Comments on the DEIS for the Flathead National Forest Plan Revision and Forest Plan Amendment

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Introduction

These official comments on the Draft Environmental Impact Statement for the Flathead National Forest Plan Revision and the Four Forest Plan Amendments for Grizzly Bear Habitat Management are respectfully submitted on behalf of the Flathead-Lolo-Bitterroot Citizen Task Force, a special project of the Friends of the Rattlesnake, Wilderness Watch, and the WildWest Institute. The Statements of Purpose for our respective organizations are attached as Appendix A. The enclosed disk (Appendix B) contains electronic copies of the citations we reference in our comments. We have also filed a copy of our comments electronically.

We represent residents of western Montana and throughout the nation who have used and enjoyed the Flathead National Forest and the Northern Continental Divide Ecosystem for decades. We have worked there, conducted scientific research, hiked, backpacked, fished, hunted, picked berries, taken photographs, enjoyed the forests, scenery and the watersheds and taken comfort that the Flathead National Forest contains habitat for a host of threatened and endangered species and is a great national resource of rapidly vanishing wildlands, roadless areas and designated Wilderness.

Thus, we have a vested interest in protecting the natural features and conditions of the area, its native fish and wildlife and their habitat, and maintenance of its natural and primitive attributes for our continued use and enjoyment.

Executive Summary

We incorporate by reference the **Citizen reVision** (Friends of the Wild Swan & Swan View Coalition 2014).

We generally support Alternative C, with several important additions. These include:

•Apply Forest Plan Amendment 19 to all units of the Flathead National Forest. Amendment 19 continues to be a legally binding commitment and its schedule of road closures, decommissioning and reclamation must be completed.

•Continue managing riparian buffers as per the direction of the Inland Native Fish Conservation Strategy (INFISH), including maintaining the Resource Management Objectives (RMOs) within the Riparian Habitat Conservation Areas (RHCAs). Maintain numeric standards for the Primary Constituent Elements of bull trout and cutthroat trout habitat. The buffers should be extended to 300' for perennial streams and wetlands, and 100' for intermittent streams. The standard for project analysis should continue to be the comprehensive watershed effects analysis. In addition to no roadbuilding within the 300'buffer, within 200' of perennial streams and wetlands there should be no vegetative management or controlled burning.

•In accordance with Forest Service regional policy, all areas recommended for Wilderness and Wild & Scenic River designations shall be managed to prevent non-conforming uses, including prohibiting motorized and mechanized vehicles.

•The Salish Mountains, Tally Lake Ranger District should not be managed as a resource extraction sacrifice zone. The management direction should be primarily Special Area, Yellow (Grizzly Bear Demographic Linkage Area) with some General Forest Low (light Brown). Emphasis should be on reducing total road and motorized trail density.

•The map of Wildland-Urban Interface (Map B-18, Appendix B) should be discarded. It is a total misrepresentation of the concept and fails to portray the best available science, which is based upon a much smaller and realistic Structure Protection Zone.

Requirements to Use the Best Available Science

The 9/21/16 *Missoulian* quotes Forest Service Chief Tom Tidwell regarding working with the public: "**The biggest challenge has been moving away from a belief that the agency's scientists and foresters already had all the answers**." The Flathead National Forest now has a legal obligation to recognize this bias and fully consider the best available science that is not always from the agency's own scientists.

The 2012 Planning Rule at 36 CFR § 219.3 states:

> Role of science in planning. The responsible official shall use the best available scientific information to inform the planning process required by this subpart. In doing so, the responsible official shall determine what information is the most accurate, reliable, and relevant to the issues being considered. The responsible official shall document how the best available scientific information was used to inform the assessment, the plan decision, and the monitoring program as required in §§ 219.6(a)(3) and 219.14(a)(4). Such documentation must: **Identify what information was determined to be the best available scientific information**, **explain the basis for that determination**, and **explain how the information was applied to the issues considered**. (Emphasis added.)

