "Access Amendments"). The Revised Forest Plan incorporated that decision. AWR fully participated in the public process during the development of the Access Amendments, and we incorporate our comments and appeal of that Decision within this Objection to the Bog Creek Road project. (See folder entitled "Acc Amend Participation")

AWR also participated during the public process as the Northern Rockies Lynx Management Direction (NRLMD) was developed. The Revised Forest Plan adopted that direction. We believe that the RFP/NRLMD does not consider the best available science, and incorporates our comments on that forest plan direction within this Objection to the Bog Creek Road project. (See folder entitled "NRLMD Participation")

In addition to the issues AWR raised in the above contexts, AWR submitted May 22, 2016 comments on the FS's February 6, 2013 scoping notice for the "East-West Access Around Continental Mountain" (scoping comments) and July 15, 2018 comments on the Bog Creek Road Project Draft Environmental Impact Statement (DEIS comments). We incorporate those comment letters into this Objection. Below we also discuss how the Bog Creek Road project would not be in compliance with laws, regulations, and policy.

AUTHORITY

Along with the draft ROD we are objecting to, the government issued a draft ROD for Customs and Border Protection (CBP), a department of the U.S. Department of Homeland Security (DHS). The FEIS does not establish the authority of DHS or CBP to authorize the proposed actions on national forest land in the project area. Given there is no further administrative process like appeals or objections for DHS or CBP actions, the selection of Alternative 3 is a foregone conclusion so it's almost pointless for the FS to have an objection process if CBP has the authority this situation implies.

That CBP arbitrarily "opened" the Bog Creek Road to ATVs by cutting vegetation proves that agency believes it can do whatever it wants on roads the draft ROD decommissions, or "stores" or otherwise removes from TMRD while retaining the road template.

It is one thing for the CBP to take otherwise unauthorized and arbitrary actions in the name of national security—without any public oversight. However the FS cannot hand over its decisionmaking authority on national forest land to CBP.

If the situation is that CBP can run roughshod over values such as security of wildlife habitat, clean water, and quiet recreation while doing whatever it wants on closed, undrivable, and even decommissioned roads and not be accountable to the public, then the FEIS must say so in order for the public to understand what values would be lost here in the Blue-Grass Bear Management Unit (BMU).

RANGE OF ALTERNATIVES

The FEIS basically says the FS is under a mandate to finally comply with the Access Amendment:

> In 2011, the IPNF issued a Record of Decision (ROD) for the Access Amendment (Forest Service 2011a) that set motorized vehicle access and security standards to meet the agency's responsibilities under the Endangered Species Act (ESA) to conserve and contribute to the recovery of grizzly bears. The ROD and accompanying biological opinion from the USFWS **require the standards in the Access Amendment to be met in 2019**. The Forest Service has been planning to bring the Blue-Grass BMU into compliance with the Access Amendment and the Forest Plan (Forest Service 2015a). (Emphasis added.)

The only alternatives that the FEIS includes which meet this mandate would open the Bog Creek Road. This artificially and arbitrarily extends the USFWS mandate to making a choice to adopt a set of actions the Biological Assessment (BA) admits would be highly adverse to grizzly bears. It effectively prejudices the upcoming decision. In failing to fully analyze an alternative which doesn't open the Bog Creek Road yet meets the Access Amendment, the FEIS contains an overly narrow range of alternatives in violation of NEPA.

This objection identifies other ways the FEIS skews and misrepresents the No Action Alternative, also in violation of NEPA.

NEED FOR PROJECT

The FEIS states, "Public involvement for the Bog Creek Road repair and maintenance proposal was initially conducted by CBP in February and March 2013. The project has been listed on the IPNF Schedule of Proposed Actions since February 2013. The initial 30-day scoping period was held from February 6 to March 8, 2013."

The FEIS fails to establish a genuine need for the proposed motorized access using the Bog Creek Road. If the proposed action is so needed, why did the government let this proposal languish for so many years?

As our comments also pointed out, providing easier access for CBP also provides easier access for illegal activities. The more travelways that exist on the U.S. side of the border, the more targets exist for use by those who cross the border illegally. Is there this kind of ruckus about potential illegal border crossings from Canada into the Pasayten Wilderness of Washington State? Of course not, because there are no roads and access would have to be on foot or by horse—not a smuggler's silk road.

So, the fear of illegal border crossing and smuggling creates the need for a road in the minds of government officials, which in turn would create increased access for said illegal activities. Just as with wildfire, fear-based management becomes a self-perpetuating spiral of destruction in a national forest.

And regarding the Continental Mine private property owners, they already have reasonable access to the extent the law requires.

CONSISTENCY WITH FOREST PLAN

Our DEIS comments state:

> The IPNF Forest Plan (page 93) desired condition states:
>
> > **GA-DC-VEG-PR-02.** The Upper Priest and Upper Granite Creek areas are the most diverse in the IPNF from an ecosystem and species standpoint. These areas are within the desired conditions that are shown in figures 2 and 3 and continue to provide high ecological integrity.
>
> All alternatives in this dEIS proposal are counter to the desired future condition of the Priest Lake Geographic Area and will decrease the ecological integrity of the area. All alternatives will negatively affect Malcom and Bog Creeks and the wildlife associated with them.

The FEIS fails to demonstrate consistency with this Forest Plan direction. But the failure of analysis goes beyond just that DC. The FEIS also fails to address Forest Plan GA-DC-WL-PR-

01 which requires “NFS lands provide habitat conditions for wildlife movement, especially woodland caribou, throughout the Selkirk recovery zone.”

In failing to demonstrate consistency with those, and all the other applicable forest plan elements, the FEIS violates NFMA and NEPA.

GRIZZLY BEAR

We discuss at length grizzly bear issues in our DEIS comments (pp. 1-9) and in our scoping comments (pp. 1-5).

Great Bear Foundation et al., 2009 discusses in great detail how the Forest Plan including incorporated Access Amendment leads to a significant deterioration in an already unacceptable Baseline Condition for grizzly bears.

The FS manages much of the habitat in the Selkirk Recovery Zone (SRZ), but instead of exercising its discretion to increase habitat security via substantial road reductions and minimizing industrial and motorized disturbance, the agency prefers to log, mine, and otherwise manipulate and disrupt the grizzly’s habitat to the limits allowed by its already inadequate regulatory mechanisms. Since 2010, the FS:

- Declined the opportunity to select an Access Amendment alternative that would have provided a higher level of habitat protections for grizzly bears and for a whole host of other wildlife species;
- Continues to neglect its duty to identify the forestwide minimum road system under the Travel Management Rule Subpart A;
- Recommended a minimum of the inventoried roadless areas in for Wilderness in the RFP; and
- Approved more timber sales in the SRZ.

Such actions reveal a practice and pattern of failing to prioritize the needs of the grizzly bear within MS 1. The FS must undertake a full cumulative effects analysis that considers all management activities (public and private) in the SRZ.

The FS refuses to recognize that the critically low population level means that research results cannot statistically validate its management direction. The agency should dump its reckless resource extraction paradigm and adopt an enlightened management philosophy based on the Precautionary Principle.[1]

The FEIS fails to adequately analyze and disclose cumulative impacts on land of other ownerships due to their unknown duration, location, and intensity.

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[1] The **precautionary principle** or precautionary approach to risk management states that if an action or policy has a suspected risk of causing harm to the public or to the environment, in the absence of scientific consensus that the action or policy is not harmful, the burden of proof that it is *not* harmful falls on those taking an action. https://en.wikipedia.org/wiki/Precautionary_principle

We incorporate Willcox, 2017 within this objection.

The FS fails to recognize that Bear Management Units (BMUs) do not protect enough habitat to satisfy most individual grizzly bears' needs in the Selkirk Recovery Zone. Merrill, 2003 states:

> Our analysis shows that grizzly bears have little or no opportunity to select home ranges with lower road density or higher percentages of core… Because grizzly bears could not have selected home ranges having more core area and lower road densities, and there has been no growth in the population, there is no basis to conclude the proposed access standards are sufficient to insure the recovery of the Cabinet-Yaak and Selkirk grizzly bear populations.

The FS has no plan to provide scientifically defensible habitat protections outside the Selkirk recovery zone that would allow for a larger protected zone and/or natural augmentation from outside the SRZ. The FS has no cogent methodology that provides scientifically defensible habitat protections inside the Selkirk Recovery Zone that would facilitate functional connectivity between and among BMUs.

The FEIS fails to disclose the effective road closures for the purpose of eliminating human access behind the closures. We incorporate the Amended Complaint for case CV-18-67-DWM for the purposes of explaining how roads affect wildlife; and that ineffective closures on national forest land are all too common.

Roads treated as "not-roads" by the FEIS, although not decommissioned, are not included in Total Motorized Road Density (TMRD). Yet, given recent CBP behavior, such roads would receive use inconsistent with the Access Amendments/Forest Plan—all sanctioned by the FS.

The FS's March 2019 Biological Assessment (BA) concludes "direct, indirect, and cumulative impacts from the proposed action **may affect, and are likely to adversely affect,** grizzly bear." The BA describes impacts which would be both short term ("…from road repair and motorized closure actions") and long term:

- "…fragment habitat that has been effectively functioning as core area habitat…"
- "…bears… may be permanently displaced from … very high and high-quality habitats."
- "…bears that habituate to the motorized/non-motorized use along the Bog Creek road will likely be at elevated risk of negative human-bear interactions and associated mortality."
- "…the SRZ population recovery may be inhibited…"
- "…adverse impacts to grizzly bears from long-term maintenance and use actions under the proposed action, resulting in behavioral changes, loss of preferred habitat, reduced foraging efficiency, potential range contractions, and reduced demographic and genetic exchange for a number of years until bears develop new use strategies.

Human activities implemented, approved or sanctioned by various government bodies has led the recent extirpation of the Endangered mountain caribou in the U.S. portion of the Selkirk Mountains. Discussion from the FEIS indicates the opening and maintenance of the Bog Creek Road would set a similar course for the Grizzly Bear in the SRZ:

- The SRZ bear population has the lowest genetic diversity of the ESA-listed grizzly bear populations (IGBC 2017)
- There is an extensive east-west-trending road system that is open to motorized use just north of the Canadian border. These Canadian roads, combined with roads open to motorized use within the U.S. portion of the SRZ, likely act as a semipermeable barrier to grizzly bear movement, due to bear road-avoidance behavior.

The BA strongly indicates the opening/reconstruction of the Bog Creek Road will be highly averse:

> The proposed action would decrease permeability on the west side of the BMU in an area that has been used by bears for more than three decades and the only spot that provides clear and unimpeded travel back and forth into B.C. and to the higher elevation fall and denning habitats found in the Salmo-Priest BMU. Reducing administrative use elsewhere (i.e., Grass Creek drainage) would help facilitate movement within the Blue-Grass BMU, but would not provide any kind of offset in connectivity for the loss in the Bog Creek area due to the open motorized routes that exist north of Grass Creek in B.C. These changes may ultimately decrease the genetic flow between the U.S. and the B.C. portion of this population; without connectivity to the north the SRZ population recovery may be inhibited.

Selection of any of the action alternatives would violate result in “take” of grizzly bears, in violation of the ESA.