The 2012 Rule also states:

> **§ 219.6 Assessment.**
> (b) *Content of the assessment for plan development or revision.*
> In the assessment for plan development or revision, the responsible official shall identify and evaluate existing information relevant to the plan area for the following:
> (1) Terrestrial ecosystems, aquatic ecosystems, and watersheds;
> (2) Air, soil, and water resources and quality;
> (3) System drivers, including dominant **ecological processes, disturbance regimes**, and stressors, such as natural succession, wildland fire, invasive species, and climate change; and the ability of terrestrial and aquatic ecosystems on the plan area to adapt to change;
> (4) Baseline assessment of carbon stocks;
> (5) Threatened, endangered, proposed and candidate species, and potential **species of conservation concern** present in the plan area;
>
> (7) Benefits people obtain from the NFS planning area (ecosystem services);

"Species of conservation concern":

> **§ 219.7 New plan development or plan revision.**
> The regional forester shall **identify the species of conservation concern** for the plan area in coordination with the responsible official.
>
> **§ 219.9 Diversity of plant and animal communities.**
> (a)(1) The responsible official shall determine whether or not the plan components required by paragraph (a) of this section provide the ecological conditions necessary to: contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, **and**

maintain a viable population of each species of conservation concern within the plan area.

(c) ***Species of conservation concern.***
For purposes of this subpart, a species of conservation concern is a species, other than federally recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the regional forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area.

Ecological Sustainability and consistency with the 2012 Rule
§ 219.8 Sustainability. The plan **must provide for** social, economic, and **ecological sustainability** within Forest Service authority and consistent with the inherent capability of the plan area, as follows: (a) *Ecological sustainability.*
(1) ***Ecosystem Integrity***. The plan must include plan components, including standards or guidelines, to maintain or restore the ecological integrity of terrestrial and aquatic ecosystems and watersheds in the plan area**, including plan components to maintain or restore structure, function, composition, and connectivity,** taking into account:
(i) **Interdependence of terrestrial and aquatic ecosystems** in the plan area.
(ii) Contributions of the plan area to ecological conditions within the broader landscape influenced by the plan area.
(iii) Conditions in the broader landscape that may influence the sustainability of resources and ecosystems within the plan area.
(iv) **System drivers, including dominant ecological processes, disturbance regimes, and stressors**, such as natural succession, wildland fire, invasive species, and climate change; and the ability of terrestrial and aquatic ecosystems on the plan area to adapt to change.

The Flathead National Forest must explicitly describe the continuity between the existing and revised plan.

Grizzly Bears

The Flathead National Forest must remove all references in Volumes I, II and III that the grizzly bear in the NCDE is fully recovered. That is neither a biological nor legal fact, and is contravened by the best available science.

Bader (2016) finds that the most recent population estimates for the NCDE (Costello, et al. 2016) are almost certainly too high and crucial aspects affecting the grizzly bear

have not been assessed. Costello, et al. (2016) show the highest concentration of grizzly bear mortalities (34%) in the NCDE from 2004-2014 was in the Swan Mountains and Swan Valley areas on the Flathead National Forest. Fully 1/3 of all NCDE mortalities occurred in an area just 16.8% of the 42,600km^2 Demographic Monitoring Area. This death zone is largely managed by the Flathead National Forest.

This is an ongoing, illegal management situation caused by the Forest Service's lack of adequate security habitat for grizzly bears. This area comprises some of the most productive habitat in the entire NCDE (Bader 2000c). The Swan River watershed is considered the most water-rich watershed in Montana. It has > 4,000 lakes, ponds and wetlands which equal 16% of the total area and has ≈ 2,080 km of rivers and streams (Montana DNRC 2010; Swan Ecosystem Center 2014). As such, it should support very high densities of grizzly bears, on a par with those found by Kendall, et al. (2008) of 30/1000km^2.

The best available science supports the restoration components of the Citizen reVision in the Hungry Horse/South Fork, Middle Fork, Swan Valley and other areas on the Flathead National Forest.

The Flathead Plan Revision Cannot be Based Upon a Draft Document

Volume 3 (the four forests amendments) is predicated upon a **DRAFT** Conservation Strategy, which in turn is based upon preliminary and incomplete information.

The Draft Conservation Strategy (DCS) for the NCDE (USFWS 2013) is a *draft* document that has not undergone scientific peer review or detailed public analysis. It does not represent the best available science nor is it based upon the best available science.

The DCS identifies a four-tier strategy consisting of the Primary Conservation Area (the FWS recovery zone) plus Zones 1, 2 and 3, stating: "Habitat and population protections would vary by management objective in these Zones with more protections in areas identified as Demographic Connectivity Areas."

The DCS arbitrarily locks into place conditions as of 2011, and concludes those levels of open road densities, logging, motorized and non-motorized use are compatible with population growth in Zone 1. This is an arbitrary and capricious claim on numerous counts. The ecosystem has changed since 2011 and may well change again due to the effects and impacts of climate change and the potential for sustained droughts. Both human population and visitation has grown since 2011 and is projected to continue significant growth. The DCS itself states that hunting may be an effective

management tool. There was no hunting season in 2011.

By concluding 2011 levels are compatible with further population growth, the DCS provides an opportunity for land management agencies to walk away from previous legal commitments and effectively short-circuits requirements for monitoring and adaptive management. The DCS explicitly states: "The grizzly population has recovered to the point where managers can afford to be less conservative than in the past." Moreover, the DCS arbitrarily states that as long as the NCDE grizzly population does not decline below 800, land management strategies will be considered to be adequate for sustaining the grizzly population. This figure is approximately 160-200 bears less than the current estimate they cite from Costello, et al. (2016).

The Flathead National Forest extensively cuts and pastes from the DCS for the DEIS for Forest Plan Revision. Relying on the DCS' draft and erroneous conclusions, the FNF proposes to abandon its legal commitment to Forest Plan Amendment 19, which established a management regime for open road and trail densities and defined core habitat to protect grizzly bear habitat security. By dropping Amendment 19, the FNF would be able to walk away from their legal commitment to reclaim approximately 500 additional miles of roads in grizzly bear habitat, thus leaving the Amendment 19 road reduction program only half complete.

The DCS also arbitrarily redefines "core habitat." The current definition of core is habitat area that is at least 0.3 miles from an open road, gated trailhead, motorized trail route and high-intensity use non-motorized trail. The DCS, without scientific merit, drops all high-intensity use non-motorized trails from having any impact on grizzly bear security and make the false claim that there has been no scientific research on the subject.

To name just two, Gunther (1993) found when the Pelican Valley in Yellowstone National Park was open to non-motorized use by the public, grizzly bear use of areas > 500m from tree cover was significantly reduced. Schleyer (1983:55) described the flight response of grizzly bears to small foot parties: "There were seven observations where a bear was known to immediately flee from the area because of scenting the observers. These bears traveled several to many kilometers before stopping for any length of time."

The unscientific redefinition of core allows land managers to artificially inflate the total acres devoted to core habitat, making additional room for adverse landscape modifications of grizzly bear habitat.

The DCS at page 22 claims there is no relationship between non-motorized trails and grizzly bear mortality. However, it is plain to see that mortalities in the NCDE have

been clustered around major access trails into the Wilderness all around the NCDE. These include access at Holland Lake, the South Fork/Hungry Horse, the North Fork of the Blackfoot, Benchmark and Birch Creek.

The DCS states that land management within the Demographic Linkage Areas within Zone 1 will focus on creating conditions conducive to occupancy by female/cub groups. However, by accepting 2011 conditions as conducive to population growth in Zone 1 allows the FNF to propose high-intensity general forest management throughout the Salish Mountains Connectivity Area, with an extensive road network and high motorized use levels. That is not compatible with occupancy by female/cub groups. The Salish Connectivity Zone also improperly includes extensive open agricultural flatlands in the Tobacco Valley and excludes areas on the south end of the Tally Lake Ranger District.

There are attempts at every level to implement new rules and management based on documents and process that have not been completed. The DCS says it is based upon the *Draft* Habitat-Based Recovery Standards, which has also not been completed and has not yet come up with actual habitat standards. Following the chain, the FNF *Draft* EIS is based upon the *Draft* Conservation Strategy.

Costello, et al. (2016) state their estimates for sustainable mortality are not appropriate for application without further analysis. Thus, the entire chain of documentation consists of incomplete, draft information subject to further analysis. It does not represent the best available science nor a legal basis for broad changes in land management.

Core Areas, Type I and II Habitats

The best available science shows that large roadless, wilderness habitats (Type I) are a source habitat for grizzly bears and the roaded matrix with small, dispersed roadless areas (Type II) are a sink habitat (Bader 2000a; 2000c).