The FEIS describes long-term inconsistency with Forest Plan habitat standards:

> In 2011, the IPNF issued a Record of Decision (ROD) for the Access Amendment (Forest Service 2011a) that set motorized vehicle access and security standards… The Forest Service has been planning to bring the Blue-Grass BMU into compliance with the Access Amendment and the Forest Plan.
>
> (T)he Blue-Grass BMU currently contains 48.3 percent core area habitat, which is 6.7 percentage points below the minimum core area habitat standard of 55 percent. The BMU currently does not meet the TMRD standard; 29 percent of the BMU has a TMRD greater than 2 miles per square mile. The standard requires that no more than 26 percent of the BMU contain greater than 2 miles per square mile of total roads. The BMU has not met the TMRD standard since the Access Amendment was finalized. The Blue-Grass BMU is the only BMU in the SRZ that is not currently meeting the motorized access standards as established in the 2015 Forest Plan.

The Interagency Grizzly Bear Guidelines (IGBC 1986) direct the FS to manage for “multiple land use benefits” to the extent that these uses are compatible with grizzly recovery. The entire Blue-Grass BMU is Management Situation (MS) 1 habitat as defined in the IGBC guidelines. In MS1, management must focus on grizzly bear habitat maintenance, improvement and minimization of grizzly-human conflict. Management decisions will favor the needs of the grizzly bear when grizzly habitat and other land use values compete. Implementation of any action alternative would not be consistent with the requirement to prioritize the needs of the grizzly bear in MS1.

<u>Core percentages, undrivable roads and No Action Alternative</u>

The FEIS inaccurately describes the No Action alternative (Alternative 1). It does not disclose the effective or "functional" Core percentage. As the BA explains, this involves recognizing as Core the "undrivable" roads "having received no motorized use in at least 10 years" and thus "considered to be providing secure habitat for grizzly bears using the area (i.e., functional core)." Although the BA's list of these undrivable roads doesn't include the long-term undrivable portion of the Bog Creek Road (1013), its map of 2017 "Motorized Use and Drivable Conditions" does:

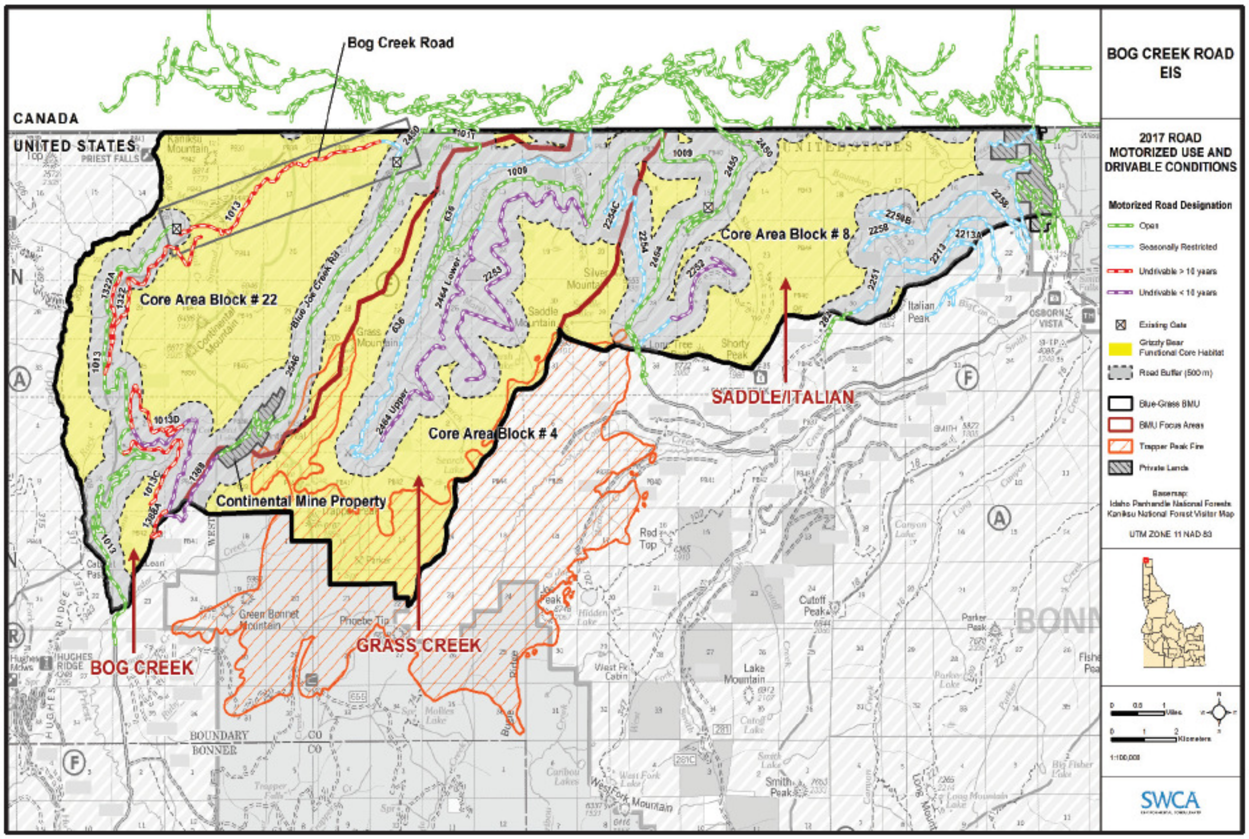


Figure 3.2. Functional core habitat and 2017 motorized road use in the Blue-Grass BMU.

The undrivable portion of the 1013 Road is consistent with the FS's default management of the road as Maintenance Level (ML) 1:

> Planned road deterioration may occur at this level. Appropriate traffic management strategies are "prohibit" and "eliminate."

And although for ML 1 roads "Emphasis is normally given to maintaining drainage facilities and runoff patterns" that's not the history of this road, nor the FS's plan for the road, as the FEIS explains:

> While examining how to meet the Access Amendment standards, the Forest Service identified the long-planned closure of Bog Creek Road as an option that would create core habitat in the Blue-Grass BMU. Consistent with that plan, **Bog Creek Road was allowed to deteriorate, and no steps were taken to regularly maintain the road.** (Emphasis added.)

Thus, in omitting disclosure of the functional core, the FEIS provides an inaccurate characterization of the no action alternative, skewing the analysis in favor of the ROD's Selected alternative. This is a violation of NEPA.

Objection Attachment 1 is a version of the BA Figure 3.2 map, by Paul Sieracki, correcting some errors in Figure 3.2. It calculates the total current Functional Core at 53.1%, still almost two percentage points less than the Forest Plan standard. This is the current scenario under the No Action alternative.

Also under the current (no action) alternative scenario, the way the FS has been managing this BMU means those roads now undrivable for less than 10 years would eventually be undrivable for more than 10 years. As the BA states, "**Maintaining undisturbed and secure habitat in place for ten years or longer provides an area of known security to grizzly bears**, which they can utilize for foraging, breeding, and sheltering, should activities within other areas of their home range disrupt their normal activities (USFWS 2011a)." (Emphasis in the original.) Core percentage under the no action alternative would functionally increase over the longer term, when those <10 years undrivable roads are finally recognized by bears as not a source of human disturbance (when they have become undrivable for >10 years).

Objection Attachment 2 is another map by Paul Sieracki displaying the longer term No Action scenario as described just above. It reveals the total Functional Core will become <u>61.7%</u>. The FS simply needs to stop pretending the Bog Creek Road is needed, fully decommission that and the other obviously unneeded ("undrivable") roads, and then redouble efforts to implement genuine restoration of habitat for rare and endangered species.

<u>Impacts of Non-motorized trails</u>

As our comments pointed out, non-motorized trail use considered moderate by the FEIS would likely increase to the level at which it would need to be buffered out of Core in the foreseeable future. The FEIS states:

> (T)he BMU also has two popular non-motorized trails located within its boundaries: the Upper Priest River (Trail #308) and American Falls (Trail #28). These trails are currently being monitored to ascertain whether they should be considered high-use trails. "High-use" trails are those trails receiving an average of more than 20 parties per week. Monitoring has documented these trails (Trails #308 and #28) receiving an average of up to 16 parties per week during the busy summer season. **High-use trails, recognized as having the potential to displace bears, are buffered in the same fashion as drivable roads** (IGBC 1998). The buffered area surrounding high-use trails is removed from identified core area habitat. (Emphasis added.)

The BA states, "The creation of an east-west corridor in the Bog Creek drainage for administrative use by agency and Continental Mine owners will **likely result in increasing levels of non-motorized users as well.**" (Emphasis added.)

In other words, the FEIS fails to analyze and disclose the cumulative effects of likely increase in non-motorized trail use and thus impacts on the grizzly bear and other wildlife needing or preferring seclusion from frequent human activities. The Upper Priest River Trail #308 and the American Falls Trail #28 should be considered high-use, with buffers applied under future scenarios, for all alternatives.

Cumulative impacts

The FEIS also does not take a hard look at management/human activities on lands adjacent to the BMU which are intensively managed by the Idaho Department of Lands (IDL) and intensively managed land just over the border inside Canada. Such activities have the potential to impact Core, which may require buffering and thus reduction in percent Core or functional core.

Also, foreseeable future mineral exploration is not considered, as our comments pointed out.

Small fragments of Core habitat

This is one of several issues we incorporate as part of AWR's appeal of the Access Amendments, explaining the inadequacy of the Amendments and inconsistency with best available science. The issue arises here because small, isolated blocks of Core and narrow strips of Core are included in BMU Core percent calculations.

Our comments on the DEIS cited Wakkinen and Kasworm (1997) who state:

> We suggest that if a minimum size occurs, it is likely between 2 to 8 square miles. Furthermore we believe that narrow strips of core habitat that may fit some minimum size criteria likely will not provide effective core habitat for bears.

Most notably, the FEIS maps show a narrow strip of Core between Blue Joe and Grass Creeks, two tiny isolated blocks of Core in the north central part of the BMU next to Canada, and a third roughly 1 sq. mi. in extent northeast of Silver Mountain. The FEIS does not adequately consider the reduced value of these Core areas because of this geography.

Objection Attachment 1 shows that deduction of blocks < 4 sq. mi. from total core would reduce the amount of calculated core about 1.1%.

Impacts of motorized over-snow activities and winter recreation

The draft ROD states: "The 1388 route is currently a designated snowmobile route, and this use will be maintained because use does not conflict with the active bear year." In contrast, Alternative 2 would have closed this road to snowmobile use.

The FEIS does not demonstrate the FS is managing the BMU consistent with the Travel Management Rule, Subpart C. No process has been undertaken. The NEPA process for Winter Recreation had stalled for years.

The Biological Opinion on the forest plan for the Kootenai National Forest states:

> In the CYE and NCDE, incidental take may occur where late season snowmobiling overlaps with grizzly bear post-denning habitat. The incidental take is expected to be in the form of harassment to individual female grizzly bears and/or cubs caused by premature den emergence or premature displacement from the den site area, resulting in reduced fitness of females and cubs. We expect the amount and extent of take would be very low.

The Bog Creek Road FEIS does not demonstrate that such incidental take in the Blue-Grass BMU is in actually low.

As our comments on the DEIS point out, extension of the bear year from beginning on April 1 to beginning on March 15 has already been implemented for the road into Hughes Meadow, a wetland complex in an adjacent BMU. Failure to implement a spring extension impacts the ability of bears to utilize 41% of the wetland habitat, and it is inconsistent with Forest Plan Desired Condition FW-DC-WL-04, which requires "All grizzly BMUs have low levels of disturbance to facilitate denning activities, spring use, limit displacement, and reduce human/bear conflicts and potential bear mortality."

Finally, grizzly bears are winter-sleepers rather than true hibernators. If high density motorized routes are known to disturb, displace, habituate, and raise mortalities among grizzlies in spring, summer, and fall, there's no logical, or scientific reason to believe they don't do the same to sleeping bears in winter. This is not adequately considered in the FEIS.

MOUNTAIN CARIBOU

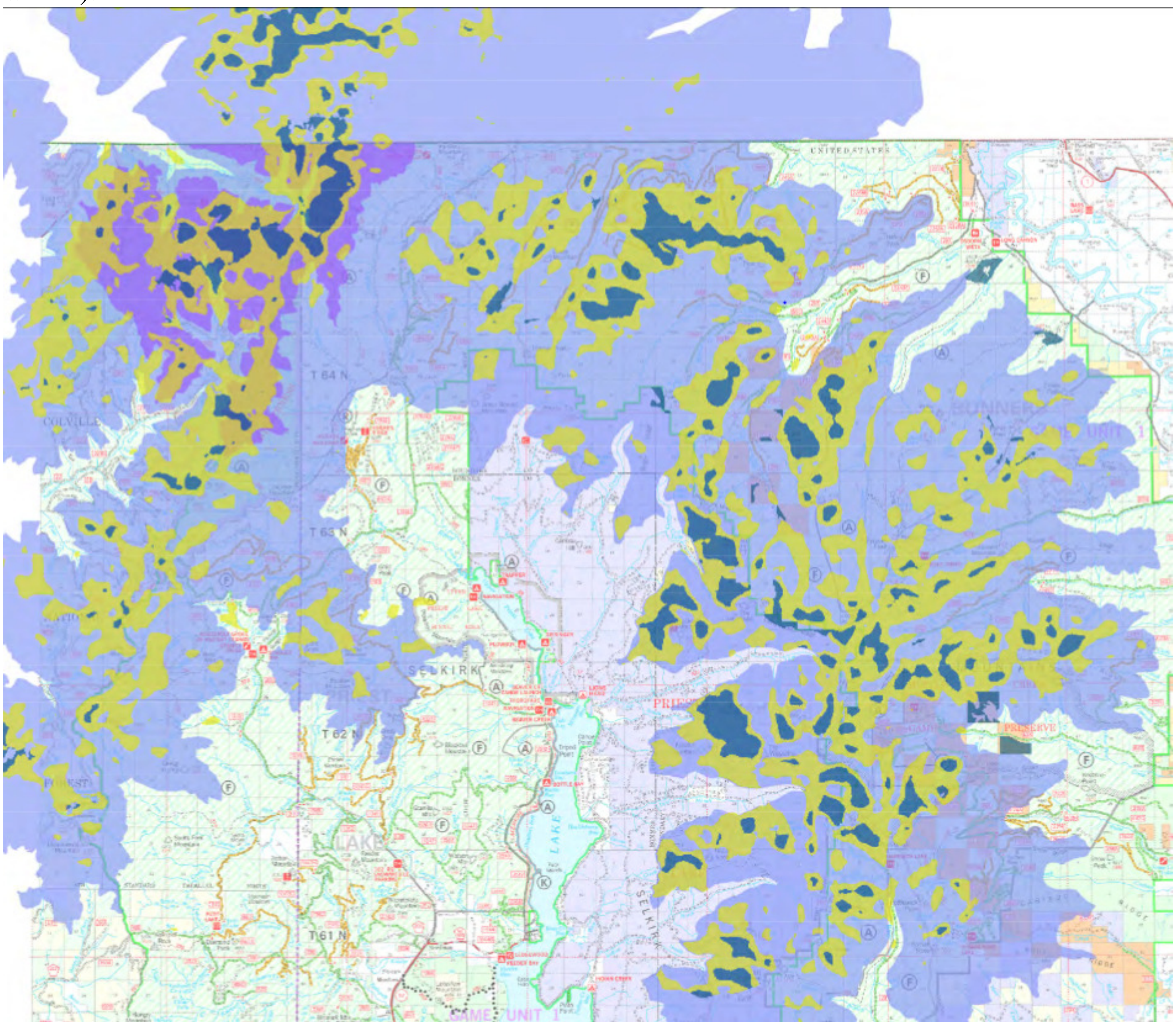
We discuss the Endangered mountain caribou in both our DEIS comments (pp. 1, 9, 10-11) and in our scoping comments (pp. 1, 3). AWR has for many years expressed concerns over federal government management of caribou habitat (see incorporated Caribou folder).

The mountain caribou, like the grizzly bear, relies on remote habitat relatively undisturbed from management and recreational activities so the issues we discuss above concerning grizzly bears apply here as well. The BA states, "The southern Selkirk Mountains population, occurring in the woodland caribou action area, is now the southernmost extant population of mountain caribou and the last remaining mountain caribou population in the United States (USFWS 1994)." Figure 7.2 in the BA illustrates how the Bog Creek Road lies at the crux of caribou recovery, situated at the border between habitat in Canada and the Recovery Zone in the U.S.

Human activities implemented, approved or sanctioned by various government bodies has led the recent extirpation of the mountain caribou in the U.S. portion of the Selkirk Mountains. The U.S. government has already violated the ESA; further impacts on caribou in the project area would exacerbate the existing ESA violation.

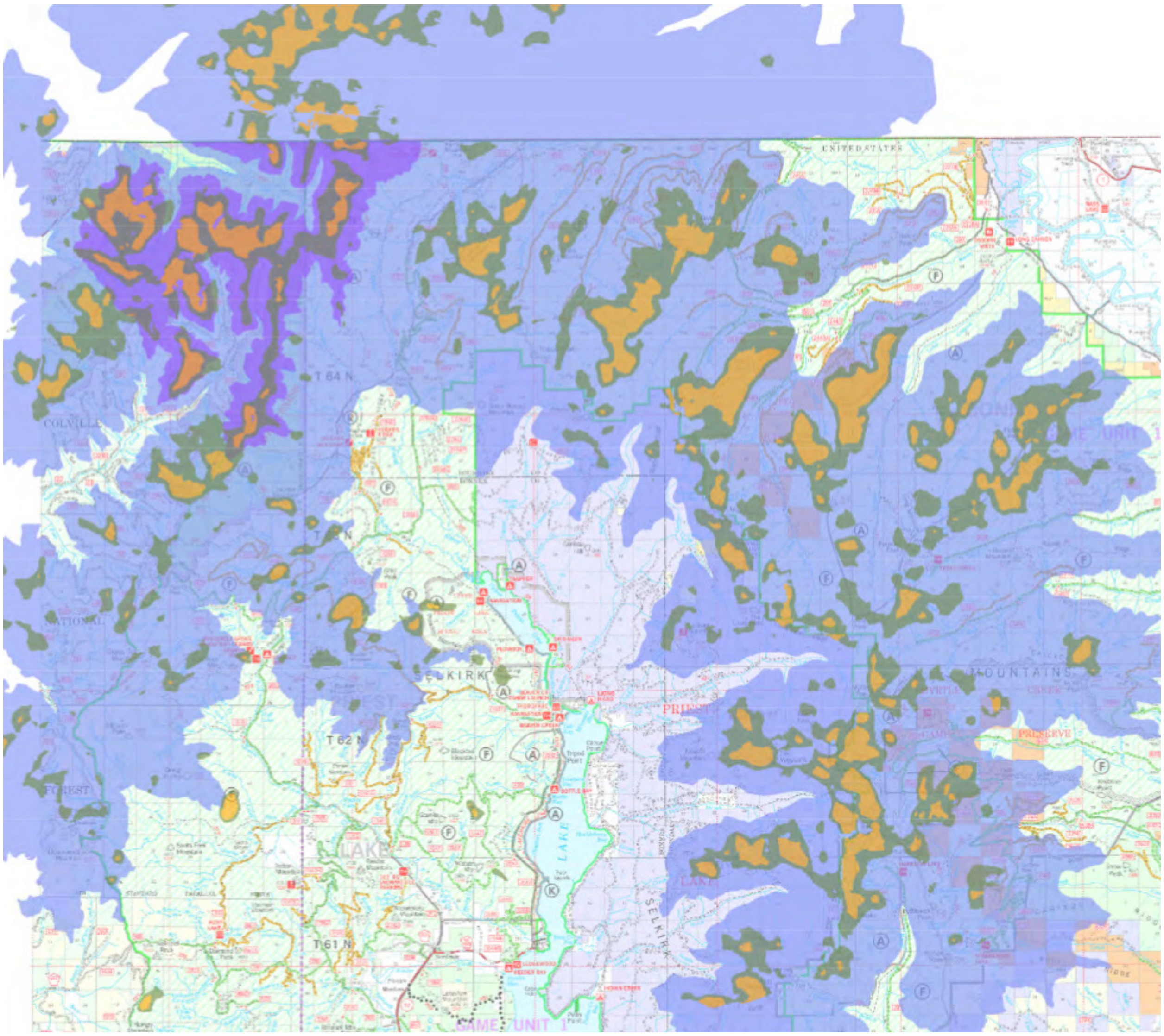
The BA concludes for the short term, "Given the lack of caribou in the ecosystem and paucity of recent documented caribou use of the project area, the potential impacts from short-term activities (road reconstruction, road closures and associated human activity over the three year period) to Selkirk Mountains caribou and their habitat are considered negligible." However, this determination of "negligible" is the result if government failures to actually implement caribou recovery. For the long term the BA admits, "The proposed action would directly impact caribou population connectivity when compared to current conditions because of caribou displacement from the known historical movement route across to Continental Mountain and its adjacent caribou habitat" and determines "the proposed action **may affect, and is likely to adversely affect,** Selkirk Mountains woodland caribou."

The FS (https://www.fs.usda.gov/nfs/11558/www/nepa/108297_FSPLT3_4284796.pdf) displays how the Bog Creek Road separates Critical Habitat from other important caribou habitat (early winter):



This also shows how arbitrary was the USFWS decision to so severely limit caribou critical habitat.

Similarly, (https://www.fs.usda.gov/nfs/11558/www/nepa/108297_FSPLT3_4284797.pdf) displays how the Bog Creek Road separates Critical Habitat from other important caribou habitat (late winter):



In failing to complete the analysis the FS has contemplated since at least 2006, concerning the Selkirks Winter Travel Plan the FEIS is not consistent with nor informed by the Travel Management Regulations Subpart C process. The BA recognizes: "Motorized over-the-snow routes. Controlling and managing motorized access improves Selkirk caribou habitat quality by reducing the risk of disturbance, displacement, and mortality. Caribou can be displaced by over-the-snow motorized vehicles." The BA also states:

> This closure restricts motorized over-the-snow vehicle access to designated timing and trails on NFS lands and will remain in-place until the IPNF completes the Kaniksu Over-The-Snow Travel Management Plan.

In 2018 the aforementioned Selkirks Winter Travel Plan was apparently rechristened the "Kaniksu Over-The-Snow Travel Management Plan" but seems no closer to implementation. Foreseeable outcome scenarios were not analyzed nor considered in the Bog Creek Road FEIS.

And as we mention above, the FEIS fails to demonstrate consistency with Forest Plan direction concerning the caribou and its habitat.

Reconstruction/re-opening of the Bog Creek Road would constitute a violation of the ESA.

CANADA LYNX

AWR discussed Canada lynx in DEIS comments (pp. 1, 9, 10) and scoping comments (pp. 1, 2).

The BA determines the proposal “may affect” but is “not likely to adversely affect” Canada lynx. Its rationale includes:

> Repair and subsequent maintenance of Bog Creek Road would facilitate non-motorized recreational use of the corridor by mountain bikers, hikers, hunters/trappers, and others. With improved non-motorized public access along Bog Creek Road, it is possible that non-motorized public access could also increase along Blue Joe Creek Road from current conditions. Lynx may avoid contact and could be displaced by these user groups until the humans leave the area. This temporary displacement would be an insignificant impact with the availability of unaffected suitable habitat. Because the road is currently heavily vegetated and the improvements would make it more passable on foot, there is a low likelihood that there could be an increase in indirect effects on lynx from trapping of their prey species, incidental trapping (when other species are targeted), or poaching and malicious killing.