Type I habitats are large blocks of roadless, designated wilderness and national parks where the core is occupied by numerous females and males with overlapping home ranges. These habitats are scaled to the size of several dozens of females and males with overlapping home ranges. The edge of Type I habitats are areas with increased mortality risk for grizzly bears.

Type II habitats are areas with small, dispersed secure areas that may be occupied from time to time by grizzly bears, but with very high mortality risk and rates. The secure areas are scaled to the size of individual home ranges with minimal home range overlap.

Bader (2000b) noted most grizzly bear studies have been focused within Type I habitats with high productivity, leading to sampling bias. Those that have overlapped Type I and II include Mace & Waller (1998) who documented a negative 2.3 % population growth rate.

To address grizzly bear occupancy of Type II habitats, Mattson (1993) recommended open road densities be limited to .42km/km2 to protect female/cub groups in the Yellowstone ecosystem. Craighead, et al. (1995) recommended maximum allowable road density of .40km/km2 for national forests containing grizzly bear habitat. Coincidentally, using a different methodology based on data from Mace & Waller (1998) and their South Fork Grizzly Bear Study on the Flathead National Forest, Metzgar (1998) recommended total road density approximately between the Mattson and Craighead, et al. values.

Metzgar (1998) recommended open and total road density based upon what 90% of the South Fork study females were observed to tolerate over the course of the study.

For any management unit, at least 94.6% must have 0km/km2 of open roads/motorized routes. No more than 3.6% with 0-1km/km2 open roads and no more than 1.7% with > 1km/km2 open roads.

For total road density, at least 86.7% must have 0km/km2 roads, no more than 8.3% with 0-1km/km2 roads and no more than 3.1% with > 1km/km2 roads.

Moreover, secure core areas should not shift over time. Young females adopt home ranges within or significantly overlapping the maternal home range. Thus, the use of secure areas is a learned behavior passed through the population. Shifting of core disrupts this behavior and needlessly exposes female/cub groups and young independent feamles to excessive mortality risk.

Current Management Does Not Protect Male Grizzly Bears

Habitat management has traditionally focused upon adult female grizzly bears for demographic reasons. Harris & Metzgar (1990) found male grizzly bears have value relative to population growth while Shaffer & Sampson (1985) reported 58% of their simulated populations went extinct due to loss of adult males. Males have significantly larger home ranges and dispersal distances (Bader 2000c) and may be the primary source of gene flow (Craighead & Vyse 1994). Adult males are also typically at the top of grizzly bear social hierarchies (Craighead, et al. 1995). Therefore the needs of male grizzlies must be considered when attempting to preserve a behaviorally-structured, genetically-diverse population.

However, male grizzlies, with their much larger home ranges, are not being protected on the Flathead National Forest. For example, the further from the PCA, the less likelihood that small-scale security blocks will support male grizzlies. Costello, et al. (2016) show this through the mortality data. In 2014, 44% of all NCDE mortalities occurred outside the PCA. A very high percentage of these mortalities were young males.

Type II Habitats Need Amendment 19 Protections

Failure to increase habitat security in Type II areas will prevent the achievement of key goals in the Draft Conservation Strategy. These include the potential for continual occupancy by both female and male grizzly bears and population growth in Zone 1, as well as demographic connectivity in the Salish Mountains and Nine Mile linkages.

The Flathead National Forest has an affirmative duty to provide adequate habitat and security for grizzly bears. It may not rely on draft strategies which are incomplete and have not passed legal muster.

Bull Trout and Watersheds

The best available scientific information on bull trout supports the following specific, numeric and measurable standards for protection of the Primary Constituent Elements of bull trout habitat. Protecting these PCEs in all watersheds will provide benefits for westslope cutthroat trout and other native aquatic species.

Clean- The bull trout is virtually synonymous with water quality. Bull trout require very clean water and favor streams with upwelling groundwater for spawning (Fraley & Shepard 1989; Baxter & Hauer 2000). Of the many threatened and endangered fish species, bull trout are the most sensitive to changes in water quality, particularly from fine sediments generated by logging and grazing activities. Fine sediments can smother spawning beds and degrade other habitat components. A key determinant is the level of fine sediment ≤ 6.35 mm (Weaver & Fraley 1991) and protecting upwelling groundwater. Protection of critical habitat includes standards to maintain and improve water quality and control lethal sediments.