However the FEIS and BA downplay the cumulative impacts of trapping facilitated by roads, and the resulting habitat fragmentation.

Squires et al. (2013) noted that long-term population recovery of lynx, as well as other species as the grizzly bear, require maintenance of short and long-distance connectivity. The importance of maintaining lynx linkage zones for landscape connectivity should be maintained to allow for movement and dispersal of lynx. And connectivity between project area LAUs and adjacent LAUs was not analyzed or disclosed.

Kosterman, 2014, Vanbianchi et al., 2017 and Holbrook, et al., 2018 each demonstrate Forest Plan/NRLMD direction is not adequate for lynx viability and recovery, as the FS assumes.

The FEIS fails to consider, apply, and incorporate best available science and fails to demonstrate consistency with all Forest Plan/NRLMD direction, in violation of the ESA. The project will result in unauthorized take as defined by Section 9 of the ESA.

BULL TROUT AND NATIVE FISH

Our DEIS comments discuss bull trout on pp. 1, 9-10.

The BA states, “Culvert replacement or removal, as proposed, would reduce the long-term potential for catastrophic culvert failure (generally producing relatively large pulse of sediment and turbidity) at the road–stream crossings upstream of bull trout occupied habitat.” True enough, however, this statement and the FEIS fail to address impacts on streams and therefore fish habitat from foreseeable road degradation, especially where roads are not maintained for the long term leading to inevitable road prism and culvert failures.

The FS does not have a monitoring and maintenance plan for culverts that will be left on closed roads. The USFWS Biological Opinion of the Effects to Bull Trout and Bull Trout Critical Habitat from Road Management Activities on National Forest System and Bureau of Land Management Lands in Western Montana, (2015) recognizes: "Culverts that remain in the road behind gates and berms that are not properly sized, positioned, and inspected will be considered for removal. These have an increased risk for failure by reducing awareness of potential maintenance needs. The accumulation of debris has the potential to obstruct culverts and other road drainage structures. Without maintenance and periodic cleaning, these structures can fail, resulting in sediment production from the road surface, ditch, and fill slopes." Following that consultation, the USFWS asserted, "The design criteria to address drainage structures left behind gates and berms **require annual monitoring of these structures**." (Emphasis added.)

Unlike the grizzly bear, which would benefit from the FS's passive policy of "planned road deterioration", fisheries would suffer as the stream crossings and other portions of the road prism fail catastrophically or chronically erode downhill and downstream.

US Fish and Wildlife Service, 2010 provides a discussion of biological effects of sediment on bull trout and other fish.

USDA Forest Service, 2017c explains that native westslope cutthroat trout have declined due to habitat degradation:

> The distribution and abundance of westslope cutthroat trout has declined from historic levels (less than 59 percent of historically occupied stream habitat) across its range, which included western Montana, central and northern Idaho, a small portion of Wyoming, and portions of three Canadian provinces (Liknes and Graham 1988, Shepard et al. 2005). Westslope cutthroat trout persist in only 27 percent of their historic range in Montana. Due to hybridization, genetically pure populations are present in only 2.5 percent of that range (Rieman and Apperson 1989). Introduced species have hybridized or displaced westslope cutthroat trout populations across their range. Hybridization causes loss of genetic purity of the population through introgression. Within the planning area, genetically pure populations of westslope cutthroat trout are known to persist in Ruby Creek (MFISH 1992, 2012). Some of these remaining genetically pure populations of westslope cutthroat trout are found above fish passage barriers that protect them from hybridization, but isolate them from other populations.
>
> Brook trout are believed to have displaced many westslope cutthroat trout populations (Behnke 1992). Where the two species co-exist, westslope cutthroat trout typically predominate in higher gradient reaches and brook trout generally prevail in lower gradient reaches (Griffith 1988). This isolates westslope cutthroat trout populations, further increasing the risk of local extinction from genetic and stochastic factors (McIntyre and Rieman 1995).

> Habitat fragmentation and the subsequent isolation of conspecific populations is a concern for westslope cutthroat trout due to the increased risk of local and general extinctions. The probability that one population in any locality will persist depends, in part on, habitat quality and proximity to other connected populations (Rieman and McIntyre 1993). Therefore, the several small, isolated populations left in the project area are at a moderate risk of local extirpation in the event of an intense drainage-wide disturbance.
>
> Habitat degradation also threatens the persistence of westslope cutthroat trout throughout their range. Sediment delivered to stream channels from roads is one of the primary causes of habitat degradation. Sediment can decrease quality and quantity of suitable spawning substrate and reduce overwintering habitat for juveniles which reduces spawning success and increases overwinter mortality. Roads can also alter the drainage network of a watershed and thereby increase peak flows. The end result of increased peak flows is decreased channel stability and accelerated rates of mass erosion. Across their range the strongest populations of westslope cutthroat trout exist most frequently in the wilderness, Glacier National Park, and areas of low road densities or roadless areas (Liknes and Graham 1988, Marnell 1988, Rieman and Apperson 1989, Lee et al. 1997).

The Kootenai NF's Flower Creek Forest Health project EA states:

> Fine sediment can greatly reduce the capability of winter and summer rearing habitats and decrease survival to emergence when sediment levels reach 30% or greater (Shepard et al. 1984). Fine sediment may have the greatest impact on winter rearing habitat for juvenile salmonids. Fine sediments can cap or fill interstitial spaces of streambed cobbles. When interstitial rearing space is unavailable, juvenile salmonids migrate until suitable wintering habitat can be found (Hillman et al. 1987). Fine sediment can also alter macroinvertebrate abundance and diversity.

Mazza, 2015 addresses the importance of headwater riparian zones: "Riparian areas, where the terrestrial mingle with the aquatic, are special places. Riparian area around headwaters are particularly important because they have strong ecological connections to uplands and provide resources to the downstream system."

An article in the October 19, 2015 edition of *The Spokesman-Review* discusses the importance of headwater streams that provide essential cold water refuges for west slope cutthroat and bull trout. "One of the things we're seeing is that the colder areas are typically in the headwaters," said Dan Issak, a research fisheries biologist with the U.S. Forest Service in Boise. "Those are warming up a lot more slowly that streams at lower elevations."

The FEIS fails to demonstrate consistency of FS management of the project area with all applicable Forest Plan direction for riparian areas, water quality, and aquatic species habitat.

FISHER

Objectors discussed the fisher in our DEIS comments (pp. 9, 10). We supplement those comments with the following discussion.

The FEIS fails to adequately analyze the cumulative effects on fisher due to trapping or from use of the road and trail networks. Heinemeyer and Jones, 1994 stated:

> Fishers are susceptible to trapping, and are frequently caught in sets for other furbearers. Additionally, populations are vulnerable to trapping, as even light pressure may cause local extinction. Western fisher populations may have lower natality and higher natural mortality rates as compared to eastern populations. Consequently, western populations may be more susceptible to over-trapping. It has been suggested that incidental captures may limit population growth in some areas.

Also Jones, (undated) recognizes:

> Roads are directly correlated with trapper access, and consequently, fisher vulnerability. Even in areas where fishers cannot be legally trapped, trapping pressure for other furbearers (i.e., marten) may contribute significantly to fisher mortality. Roads bisecting or adjacent to preferred habitats (i.e., drainage bottoms) have the greatest potential of increasing a trapper's probability of encountering fishers."

And Witmer et al., 1998 state, "The range and population levels of the fisher have declined substantially in the past century, primarily the result of trapping pressure and habitat alteration through logging (Powell and Zielinski 1994)."

Hayes and Lewis, 2006 state "The two most significant causes of the fisher's decline were over-trapping by commercial trappers and loss and fragmentation of low to mid-elevation late-successional forests." Hayes and Lewis, 2006 also present a science synthesis in the context of a recovery plan for fisher in the state of Washington. They also state:

> Trapping reduced populations quickly. Despite decades of protection from harvest, fisher populations never recovered in Washington. Fishers use forest structures associated with late-successional forests, such as large live trees, snags and logs, for giving birth and raising their young, as well as for rest sites. Travel among den sites, rest sites, and foraging areas occurs under a dense forest canopy; large openings in the forest are avoided. Commercial forestry removed the large trees, snags and logs that were important habitat features for fishers, and short harvest rotations (40-60 years) didn't allow for the replacement of these large tree structures. Clearcuts fragmented remaining fisher habitat and created impediments to dispersal, thus isolating fishers into smaller populations that increased their risk of extinction.

Sauder and Rachlow (2014) report the average home range size is approximately 12,200 acres and for a female fisher and approximately 24,300 acres for a male fisher. Home ranges generally do not overlap greatly for the individual sexes (21.3% for females and 15.3% for males), but male home ranges can overlap female home ranges. Preferred habitat would likely occur in upland areas and stands composed of cedar and grand fir forests (Schwartz et al. 2013).

Ruggiero et al. 1994b discuss habitat disruption by human presence:

> …The fisher's reaction to humans in all of these interactions is usually one of avoidance. Even though mustelids appear to be curious by nature and in some instances fishers may associate with humans (W. Zielinski, pers. obs.), they seldom linger when they become aware of the immediate presence of a human. In this regard, fishers generally are more

> common where the density of humans is low and human disturbance is reduced. Although perhaps not as associated with "wilderness" as the wolverine (V. Banci, Chapter 5), the fisher is usually characterized as a species that avoids humans (Douglas and Strickland 1987; Powell 1993).

The FS fails to set meaningful thresholds and assumes without scientific basis that project-caused habitat losses will not threaten population viability. Of such analyses, Schultz (2010) concludes that "the lack of management thresholds allows small portions of habitat to be eliminated incrementally without any signal when the loss of habitat might constitute a significant cumulative impact." In the absence of meaningful thresholds of habitat loss and no monitoring of wildlife populations at the Forest level, projects will continue to degrade habitat across the IPNF over time. (See also Schultz 2012.)

Traill et al., 2010 and Reed et al., 2003 are published, peer-reviewed scientific articles addressing how "minimum viable populations" can be estimated, and how they have been drastically underestimated in past. The FS has not identified the best available science to make quantitative minimum viable population determinations for wildlife species on the Forest.

Traill et al., 2010 state:

> To ensure both long-term persistence and evolutionary potential, the required number of individuals in a population often greatly exceeds the targets proposed by conservation management. We critically review minimum population size requirements for species based on empirical and theoretical estimates made over the past few decades. This literature collectively shows that thousands (not hundreds) of individuals are required for a population to have an acceptable probability of riding-out environmental fluctuation and catastrophic events, and ensuring the continuation of evolutionary processes. The evidence is clear, yet conservation policy does not appear to reflect these findings, with pragmatic concerns on feasibility over-riding biological risk assessment. As such, we argue that conservation biology faces a dilemma akin to those working on the physical basis of climate change, where scientific recommendations on carbon emission reductions are compromised by policy makers. There is no obvious resolution other than a more explicit acceptance of the trade-offs implied when population viability requirements are ignored. We recommend that conservation planners include demographic and genetic thresholds in their assessments, and recognise implicit triage where these are not met.

Assuring viability of most wildlife species is forestwide issue. The cumulative effects of carrying out multiple projects simultaneously across a national forest makes it imperative that population viability be assessed at least at the forestwide scale (Marcot and Murphy, 1992; also see Ruggiero et al., 1994a).

The FS provides no assurances that a viable population of fishers exists now in the IPNF, and fails to provide a proper cumulative effects analysis on fisher viability. The FEIS violates NEPA and NFMA.