Cold- Bull trout also require colder water than other native fish. Rieman & McIntyre (1993) reported that researchers recognize temperature more consistently than any other factor influencing bull trout distribution (see also, Pratt 1992). Habitat protection efforts must seek to maintain or reacquire natural cold water conditions.

Complex- Critical habitat for bull trout isn't just a set of places, but rather a complex arrangement of environmental conditions. Noting that "watersheds must have specific physical characteristics to provide habitat requirements for bull trout to successfully spawn and rear," in its 1998 listing rule the Service listed the habitat components: "water temperature, cover, channel form and stability, valley form, spawning and rearing substrates, and migratory corridors." Implicit in this list of habitat requirements is the understanding that habitat critical to bull trout viability consists of a specific set of physical conditions in addition to particular places. For example, the Service explained that "[m]aintaining bull trout habitat requires stream channel and flow stability." And further explained that "[a]ll life history stages of bull trout are associated with complex forms of cover, including large woody debris, undercut banks, boulders and pools."

Bull trout not only need clean, cold water, they need places to rest, hide, feed and travel. Intact forests, which provide bank stability, shade and woody debris for formation and maintenance of pool habitat, are essential. Wherever possible, habitat protection should extend to the entire hydrologic watershed. Frissell (1999) reported complex interactions between near-surface groundwater and surface waters in bull trout streams, suggesting a more comprehensive approach to watershed protection. Baxter and Hauer (2000) reported that geomorphology and hyporheic groundwater exchange have a strong influence on bull trout redd locations.

Connected- The sciences of conservation biology and conservation genetics show that bull trout have naturally occurred throughout the Northern Rockies and Pacific Northwest in a system of connected watersheds comprising migratory meta-populations of bull trout (Rieman & McIntyre 1993). Blockages to historic migration routes, both physical and thermal, must be addressed to provide access to spawning streams and protect the genetic integrity of the bull trout. Historically occupied, but currently unoccupied habitat must be protected and reoccupied to reconnect bull trout populations throughout their range.

In addition to these standards, roadless and low road density watersheds deserve special protection measures. Numerous scientific studies and reviews have consistently reported that bull trout strong populations, presence and biomass are inversely related to road densities (Huntington 1995; Quigley, et al. 1996; Rieman, et al. 1997). Bader (2000) found that 78% of bull trout "strong populations" were in roadless areas with most of the remainder directly downstream from roadless areas. Quigley, et al. (1996) reported that roadless and wilderness areas can provide "strong anchors" for salmonid recovery. In recognition of this strong body of scientific evidence, the U.S. Fish & Wildlife Service (1998) recommended that remaining roadless areas within bull trout range be maintained in roadless condition. Comprehensive protection and restoration of bull trout and native fish habitat must be

done throughout the core watersheds that support native fish.

• Continue to implement the Riparian Management Recommendations, Standards and Guidelines, and Riparian Habitat Conservation Areas that are in the Inland Native Fish Strategy and the PACFISH/INFISH Biological Opinion with the following additions/changes:

• Fine sediments < 6.4 mm in diameter must be limited to less than 20% in spawning habitat (Espinosa 1996) and standards must be developed to maintain groundwater.

• All streams should average ≥ 90% bank stability and that cobble embeddedness in summer rearing habitat should be < 30% and < 25% in winter rearing habitats (Espinosa1996). Additional indices include channel morphology including large woody debris, pool frequency, volume and residual pool volumes.

• Stream temperatures in current and historic spawning, rearing and migratory corridor habitats should not exceed 6-8 C for spawning, with the optimum for incubation from 2-4 C (McPhail & Murray 1979); 10-12 C for rearing habitat, with 7-8 C being optimal (Goetz 1989); migratory stream corridors should be 12 C or less.

• Establish a total and open road density standard that protects and restores native fish habitat by reducing sediment, restoring hydrologic upwelling, and eliminating barriers.

For adequate protection of core and nodal bull trout habitats, the Montana Bull Trout Scientific Group (1998 at page 58) identified two approaches:

(1) the 100 year floodplain as described by FEMAT (1993) plus a zone at least 150 feet from either side of the outer edge of the floodplain;
(2) a zone comprising the hydrologic boundary of the watershed.