WOLVERINE

Objectors discussed the wolverine in our DEIS comments (pp. 9, 10). We supplement those comments with the following discussion.

Wolverines use habitat ranging from Douglas-fir and lodgepole pine forest to subalpine whitebark pine forest (Copeland et al., 2007). Lofroth (1997) in a study in British Columbia, found that wolverines use habitats as diverse as tundra and old-growth forest. Wolverines are also known to use mid- to low-elevation Douglas-fir forests in the winter (USDA Forest Service, 1993).

Aubry, et al. 2007 note that wolverine range in the U.S. had contracted substantially by the mid-1900s and that extirpations are likely due to human-caused mortality and low to nonexistent immigration rates.

May et al. (2006) cite: "Increased human development (e.g. houses, cabins, settlements and roads) and activity (e.g. recreation and husbandry) in once remote areas may thus cause reduced ability of wolverines to perform their daily activities unimpeded, making the habitat less optimal or causing wolverines to avoid the disturbed area (Landa & Skogland 1995, Landa et al. 2000a)."

Ruggiero, et al. (2007) state: "Many wolverine populations appear to be relatively small and isolated. Accordingly, empirical information on the landscape features that facilitate or impede immigration and emigration is critical for the conservation of this species."

Heinemeyer et al., 2017 conclude that both male and female wolverines responded negatively to increasing intensity of winter recreation within home ranges. From Heinemeyer et al., 2017:

> Wolverines may be vulnerable to direct and indirect impacts of recreation during winter, as they naturally occur at low densities, have low reproductive rates, and remain active through the winter (Hash 1987). There has been no effort focused on understanding wolverine responses to winter recreation, though research suggests they are sensitive to human activities and infrastructure (May et al. 2006, Krebs et al. 2007, Stewart et al. 2016, Heim et al. 2017). Females enter reproductive dens within deep snow packduring the winter recreation season with kits born in mid-Feb to early March and they occupy these dens through late April or mid-May (Hash 1987, Magoun and Copeland 1998). The potential impact of backcountry winter recreation to denning females is of primary concern (Carroll et al. 2001, May et al. 2006, Copeland et al. 2007, Krebs et al. 2007).
>
> Habitat models that included winter recreation showed that both males and females responded negatively to increasing intensity of winter recreation within home ranges. Dispersed recreation activities elicited a stronger response than recreation along roads and groomed routes, with females showing more sensitivity to disturbance than males. The functional responses to dispersed recreation, particularly to motorized dispersed recreation, suggests that avoidance results in potentially important indirect habitat loss when a significant portion of an animal's home range receives recreation use, as it is exactly those animals exposed to higher levels of recreation that are most strongly displaced from these areas. Other wolverines were exposed to winter recreation within only a relatively small

portion of their large home ranges, and the functional responses also suggest that this limited exposure may mute the indirect habitat loss. The weak avoidance of areas near linear access used by winter recreationists suggests wolverines may be less sensitive to these linear disturbances.

> Female wolverines appeared to discriminate between different types of winter recreation with the best supported female model containing separate predictors for linear recreation travel, dispersed motorized recreation and dispersed non-motorized recreation. Females avoid all three forms of winter recreation but the relative importance of each is different. Females show a strong avoidance of areas with dispersed non-motorized recreation, though these areas are limited within home ranges. Motorized dispersed winter recreation is the second most important predictor of female habitat selection, indicating that this disturbance has a strong influence on female wolverine habitat selection in areas where motorized recreation occurs. This strong avoidance combined with the potential for motorized recreation to cover larger areas may lead to important indirect habitat loss for female wolverines.

Roads result in direct mortality to wolverines by providing access for trappers (Krebs et al., 2007). Trapping was identified as the dominant factor affecting wolverine survival in a Montana study (Squires et al. 2007). Female wolverines avoid roads and recently logged areas, and respond negatively to human activities (Krebs et al., 2007)

Ruggiero et al. (1994b) recognized that "Over most of its distribution, the primary mortality factor for the wolverines is trapping." Those authors also state, "Transient wolverines likely play a key role in the maintenance of spatial organization and the colonization of vacant habitat. Factors that affect movements by transients may be important to population and distributional dynamics."

Results from Scrafford et al., 2018:

> …show that roads, regardless of traffic volume, reduce the quality of wolverine habitats and that higher-traffic roads might be most deleterious. We suggest that wildlife behavior near roads should be viewed as a continuum and that accurate modeling of behavior when near roads requires quantification of both movement and habitat selection. Mitigating the effects of roads on wolverines would require clustering roads, road closures, or access management."

Roads and human density are important factors influencing current wolverine distribution (Carroll et al. 2001b); and wolverine habitat selection is negatively correlated with human activity – including roads (Krebs et al. 2007). Wolverine occurrence has shown a negative relationship with road densities greater than 2.8 mi/mi^2 (1.7 km/km^2) (Carroll et al. 2001b).

(T)he presence of roads can be directly implicated in human-caused mortality (trapping) of this species. Trapping was identified as the dominant factor affecting wolverine survival in a Montana study (Squires et al. 2007).

Krebs et al. (2007) state, "Human use, including winter recreation and the presence of roads, reduced habitat value for wolverines in our studies."

Wisdom et al. (2000) state:

> Carnivorous mammals such as marten, fisher, lynx, and wolverine are vulnerable to over-trapping (Bailey and others 1986, Banci 1994, Coulter 1966, Fortin and Cantin 1994, Hodgman and others 1994, Hornocker and Hash 1981, Jones 1991, Parker and others 1983, Thompson 1994, Witmer and others 1998), and over-trapping can be facilitated by road access (Bailey and others 1986, Hodgman and others 1994, Terra-Berns and others 1997, Witmer and others 1998).
>
> …Snow-tracking and radio telemetry in Montana indicated that wolverines avoided recent clearcuts and burns (Hornocker and Hash 1981).
>
> Copeland (1996) found that human disturbance near natal denning habitat resulted in immediate den abandonment but not kit abandonment. Disturbances that could affect wolverine are heli-skiing, snowmobiles, backcountry skiing, logging, hunting, and summer recreation (Copeland 1996, Hornocker and Hash 1981, ICBEMP1996f).

Carroll et al. (2001b) state:

> The combination of large area requirements and low reproductive rate make the wolverine vulnerable to human-induced mortality and habitat alteration. Populations probably cannot sustain rates of human-induced mortality greater than 7–8%, lower than that documented in most studies of trapping mortality (Banci 1994, Weaver et al. 1996).
>
> … (T)he present distribution of the wolverine, like that of the grizzly bear, may be more related to regions that escaped human settlement than to vegetation structure.

Wisdom et al. (2000) offered the following strategies:

- Provide large areas with low road density and minimal human disturbance for wolverine and lynx, especially where populations are known to occur. Manage human activities and road access to minimize human disturbance in areas of known populations.
- Manage wolverine and lynx in a metapopulation context, and provide adequate links among existing populations.
- Reduce human disturbances, particularly in areas with known or high potential for wolverine natal den sites (subalpine talus cirques).

Nowhere in the Forest Plan or Bog Creek Road FEIS can be found a description of the quantity and quality of habitat that is necessary to sustain the viability of the wolverine.

The Bog Creek Road FEIS also fails to analyze and disclose cumulative impacts of recreational activities on wolverine.

The Analysis of the Management Situation Technical Report for Revision of the Kootenai and Idaho Panhandle Forest Plans states:

> Direct mortality (related to access) from trapping, legal hunting, and illegal shooting has impacted all wide-ranging carnivores (e.g. lynx, wolverine, grizzly and black bears, wolves)…
>
> …Wolverine populations may have declined from historic levels, as a result of over-trapping, hunting, habitat changes, and intolerance to human developments. As the amount of winter backcountry recreation increases, wolverine den sites may become more susceptible to human disturbance.

Cumulative effects are not adequately analyzed. The FS's illogical wolverine determination is based in part upon a 2013 memo from the Regional Office (USDA Forest Service 2013c). It appears that FS district level specialists are not allowed to arrive at effects conclusions based upon their own expertise and judgment.

PINE MARTEN

Objectors discussed the pine marten in our DEIS comments (p. 9). We supplement those comments with the following discussion.

The Bog Creek FEIS fails to consider best available science for insuring viable populations of the pine marten, a species whose habitat is significantly altered by active forest management. (See Moriarty et al., 2016; Bull and Blumton, 1999; Hargis et al., 1999 and Wasserman et al., 2012).

The FEIS fails to conduct an analysis of the historic range of marten habitat on the Forest, thus it also fails to conduct the proper cumulative effects analysis.

Ruggiero et al. 1994b recognize that for martens, "trapper access is decreased, and de facto partial protection provided, by prohibitions of motorized travel."

Old growth allows martens to avoid predators, provides resting and denning places in coarse woody debris and large diameter trees, and allows for access under the snow surface. USDA Forest Service, 1990 reviewed research suggesting that martens prefer forest stands with greater than 40% tree canopy closure and rarely venture more than 150 feet from forest cover, particularly in winter. USDA Forest Service, 1990 states, "To ensure that a viable population of marten is maintained across its range, suitable habitat for individual martens should be distributed geographically in a manner that allows interchange of individuals between habitat patches."

The FEIS does not disclose the quantity and quality of habitat necessary to sustain the viability of the marten.

WESTERN (BOREAL) TOAD

Objectors discussed the boreal toad in our DEIS comments (p. 9). We supplement those comments with the following discussion.

The FS has no scientifically-based viability strategy for the Western (Boreal) toad, no metrics for describing the quantity and quality of habitat need to assure viability, and no way of quantifying cumulative effects. USDA Forest Service, 2011c:

> According to historical records, the western (boreal) toad … was widely distributed and very common in Montana and other western states, but the species may have undergone severe population decreases in the past 25 years (Currim 1996).
>
> …Timber harvest, increased vehicle use, road maintenance, and road construction may kill individual adult and juvenile boreal toads using upland habitats.

The Lolo NF's Sunrise Fire Salvage EA states, "The critical factor in whether toads can exploit open habitats appears to be the presence of adequate retreat sites [refugia] where toads can escape predators and maintain water balance (Guscio et al. (2007)."

USDA Forest Service, 2003a states:

> Little quantitative data are available regarding the boreal toad's use of upland and forested habitats. However, boreal toads are known 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). 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 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.

The FEIS fails to describe the quantity and quality of habitat necessary to sustain the viability of the boreal toad, and has no explanation of FS methodology for measuring this habitat.

MINIMUM ROAD NETWORK

AWR's DEIS comments on the DEIS state in the first paragraph, "conserving wildlife must be top priority. This must be addressed through aggressive rewildling / restoration of habitat, including road removal and re-contouring, and replanting." On page 10 we suggest "Recontour road segments …to exclude atv's and snowmobiles, and fix erosion problems.

Reducing roads and their impacts would benefit not only grizzly bears, but most other natural aspects of the ecosystem. The Access Amendments[2] Draft SEIS demonstrates how habitat protections for the grizzly bear benefits other species:

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[2] Not selected, but Alternative D would have restricted road densities the most and protected the most Core of all alternatives analyzed. (Amended forest plans for the Kootenai, Idaho Panhandle, and Lolo National Forests concerning Selkirk and Cabinet-Yaak Ecosystems Grizzly Bear subpopulation.)

- Alternative D Modified would convert the most roads and consequently would provide the highest degree of habitat security and a lower mortality risk to the **Canada lynx**. (P. 70.)
- Alternative D Modified would provide a higher degree of habitat security (for **gray wolves**) than Alternative E Updated… (P. 74.)
- Alternative D Modified … could contribute to a cumulative increase in habitat security for **black-backed woodpeckers** (and **pileated woodpeckers**) because timber sales or other ground disturbing or vegetation management activities would be less likely to occur in Core Areas. Newly dead trees that support wood boring beetle populations would be less likely to be removed during vegetation management activities or by woodcutters. Alternative D Modified could provide slightly more secure habitat than Alternative E Updated. (P. 84, 112.)
- Alternative D Modified … could contribute to a cumulative increase in habitat security because timber sales or other ground disturbing or vegetation management activities would be less likely to occur in Core Areas. Snags would be less likely to be removed during vegetation management activities or by woodcutters. Alternative D Modified could provide slightly more secure habitat (for **Townsend's big-eared bats, flammulated owls, fringed myotis bats**) than Alternative E Updated. (Pp. 85, 86, 95.)
- Alternative D Modified and Alternative E Updated provide different levels of habitat security (for **peregrine falcon, fisher, wolverine**) based on the relative amount of wheeled motorized vehicle access. (Pp. 87, 89, 91.)
- Alternative D Modified, which closes the most miles of road in suitable habitat, would be the preferred alternative for the western toad. (P. 101.)
- Alternative D Modified closes the most miles of road in suitable habitat and would provide the greatest benefits for the **goshawk**. (P. 103.)
- Alternative D Modified, which closes the most miles of road in suitable habitat, would be the best Alternative for **elk**. (P. 104.)
- Alternative E Updated would provide some security and reduced vulnerability (for **moose**), but not as much as Alternative D Modified. (P. 104.)
- Although Alternative D Modified and Alternative E Updated would benefit **mountain goats**, Alternative D Modified would improve security and reduce the risk of displacement more than Alternative E Updated. (P. 109.)
- Alternative D Modified would improve security (for **pine marten**) more than Alternative E Updated. (P. 110.)

The FEIS pretends there would be no on-the-ground difference between decommissioned and "stored" roads: "hydrologically inert by installing water bars along the full length of affected segments, removing drainage structures (culverts), and fully recontouring specific sections." The FS's management paradigm mainly provides short-term fixes when roads are not fully decommissioned.

Implementing Best Management Practices (BMPs) and other drainage improvements are short-lived. After a few short years the situation reverts back to impacts inherent with insufficient maintenance funding, resulting in chronic watershed damage.

The extreme contrast between streams in roaded areas vs. unroaded areas found on the Lolo NF (Riggers, et al. 1998) is a testament to the failures of the BMP approach.

Without the sufficient funding to maintain its road system in a timely manner, all the BMP implantation that can be mustered in the context of a project such as this will only be a short-term fix, and the road system will remain an ecological liability. The FS admits such problems in a non-NEPA context (USDA Forest Service, 2010t):

> Constructing and improving drainage structures on Forest roads is an ongoing effort to reduce road-related stream sediment delivery. Although BMPs are proven practices that reduce the effects of roads to the watershed, it is not a static condition. Maintaining BMP standards for roads requires ongoing maintenance. Ecological processes, traffic and other factors can degrade features such as ditches, culverts, and surface water deflectors. **Continual monitoring and maintenance** on open roads reduces risks of sediment delivery to important water resources. (Emphasis added.)

Also in a non-NEPA context, a forest supervisor (Lolo National Forest, 1999) frankly admits that projects are a "chance to at least correct some (BMP) departures rather than wait until the funding stars align that would allow us to correct all the departures at once."

The FEIS neglects to fully analyze and disclose all the ongoing damage where project funding cannot address the full scope of insufficient maintenance issues. The FEIS violates NEPA.

The Bog Creek Road FEIS fails to recognize that "continual monitoring and maintenance" is necessary following project completion. The FEIS fails to disclose the temporary effectiveness of all the road maintenance and upgrading, merely assuming that the proposed actions will forever mitigate the problems they now exhibit. It fails to properly analyze and disclose the impacts of its continuously failing, undermaintained road system.

The FEIS is not consistent with the Travel Management Regulations Subpart A requiring a science-based Travel Analysis Process identify the minimum road system and so would guarantee all roads would receive timely, proper maintenance after project completion in recognition there is no increase in regular road maintenance dollars foreseeable. Subpart A requires the FS to identify the minimum road system needed to manage the Forest sustainably. The FEIS does not demonstrate how it is minimizing the forestwide road system in compliance with the Travel Management Regulations and related Directives.

The main ecological and financial problem facing the IPNF, and national forests throughout the Inland Northwest and U. S. Northern Rocky Mountains, is the existing excessive network of roads. Although the main focus of the Travel Management Rule Subpart A was to be this excessive road network, the FS sidesteps the issue at every juncture—in the ongoing revision of the Forest Plan, in the design of projects, and in the systematic avoidance of conducting its duties under Subpart A, which requires the agency to minimize the ecological and economic liabilities of the excessive road network by significantly downsizing it.

The FEIS does not present the proper economic or financial analysis to allow anyone to understand how well or how deficiently all the post-project system roads will be maintained, in light of the well-demonstrated inadequacy of annual appropriations or other funding sources. Therefore, it is impossible to discern the resultant ecological damage from putting watersheds in a "press" type condition which can never recover largely because of insufficient road maintenance.

And although the FS never likes to conduct an analysis of or disclose the forest-wide ecological impacts of its road maintenance funding shortfalls, projecting from discussion in Gucinski et al. 2001 helps to start imagining the scale of the impacts.

Gucinski et al., 2001 also recognize the ongoing ecological damage of roads—regardless of the adequacy of maintenance funding:

> Undesirable consequences include adverse effects on hydrology and geomorphic features (such as debris slides and sedimentation), habitat fragmentation, predation, road kill, invasion by exotic species, dispersal of pathogens, degraded water quality and chemical contamination, degraded aquatic habitat, use conflicts, destructive human actions (for example, trash dumping, illegal hunting, fires), lost solitude, depressed local economies, loss of soil productivity, and decline in biodiversity.

Roads influence many processes that affect aquatic ecosystems and fish: human behavior (poaching, debris removal, efficiency of access for logging, mining, or grazing, illegal species introductions), sediment delivery, and flow alterations (Trombulak and Frissell 2000). (Also see: Gucinski et al. 2001; Wisdom et al., 2000; Pacific Rivers Council, 2010.) We also incorporate The Wilderness Society (2014) which discusses best available science on the ecological impacts of roads.

Roads increase the efficiency of water transport during storm or snowmelt events, elevating water yields well above natural, with damaging effects. FS hydrologist Johnson, 1995 discusses many forms of road-related and other cumulative impacts the FEIS fails to consider.

Frissell, 2014 explain:

> Roads are ecologically problematic in any environment because they affect biota, water quality, and a suite of biophysical processes through many physical, chemical, and biological pathways (Trombulak and Frissell 2000, Jones et al. 2000). The inherent contribution of forest roads to nonpoint source pollution (in particular sediment but also nutrients) to streams, coupled with the extensive occurrence of forest roads directly adjacent to streams through large portions of the range of bull trout in the coterminous US, adversely affects water quality in streams to a degree that is directly harmful to bull trout and their prey. This impairment occurs on a widespread and sustained basis; runoff from roads may be episodic and associated with annual high rainfall or snowmelt events, but once delivered to streams, sediment and associated pollutant deposited on the streambed causes sustained impairment of habitat for salmon and other sensitive aquatic and amphibian species. Current road design, management of road use and conditions, the locations of roads relative to slopes and water bodies, and the overall density of roads throughout most of the Pacific Northwest all contribute materially to this impairment. This effect is apart from, but contributes additively in effect to the point source pollution

associated with road runoff that is entrained by culverts or ditches before being discharged to natural waters.

Wisdom et al., 2000 state:

> Our analysis also indicated **that >70 percent of the 91 species are affected negatively by one or more factors associated with roads.** Moreover, maps of the abundance of source habitats in relation to classes of road density suggested that road-associated factors hypothetically may reduce the potential to support persistent populations of terrestrial carnivores in many subbasins. Management implications of our summarized road effects include the potential to mitigate a diverse set of negative factors associated with roads. **Comprehensive mitigation of road-associated factors would require a substantial reduction in the density of existing roads as well as effective control of road access in relation to management of livestock, timber, recreation, hunting, trapping, mineral development, and other human activities.**
>
> **...Efforts to restore habitats without simultaneous efforts to reduce road density and control human disturbances will curtail the effectiveness of habitat restoration, or even contribute to its failure; this is because of the large number of species that are simultaneously affected by decline in habitat as well as by road-associated factors.** (Emphases added.)

Comprehensive monitoring of the effectiveness of logging road BMPs in achieving water quality standards does not demonstrate the BMPs are protecting water quality, nor does it undermine the abundant evidence that stormwater infrastructure along logging roads continues to deposit large quantities of sediment into rivers and streams (Endicott, 2008). Even as new information becomes available about BMP effectiveness, many states do not update their logging road BMPs, and some states have retained BMPs that have been discredited for some time, such as using fords when they are known to have greater water quality impacts than other types of stream crossings. (Id.) If the measure of success is whether a nonpoint source control program has achieved compliance with state water quality standards, the state forest practices programs have failed.

BMPs are "largely procedural, describing the steps to be taken in determining how a site will be managed," but they lack "practical in-stream criteria for regulation of sedimentation from forestry activities." (Id.) The selection and implementation of BMPs are often "defined as what is practicable in view of 'technological, economic, and institutional consideration." (Id.) The ultimate effectiveness of the BMPs are therefore impacted by the individual land manager's "value system" and the perceived benefit of protecting the resource values as opposed to the costs of operations. (Id.)

Ziemer and Lisle (1993) note a lack of reliable data showing that BMPs are cumulatively effective in protecting aquatic resources from damage. Espinosa et al., 1997 noted that the mere reliance on BMPs in lieu of limiting or avoiding activities that cause aquatic damages serves to increase aquatic damage. Even activities implemented with somewhat effective BMPs still often contribute negative cumulative effects (Ziemer et al. 1991b, Rhodes et al. 1994, Espinosa et al. 1997, Beschta et al. 2004).

In analyses of case histories of resource degradation by typical land management (logging, grazing, mining, roads) several researchers have concluded that BMPs actually increase watershed and stream damage because they encourage heavy levels of resource extraction under the false premise that resources can be protected by BMPs (Stanford and Ward, 1993; Rhodes et al., 1994; Espinosa et al., 1997). Stanford and Ward (1993) termed this phenomenon the "illusion of technique."

The IPNF participated in a sham Region 1-directed Travel Analysis Process (TAP) that failed to follow the Travel Management Rule Subpart A requirements for involving the public in a science-based effort to identify the forestwide minimum road system. The FEIS does not analyze or disclose the project area road system's needed long-term financial investments, nor the associated ecological impacts due to inadequate maintenance funding.

The Washington Office memorandum dated March 29, 2012 (USDA Forest Service, 2012d) directed the following:

- A TAP must analyze all roads (maintenance levels 1 through 5);
- The Travel Analysis Report must include a map displaying roads that will inform the Minimum Road System pursuant to 36 C.F.R. § 212.5(b), and an explanation of the underlying analysis;
- The TAP and Watershed Condition Framework process should inform one another so that they can be integrated and updated with new information or where conditions change.

The December 17, 2013 Washington Office memorandum (USDA Forest Service, 2013b) clarifies that by the September 30, 2015 deadline each forest must:

- Produce a Travel Analysis Report summarizing the travel analysis;
- Produce a list of roads *likely not needed for future use*; and
- Synthesize the results in a map displaying roads that are *likely needed* and *likely not needed in the future* that conforms to the provided template.