They concluded that an additional 150 feet on either side of the 100 year floodplain is required for the following reasons, also at page 58:

"(1) it encompasses one site-potential tree height at most locations; (2) it provides sufficient width to filter most sediment from non-channeled surface runoff from most slope classes; (3) it provides some microclimate and shallow groundwater thermal buffering to protect aquatic habitats inside the channel and channel migration zone; and (4) it provides an appropriate margin error for unanticipated channel movement, hillslope, and soil stability, blowdown, wildfire, operator error, tree disease, and certain other events that may be difficult or impossible to foresee on a site-specific basis."

All the National Forests within the Columbia River Basin were amended by either PACFISH (salmon and steelhead bearing) or INFISH (Inland Native Fish Strategy). INFISH contains standards for protection of riparian zones, or Riparian Habitat Conservation Areas (RHCAs). These generally extend to 300' on either side of a permanent inhabited stream. While these INFISH standards provided additional protection for bull trout, they were found not sufficient as per the findings of federal Judge Jones. Thus, the U.S. Fish & Wildlife Service was required to designate critical habitat for bull trout.

Critical habitat requires additional protections beyond those contained in INFISH. For example, upland influences must specifically be considered. Thus, the area of protection around critical habitat is a much more elastic concept than INFISH, which relies on simple linear distance measurements.

Even if bull trout critical habitat was removed and they were to be de-listed, the Forest Service would still be required to protect and monitor bull trout as a "species of special concern."

While critical habitat and INFISH don't prohibit projects per se, they do not allow any further degradation to the current habitat conditions including the numerous Primary Constituent Elements.

The Forest Service has an affirmative obligation to display the potential impacts climate change may pose to bull trout distribution and survival. Thermal barriers are a known obstruction to bull trout movements and have the capability to fragment and isolate populations, limiting or eliminating the migratory form of bull trout and increasing the threats from genetic isolation and the ability to re-found after extreme landscape events. Bull trout become fragmented into low number populations lacking Minimum Viable Population size (Rieman and Allendorf 2001). Rising watershed air temperatures were cited by Rieman, et al. (2007) as a prominent threat to bull trout survival.

Forest Management

Wildland-Urban Interface Concept is Abused

The map of the Wildland Urban Interface (WUI) shown in Appendix B, map B-18 provides an inflated definition of WUI far beyond reasonable. The best available science is based on the Structure Protection Zone (SPZ), the area within 100-200 feet from structures (Rheinhardt, et al. 2008).

The DEIS stretches the definition of Wildland-Urban Interface well beyond the language or intent of WUI (Healthy Forests Restoration Act). The primary definition is an area within 0.5 miles of residential areas within the intermix zone. If a National Forest or Ranger District is part of a community-based, multi-entity Fire Management Plan, an area within 1.5 miles of a community and primary egress route may be considered to be part of the WUI.

Common sense and reality dictate that occasional isolated residences in a very low-density setting (U.S. Census Bureau) cannot each be buffered to a 1.5mile radius. Otherwise, much of the western U.S. would be classified as WUI, which is an unreasonable stretch of the primary definitions and intent. A collaborative project on National Forest land relied on a much more realistic WUI zone of 0.34 miles (Lolo National Forest 2004).

Desired Conditions

The DEIS and supporting documents are largely predicated on the desirability of mimicking pre-settlement stand conditions. A stated goal is favoring retention and recruitment of large, widely spaced ponderosa pine and western larch and exclusion of Douglas fir, generating stands that are purported to be facsimiles of pre-settlement conditions. This vision is hypothetical versus broad-scale on-the-ground scientific findings. Two large-scale studies found a different story. Odion, et al. (2014) found that "…the traditional reference conditions of low-severity fire regimes is inaccurate for most forests of western North America," and "current attempts to 'restore' forests to open, low-severity fire conditions may not align with historical reference conditions in most ponderosa pine and mixed-conifer forests of western North America."