The Subpart A analysis is intended to account for benefits and risks of each road, and especially to account for affordability. The TAP must account for the cost of maintaining roads to standard, including costs required to comply with Best Management Practices related to road maintenance.

The Travel Management Regulations at 36 CFR § 212.5 state:

> (b) Road system—(1) *Identification of road system.* For each national forest, national grassland, experimental forest, and any other units of the National Forest System (§ 212.1), the responsible official must identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands. In determining the minimum road system, the responsible official must incorporate a science-based roads analysis at the appropriate scale and, to the degree practicable, involve a broad spectrum of interested and affected citizens, other state and federal agencies, and tribal governments. The minimum system is the road system determined to be needed to meet resource and other management objectives adopted in the relevant land and resource management plan (36 CFR part 219), to meet applicable statutory and regulatory requirements, to reflect long-term funding expectations, to ensure that the identified system

minimizes adverse environmental impacts associated with road construction, reconstruction, decommissioning, and maintenance.

The FEIS does not disclose the Project Area Road Management Objectives, which were to be developed using the Travel Management Regulations.

In failing to incorporate the required science-based transportation analysis, the FEIS does not comprehensively identify the unneeded or most damaging roads. The process the FS used is not consistent with requirements to involve the public in a science-based Travel Analysis Process, create a Travel Analysis Report, and identify roads likely not needed to manage the forest, as required under the Regulations and in the Directives. The FEIS doesn't even state how the FS might or might not be implementing the forestwide minimum road system. We incorporate the documents in the Folder entitled "WildEarth Guardians-TAP" within this objection.

Scientific information from government studies conducted for the Interior Columbia Ecosystem Management Project reveals a highly negative correlation between road density and fish habitat conditions. USDA Forest Service & USDI Bureau of Land Management, 1996a state:

> High integrity [forests] contain the greatest proportion of high forest, aquatic, and hydrologic integrity of all [] are dominated by wilderness and CLIMATE areas [and] are the least altered by management. [] Low integrity [forests have] likely been altered by past management [] are extensively roaded and have little wilderness. (Pp. 108, 115 and 116).

And USDA Forest Service & USDI Bureau of Land Management (1996) state "Increasing road density is correlated with declining aquatic habitat conditions and aquatic integrity. [] An intensive review of the literature concludes that increases in sedimentation [of streams] are unavoidable even using the most cautious roading methods." (P. 105).

The FEIS does not disclose if the FS has surveyed the project area with the detail needed to determine if all non-system roads existing in the project area have been identified, so their ecological liabilities can be accounted for.

INTEGRITY OF DATA, MODELS, AND TECHNICAL ANALYSES

Our DEIS comments:

> …question the accuracy of the areal calculations. As a professional Geospatial Analyst and Wildlife Biologist, It is doubtful that calculation of the BMU area and derived core percentages can be accurate to 1/100th of a percent (55.17%), or possibly even one tenth of a percent considering polygon surface area error. This is giving a false impression of accuracy to the general public.
>
> Please disclose the surface (horizontal and vertical) error ranges of all datasets used in analysis. A useful tool for assessing accuracy is located in the data viewer extension of ArcMap (http://desktop.arcgis.com/en/arcmap/latest/extensions/data-reviewer/what-is-positionalaccuracyassessment.htm).

The FS has not undertaken the task of determine the reliability of all the data used as input for the models used in the Bog Creek FEIS analyses. Since "an instrument's data must be reliable if they are valid" (Huck, 2000) this means data input to models must accurately measure that aspect of the world it is claimed to measure, or else the data is invalid for use by that model. Huck, 2000 states:

> The basic idea of reliability is summed up by the word consistency. Researchers can and do evaluate the reliability of their instruments from different perspectives, but the basic question that cuts across these various perspectives (and techniques) is always the same: "To what extent can we say the data are consistent?" …(T)he notion of consistency is at the heart of the matter in each case.
>
> …(R)eliability is conceptually and computationally connected to the data produced by the use of a measuring instrument, not to the measuring instrument as it sits on the shelf.

Beck and Suring, 2011 "remind practitioners that if available data are poor quality or fail to adequately describe variables critical to the habitat requirements of a species, then only poor quality outputs will result. Thus, obtaining quality input data is paramount in modeling activities."

Data sources must be of high reliability. The document, "USDA-Objectivity of Statistical and Financial Information" is instructional on this topic.

Larson et al. 2011 state:

> Although the presence of sampling error in habitat attribute data gathered in the field is well known, the measurement error associated with remotely sensed data and other GIS databases may not be as widely appreciated.

During litigation of a timber sale on the Kootenai NF, the FS criticized a report provided by Plaintiffs, stating "(Its) purported 'statistical analysis' reports no confidence intervals, standard deviations or standard errors in association with its conclusions."

As Huck (2000) states, the issue of "standard deviations or standard errors" that the FS raised in the context of litigation relates to the reliability of the data, which in turn depends upon how well-trained the data-gatherers are with their measuring tools and measuring methodology. In other words, different observations of the same thing must result in numbers that are very similar to result in small "standard deviations or standard errors" and thus high reliability coefficients, which in turn provide the public and decisionmakers with an idea of how confident they can be in the conclusions drawn from the data.

The next level of scientific integrity is the notion of "validity." As Huck, (2000) explains, the degree of "content validity," or accuracy of the model or methodology is established by utilizing other experts. This, in turn, demonstrates the necessity for utilizing the peer review process. The validity of the various models utilized in the Bog Creek FEIS analyses have, by and large, not been established for how agency utilizes them. No studies are cited which establishes their content validity, and no independent expert peer review process of the models has occurred.

Even if FS data input to a model is reliable, that still leaves open the question of model validity. In other words, are the models scientifically appropriate for the uses for which the Forest Service is utilizing them? The Nez Perce-Clearwater NF's 2015 Clear Creek FEIS defines "Model" as "A theoretical projection in detail of a possible system of natural resource relationships. A simulation based on an empirical calculation to set potential or outputs of a proposed action or actions." (G-14.)

From www.thefreedictionary.com :

> Empirical – 1. a. Relying on or derived from observation **or** experiment: empirical results that supported the hypothesis. b. Verifiable or provable by means of observation or experiment: empirical laws. 2. Guided by practical experience and not theory, especially in medicine.

(Emphasis added.) So the FS acknowledges that the models are "theoretical" in nature but by calling the models "empirical" implies that they are somehow based in observation or experiment that support the hypotheses of the models. That would be required, because as Verbyla and Litaitis (1989) assert, "Any approach to ecological modelling has little merit if the predictions cannot be, or are not, assessed for their accuracy using independent data." This corresponds directly to the concept of "**validity**" as discussed by Huck, 2000: "(A) measuring instrument is valid to the extent that it measures what it purports to measure."

However, there is no evidence that the FS has performed validation of the models for the way they were used to support the fEIS analyses. There is no documentation of someone using observation or experiment to support the models' inherent hypotheses. Ziemer and Lisle, 1993 state: "For any model or evaluation procedure, independent verification is essential. First, individual modules must be tested by comparing predicted and measured values under a variety of field conditions at differing sites. Then, functioning of the entire model must be evaluated under a wide array of field conditions. Finding an adequate model verification program is rare; however, finding unverified model predictions for important management and policy decisions is common."

The validity of habitat and other modeling utilized in land management plan development and the quality of scientific research are important topics. The documents, "USDA-Objectivity of Regulatory Information" and USDA-Objectivity of Scientific Research Information are instructional on this topic.

The Kootenai NF's Elk Rice EA states, "Be aware the modeling is not an attempt to depict reality, but merely an analysis for comparison purposes." The Bog Creek FEIS doesn't explain how ANY comparisons would be meaningful, in the context of such limitations. That EA's statement is made about modeling the amount of particulate produced by fire, however the Bog Creek FEIS does no better in discussing the limitations of any modeling upon which its analyses are based.

Larson et al. 2011 state:

> Habitat models are developed to satisfy a variety of objectives. ...A basic objective of most habitat models is to predict some aspect of a wildlife population (e.g., presence, density,

> survival), so assessing predictive ability is a critical component of model validation. **This requires wildlife-use data that are independent of those from which the model was developed.** ...It is informative not only to evaluate model predictions with new observations from the original study site but also to evaluate predictions in new geographic areas. (Internal citations omitted, emphasis added).

USDA Forest Service 1994b states "It is important to realize that all models greatly simplify complex processes and that the numbers generated by these models should be interpreted in light of field observations and professional judgement." (III-77.)

A 2000 Northern Region forest plan monitoring and evaluation report (USDA Forest Service, 2000c) provides an example of the FS itself acknowledging the problems of data that is old and incomplete, leading to the limitation of models the FS typically uses for wildlife analyses:

> 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… .

In that case, the FS expert believed the data were unreliable and thus they properly questioned the validity of model use.

Another Kootenai NF project EIS (USDA Forest Service, 2007a) notes the limitations of modeling methodology the FS relies upon for wildlife analyses (by Samson):

> In 2005, the Regional Office produced a Conservation Assessment of the Northern goshawk, black-backed woodpecker, flammulated owl, and pileated woodpecker in the Northern Region (Samson 2005). This analysis also calculated the amount of habitat available for these species, but was based on forest inventory and analysis (FIA) data. FIA data is consistent across the Region and the state, but **it was not developed to address site-specific stand conditions for a project area.** In some cases, these two assessments vary widely in the amount of habitat present for a specific species. (P. 116.)

Beck and Suring, 2011 state:

> Developers of frameworks have consistently attained scientific credibility through published manuscripts describing the development or applications of models developed within their frameworks, but a major weakness for many frameworks continues to be a lack of validation. Model validation is critical so that models developed within any framework can be used with confidence. Therefore, we recommend that models be validated through independent field study or by reserving some data used in model development.

Larson et al. 2011 state:

> (T)he scale at which land management objectives are most relevant, often the landscape, is also the most relevant scale at which to evaluate model performance. Model validity, however, is currently limited by a lack of information about the spatial components of wildlife habitat (e.g., minimum patch size) and relationships between habitat quality and landscape indices (Li et al. 2000).

Beck and Suring, 2011 developed several criteria for rating modeling frameworks—that is, evaluating their validity. Three of their criteria are especially relevant to this discussion:

Habitat–population linkage	Does the modeling framework incorporate vital rates (e.g., production, survival), other demographic parameters (e.g., density, population size); surrogates (e.g., quality of home ranges, habitat conditions in critical reproductive habitats, presence/absence) of population demographic parameters; or does the modeling framework model habitat conditions without specific consideration of wildlife population parameters?	0 = does not rely on population demographics or surrogates of modeled species 1 = relies on surrogates for population demographic parameters or framework; can utilize population demographics if desired, but is not dependent on them 2 = specifically relies on population demographics of modeled species
Scientific credibility	Has the framework gained credibility through publication of results, application of results, or other mechanisms to suggest acceptance by an array of professionals?	0 = limited credibility 1 = at least 1 publication of results using this framework, or other application of the modeling framework
Output definition	Is the output well defined and will it translate to something that can be measured?	1 = difficult 2 = moderate 3 = easy

A scientist from the research branch of the Forest Service, Ruggiero, 2007 states, "Independence and objectivity are key ingredients of scientific credibility, especially in research organizations that are part of a natural resource management agency like the FS. Credibility, in turn, is essential to the utility of scientific information in socio-political processes."