Williams and Baker (2012) found that historically, dry forests were structurally variable. Only 3, 12, 40 and 62% of their four landscapes fit a low-severity fire model and 38-97% had evidence of higher-severity fire. They found some large wildfires such as Rodeo-Chediski, described by others as catastrophic, had "fire severity congruent with historical variability." They conclude "a set of laws, policies and initiatives that aim to uniformly reduce fuels and fire severity is likely to move many of these forests outside their historical range of variability with adverse effects on biological diversity." Their macro-scale studies "reveal higher-severity fires were and are a part of the normal dynamics of dry forests."

Hutto, et al. (2016) conclude in their abstract on an ecologically informed view of severe fires:
"First, many plant and animal species use, and have sometimes evolved to depend on, severely burned forest conditions for their persistence. Second, evidence from fire history studies also suggests that a complex mosaic of severely burned conifer patches

was common historically in the West. Third, to maintain ecological integrity in forests born of mixed-severity fire, land managers will have to accept some severe fire and maintain the integrity of its aftermath. Lastly, public education messages surrounding fire could be modified so that people better understand and support management designed to maintain ecologically appropriate sizes and distributions of severe fire and the complex early-seral forest conditions it creates."

Historic conditions may serve as a guide, yet numerous authors have cautioned that pre-settlement conditions cannot be replicated through restoration (Reinhardt, et al. 2008) "…since historical conditions varied in time and space, selecting a single target stand structure is somewhat arbitrary and inappropriate." (Subsection 2.7). Attempts to do so "will not be desirable or feasible." (Brown, et al. 2004 citing several authors).

Authors caution against "cook-book, one-size-fits-all" plans (Ecological Research Institute; Reinhardt, et al. 2008). Oliver (2014) reports a study in Oregon "…provides solid evidence that not all mixed-conifer forests should be managed using the same approach when resilience is the goal," and "The availability of solid scientific evidence showing that mixed-conifer forests are not a one-size-fits-all landscape is helping these various stakeholders see with more clarity the range of possible restoration strategies for the different forest types…"

Thinning and burning of understory vegetation to promote fire safety, aid in future suppression and help prevent large catastrophic fire events is most often misdirected and this strategy has been shown to be self-defeating by numerous researchers. For example, Reinhardt, et al. (2008) write: "Treating fuels to facilitate suppression is an example of circular logic. If fuel treatment makes suppression more successful in general, then less area will be burned in the short run and more acreage will tend to burn under extreme conditions, when suppression is ineffective. The inevitable result is that more area is burned in fewer, more unmanageable events with greater consequences." They suggest a more successful approach is to focus on the area directly adjacent to structures and reduce the flammability of the structures themselves.

At page 1999 Reinhardt, et al. write: "Destruction in the WUI is primarily the result of the flammability of the residential areas themselves, rather than the flammability of the adjacent wildlands." Relatively small areas can easily be overwhelmed by large fires in extreme environmental conditions (Brown, et al. 2004).

The Forest Service must also realize there is a significant difference between the terms "timber harvest," "production" and "small diameter hand thinning." Webster's provides these relevant definitions of harvest. "1. The gathering of crops; 9. To catch,

take or remove for use." And for production, "2. Something that is produced; a product; 3. The creation of value; the producing of articles that have exchange value."

Moreover, when designing forest management projects, Brown, et al. (2004) argue for considering "the context of place," while Oliver (2014) noted land managers for various reasons lack "social license" to engage in restoration activities. What might be done in one place may not be appropriate in another. Merschel (quoted in Oliver 2014) "It's important to pay attention to where you are on the landscape and the history, and then you can make good, defensible decisions about the management actions you want to take."

Old Growth Protection & Restoration

Protection of old growth forest is required on the Flathead National Forest. Recruitment of old growth is also required by the USDA Policy Statement of 10/11/89.

However, attempts to recruit old growth through vegetative manipulation are speculative and may defeat the very purpose it purports to serve. Regarding a project on the Flathead National Forest, Hutto, et al. 2014 wrote: "Relative abundances of only a few bird species changed significantly as a result of restoration treatments, and these changes were characterized largely by declines in the abundances of a few species associated with more mesic, dense-forest conditions, and not by increases in the abundances of species associated with more xeric, old-growth reference stand conditions.

Management of Areas Recommended for Wilderness and Wild & Scenic Rivers

The forest plan should prohibit all non-conforming uses, including motorized and mechanized transport, within areas recommended for Wilderness and Wild & Scenic River designations, as called for in regional office guidance. It simply makes no sense to recommend an area for Wilderness, for example, but to allow uses to become established or continue that would either degrade the area's wilderness character or create a constituency to oppose wilderness or wild and scenic river designations. Much of the wild, roadless country on the Flathead National Forest provides secure wildlife habitat and wilderness-like recreation opportunities. Those values ought to be protected through the planning cycle whether or not Congress acts on wilderness and wild and scenic river recommendations.

Wilderness Direction Recommendations:

At the outset, we recommend the existing LAC wilderness management plan for the Bob Marshall Wilderness Complex be retained and incorporated in the forest plan revision.

Our recommended changes to the desired conditions are shown in **bold**. Other comments in *italics.*

Desired Conditions (MA1a-DC)

1. **01** Wilderness areas are managed to ~~provide for~~ **protect** wilderness character as ~~defined~~ **required** by the Wilderness Act and the wilderness areas' enabling legislation. Wilderness ~~character, as described in the Wilderness Act, can be defined through~~ **conditions that management will protected include** ~~five qualities which are~~: untrammeled, undeveloped, natural, outstanding opportunities for solitude or a primitive and unconfined type of recreation and other features of value such as ecological, geological, scientific, scenic, or historic. *[Note: the Wilderness Act defines "wilderness," but it does not define wilderness character. The definition the draft plan alludes to is the definition of wilderness from the Act.]*
2. **02** Natural ecological processes and disturbance (e.g., succession, wildfire, avalanches, insects, and disease) are the primary forces affecting the composition, structure, and pattern of vegetation. Wilderness areas provide opportunities for visitors to experience natural ecological processes and disturbances with limited amount of human influence.
3. **03** ~~Facilities in the Bob Marshall and Great Bear Wilderness areas provide for the management, protection and use of the wilderness.~~ **Except as necessary to meet minimum requirements for administration of the wilderness for the purpose of the Wilderness Act, there shall be no structures or installations with Wilderness.**
4. **04** Non-native invasive species are non-existent or in low abundance and do not disrupt ecological functions. **Emphasis will be placed on actions to prevent the introduction on non-native species.**
5. **05** The current **National Forest System** trails ~~system~~ in the Bob Marshall, Mission Mountains, and Great Bear Wilderness areas on the Forest ~~is~~ are managed to provide for wilderness experience.
6. **06** ~~Existing~~ outfitter and guide service opportunities ~~are maintained~~ **may be permitted** in the Bob Marshall Wilderness Complex ~~as determined by identified public need~~ to the extent necessary for activities that are proper for realizing the recreational or other wilderness purposes of the areas.

7. **07** Schafer Meadows Airstrip serves as an airplane accessible trailhead **with use levels consistent with that which occurred at the time the Great Bear Wilderness designated (1978)**.
8. **08** The Bob Marshall and Mission Mountains Wilderness areas are Class I Air Quality areas and managed as such; the Great Bear Wilderness area is managed as a Class II area.

Standards (MA1a-STD)

1. **01** Do not authorize group sizes in excess of 15 people, and ~~35~~ **15** head of livestock per party within the Bob Marshall and Great Bear Wilderness areas. *[Note: the current limit of 35 head of stock is simply way too many and allows some users to cause a disproportionate impact on the wilderness resource. It makes a mockery of leave-no-trace or "minimum impact" principles for wilderness stewardship or use. It's long past time the FS rein in excessive pack stock use in the BMWC].*
2. **02** Do not authorize group sizes in excess of eight people and eight head of livestock per party within the Mission Mountains Wilderness.
3. **03** Permanent structures for the administration of the Mission Mountains Wilderness shall not be built.
4. **04** Do not maintain, rehabilitate, restore, or interpret cultural resources within the Mission Mountains Wilderness.

Economic Analysis

There is scant economic analysis of Alternative B, the proposed action. Going back to RARE I and II and the first generation of Forest Plans, wilderness has always been the most cost-effective management alternative. It is Alternative C that is the most fiscally sound approach, creating the most ecosystem services for the American people.

The proposed action will likely create the need for repeated entries to maintain the environment it claims it will create, thereby committing the public to a long-term, expensive management regime. A much less expensive strategy that focuses on ecosystem values and site-specific protection of structures would be better suited to this landscape.

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