Ruggiero, 2007 points out that the Forest Service's scientific research branch **is distinct** from its management branch:

> The Forest Service is comprised of three major branches: the National Forest System (managers and policy makers for National Forests and National Grasslands), Research and Development (scientists chartered to address issues in natural resource management for numerous information users, including the public), and State and Private Forestry (responsible for providing assistance to private and state landowners). This article is directed toward the first two branches.
>
> The relationship between the National Forest System and the Forest Service Research and Development (Research) branches is somewhat hampered by confusion over the respective roles of scientists (researchers) and managers (policy makers and those that implement management policy). For example, some managers believe that scientists can enhance a given policy position or management action by advocating for it. This neglects the importance of scientific credibility and the difference between advocating for one's research versus advocating for or against a given policy. Similarly, some scientists believe the best way to increase funding for research is to support management policies or actions. But, as a very astute forest supervisor once told me, "Everyone has a hired gun…they are not credible…and we need you guys [Forest Service Research] to be credible."

The Forest Service Manual (FSM) provides direction on how to implement statutes and related regulations. FSM 4000 – Research and Development Chapter 4030 states: "To achieve its Research and Development (R&D) program objectives, the Forest Service shall ... maintain the R&D function as a **separate entity** … with clear accountability through a system that **maintains scientific freedom…**" (Emphasis added). This is difficult in today's political climate ("Help Wanted: Biologists to Save the West From Trump").

Ruggiero, 2007 discusses the risk to scientific integrity if that separation is not maintained, that is, if politics overly influences the use of scientific research:

> This separation also serves to keep conducting science separate from formulating policy and the political ramifications of that process. The wisdom here is that science cannot be credible if it is politicized. Science should not be influenced by managers, and scientists should not establish policy. This logic keeps scientific research "independent" while ensuring that policy makers are free to consider factors other than scientific understandings. Thus, science simply informs decision making by land managers. As the new forest planning regulations clearly state, those responsible for land management decisions must consider the best available science and document how this science was applied (Federal Register 70(3), January 5, 2005; Section 219.11(4); p. 1059).

Sullivan et al. 2006 state that "Peer-reviewed literature ...is considered the most reliable mainly because it has undergone peer review." They explain:

> *Peer review*.—A basic precept of science is that it must be verifiable, and this is what separates science from other methods of understanding and interpreting nature. The most direct method of verification is to redo the study or experiment and get the same results and interpretations, thus validating the findings. Direct verification is not always possible for nonexperimental studies and is often quite expensive and time-consuming. Instead, scientists review the study as a community to assess its validity. This latter approach is the process of peer review, and it is necessary for evaluating and endorsing the products of science. **The rigor of the peer review is one way to assess the degree to which a scientific study is adequate for informing management decisions.**

Sullivan et al. 2006 contrast peer-reviewed literature with gray literature (such as Samson, 2005 and Samson, 2006,) which:

> ...does not typically receive an independent peer review but which may be reviewed in-house, that is, within the author's own institution. ...Gray literature, such as some agency or academic technical reports, ...commonly contains reports of survey, experimental or long-term historical data along with changes in protocols, meta-data, and the progress and findings of standard monitoring procedures.

Along with Ruggiero, 2007, Sullivan et al., 2006 discuss the dangers of the "Politicization of Science":

> Many nonscientists and scientists believe that science is being increasingly politicized. Articles in newspapers (e.g., Broad and Glanz 2003) and professional newsletters document frequent instances in which the process and products of science are interfered with for political or ideological reasons. In these cases, the soundness of science, as judged by those interfering, turns on the extent to which the evidence supports a particular policy

> stance or goal. ...Politicization is especially problematic for scientists supervised by administrators who may not feel the need to follow the same rules of scientific rigor and transparency that are required of their scientists.

Agency expert opinion and gray literature relied upon in the Bog Creek FEIS is not necessarily the same as “the best scientific information” available. Sullivan et al., 2006 discuss the concept of best available science in the context of politically influenced management:

> Often, scientific and political communities differ in their definition of best available science and opposing factions misrepresent the concept to support particular ideological positions. Ideally, each policy decision would include all the relevant facts and all parties would be fully aware of the consequences of a decision. But economic, social, and scientific limitations often force decisions to be based on limited scientific information, leaving policymaking open to uncertainty.
>
> The American Fisheries Society and the Estuarine Research Federation established this committee to consider what determines the best available science and how it might be used to formulate natural resource policies and shape management actions. The report examines how scientists and nonscientists perceive science, what factors affect the quality and use of science, and how changing technology influences the availability of science. Because the issues surrounding the definition of best available science surface when managers and policymakers interpret and use science, this report also will consider the interface between science and policy and explore what scientists, policymakers, and managers should consider when implementing science through decision making.
>
> As part of their implicit contract with society, environmental scientists are obliged to communicate their knowledge widely to facilitate informed decision making (Lubchenco 1998). For nonscientists to use that knowledge effectively and fairly, they must also understand the multifaceted scientific process that produces it.
>
> Science is a dynamic process that adapts to the evolving philosophies of its practitioners and to the shifting demands of the society it serves. Unfortunately, these dynamics are often controversial for both the scientific community and the public. To see how such controversies affect science, note that over the last decade nonscientists have exerted increasing influence on how science is conducted and how it is applied to environmental policy. Many observers find this trend alarming, as evidenced by several expositions titled “science under siege” (e.g., Wilkinson 1998; Trachtman and Perrucci 2000).
>
> To achieve high-quality science, scientists conduct their studies using what is known as the scientific process, which typically includes the following elements:
>
> 4. A clear statement of objectives;
> 5. A conceptual model, which is a framework for characterizing systems, stating assumptions, making predictions, and testing hypotheses;
> 6. A good experimental design and a standardized method for collecting data;
> 7. Statistical rigor and sound logic for analysis and interpretation;
> 8. Clear documentation of methods, results, and conclusions; and
> 9. Peer review.

The Committee of Scientists (1999) state:

> To ensure the development of scientifically credible conservation strategies, the Committee recommends a process that includes (1) scientific involvement in the selection of focal species, in the development of measures of species viability and ecological integrity, and in the definition of key elements of conservation strategies; (2) independent scientific review of proposed conservation strategies before plans are published; (3) scientific involvement in designing monitoring protocols and adaptive management; and (4) a national scientific committee to advise the Chief of the Forest Service on scientific issues in assessment and planning.

NEPA states that "Accurate scientific analysis... (is) essential to implementing NEPA." And the NEPA regulations at 40 CFR § 1502.24 ("Methodology and scientific accuracy") state:

> Agencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements. They shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement. An agency may place discussion of methodology in an appendix.

The Bog Creek FEIS does not conform to NEPA because the FS has not insured the reliability of data relied upon by the models, and the FS has not validated the models for the way the Bog Creek FEIS utilizes them. The Ninth Circuit Court of Appeals has declared that the FS must disclose the limitations of its models in order to comply with NEPA. However, the FEIS has failed to disclose these limitations.

The FS has not undertaken the process of a Science Consistency Review for the Forest Plan (Guldin et al., 2003, 2003b.) Guldin et al., 2003 state:

> ...outlines a process called the science consistency review, which can be used to evaluate the use of scientific information in land management decisions. Developed with specific reference to land management decisions in the U.S. Department of Agriculture Forest Service, the process involves assembling a team of reviewers under a review administrator to constructively criticize draft analysis and decision documents. Reviews are then forwarded to the responsible official, whose team of technical experts may revise the draft documents in response to reviewer concerns. The process is designed to proceed iteratively until reviewers are satisfied that key elements are **consistent with available scientific information.**

Similarly, independent scientific review team Hayes, et al., 2011 conducted a "Science Review of the United States Forest Service Draft Environmental Impact Statement for National Forest System Land Management." The reviewers considered the following three questions:

> 1. Does the information accurately reflect the current peer-reviewed scientific literature and understanding? If not, what is missing or incorrectly presented?
> 2. Based on the current peer-reviewed scientific literature and understanding: does the documentation on environmental effects adequately respond to levels of uncertainty and limitations? If not, please describe what is missing or incorrect, and how the documentation can be improved.

> 3. What, if any, differing viewpoints should be included that are not mentioned in the DEIS regarding the effects of alternatives on climate change, restoration and resilience, watershed and water protection, diversity of plants and animal communities, sustainable use of public lands to support vibrant communities, forest threats, and monitoring.

Nie and Schembra, 2014 recommend that the agency solicit independent feedback on it use of science:

> The 1997 (Tongass National Forest) Plan was written using an innovative process whereby scientists within the Pacific Northwest Research Station (an independent research arm of the USFS) were assembled into risk assessment panels "to assist decisionmakers in interpreting and understanding the available technical information and to predict levels of risk for wildlife and fish, old growth ecosystems, and local socioeconomic conditions resulting from different management approaches."172 In this case, "science consistency checks" were used as a type of audit to ensure that the policy and management branch writing the Tongass Plan could not misrepresent or selectively use information in ways not supported by the best available science. The process, at the very least, facilitated the consideration of best available science when writing the Tongass Plan, even if parts of the Tongass Plan were based on factors going beyond science.

Also, in response to an appeal of its 1997 forest plan revision, the Black Hills National Forest was directed by the FS Washington Office to re-evaluate their Revised Forest Plan for its ability to meet diversity and viability requirements set in existing laws, and correct any deficiencies. FS biologists "interviewed accredited scientific experts to obtain information on Region 2 sensitive species for use during the Phase I Amendment" in order to remedy deficiencies in their revised forest plan. (USDA Forest Service 2000b.) Similarly, the Boise National Forest consulted with an independent scientist to review portions of their "Wildlife Conservation Strategy" proposed to amend their revised forest plan. And a Science Consistency Review was undertaken by the FS in the process of designing the Sierra Nevada Forest Plan Amendments.

Schultz (2010) provides a critique of FS wildlife analyses, and recommends peer review of large-scale assessments and project level management guidelines, and more robust, scientifically sound monitoring, and measurable objectives and thresholds for maintaining viable populations of all native and desirable non-native wildlife species.

Given the highly controversial nature of the Forest Plan, it is inexcusable and unreasonable that the FS has not undertaken a Science Consistency Review process.

Darimont, et al., 2018 advocate for more transparency in the context of government conclusions about wildlife populations, stating:

> Increased scrutiny could pressure governments to present wildlife data and policies crafted by incorporating key components of science: transparent methods, reliable estimates (and their associated uncertainties), and intelligible decisions emerging from both of them. Minimally, **if it is accepted that governments may always draw on politics, new oversight by scientists would allow clearer demarcation between where the population data begin and end in policy formation** (Creel et al. 2016*b*; Mitchell et al. 2016).

> Undeniably, social dimensions of management (i.e., impacts on livelihoods and human–wildlife conflict) will remain important. (Emphasis added.)

In a news release accompanying the release of that paper, the lead author states:

> In a post-truth world, **qualified scientists at arm's length now have the opportunity and responsibility to scrutinize government wildlife policies and the data underlying them.** Such scrutiny could support transparent, adaptive, and ultimately trustworthy policy that could be generated and defended by governments. (Emphasis added.)

The Bog Creek Road FEIS violates NEPA because the FS has not insured the professional and scientific integrity of its analyses.

NEPA regulations at 40 CFR § 1502.24 state, under **Methodology and scientific accuracy**: "Agencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements." The Bog Creek FEIS violates NEPA in terms of methodology, scientific accuracy, and scientific integrity.

RELIEF REQUESTED

Select the No Action alternative. Alternatively, prepare an EIS that addresses the legal, scientific and analytical deficiencies in above discussions, and responds affirmatively to our previous comments. Provide the remedy requested in AWR's Objection to the Forest Plan and appeal of the Access Amendments.

Objection respectfully submitted:

/s/

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