

Data Submitted (UTC 11): 10/13/2020 6:00:00 AM

First name: Gary

Last name: Macfarlane

Organization: Wilderness Watch

Title: Board Member

Comments: Dear Team Leader Krueger:

The following are comments from Wilderness Watch on the draft environmental impact statement (hereinafter DEIS) and its associated attachments and appendices for the Mid Swan Landscape Restoration and Wildland Urban Interface Project. These comments focus on the proposal for the Mission Mountains Wilderness, which is only part of the massive landscape manipulation proposal. Please note that Wilderness Watch also was a co-signer on comments submitted by Swan View Coalition. We also incorporate the letters and scientific references submitted by Friends of the Wild Swan, and Friends of the Clearwater/Alliance for the Wild Rockies. The references on fire ecology are very applicable to the Mission Mountains Wilderness.<sup>1</sup> Wilderness Watch is a national nonprofit wilderness conservation organization dedicated to the protection and proper stewardship of the National Wilderness Preservation System.

#### Introduction

According to the DEIS at 5, the purpose and need are "to restore and maintain terrestrial and aquatic biodiversity in light of a changing climate, and to reduce fire behavior in the WUI and in areas that have influence on fire behavior within the WUI." Wilderness is not mentioned in this purpose and need in spite of the fact over 13,500 acres of burning and nearly 2000 acres of planting are proposed in the DEIS. Indeed, Wilderness seems to be an inappropriate add on that is outside the purpose and need. Wilderness was not mentioned in the scoping letter and it appears there is no dedicated agency wilderness person listed on DEIS page 362 (there is a recreation planner, but no dedicated wilderness specialist). In any case, the actions proposed in the DEIS would seriously harm the Mission Mountains Wilderness and are contrary to the Wilderness Act. The wilderness analysis is deeply flawed for reasons detailed below including the rejection of the primary attribute of Wilderness[mdash]its wildness or untrammeled nature.

#### Wilderness Background

The project would allow a level of manipulation and trammeling of the Mission Mountains Wilderness not permitted by the 1964 Wilderness Act. Any supposed future wilderness benefits are speculative and equivocal.

Howard Zahniser, drafter of the Wilderness Act, stated that "[a] wilderness is an area where the earth and its community of life are untrammelled by man. (Untrammelled - not untrampled - untrammelled, meaning free, unbound, unhampered, unchecked, having the freedom of the wilderness.)." While the Forest Service is rationalizing ecological intervention based on poor past management practices and on other human-induced changes, "[t]hese threats do not justify further interventions into the natural processes within wilderness areas. These projects, whose purposes are to restore (or redirect) natural processes through the exercise of human agency, are precisely the intrusions of human culture that the Wilderness Act meant to exclude from these special places." See Kammer 2013.

The DEIS turns the substance of the Wilderness Act into a mere procedural check box. This fundamental tenet of wilderness stewardship was reiterated in a program review initiated by the four federal agencies and conducted by the Pinchot Institute for Conservation in 2001. The purpose of the study was to examine the critical management issues facing Wilderness. One of the eight "fundamental principles" for stewardship emphasized the need to preserve the wildness in Wilderness. As the Pinchot report stated, "Protection of the natural wild, where nature is not controlled, is critical in ensuring that a place is wilderness[hellip]. Since wild is a fundamental characteristic of wilderness that is not attainable elsewhere, if there is a choice between emphasizing naturalness

and wildness, stewards should err on the side of wildness."<sup>2</sup>

The Forest Service's ongoing attempts to resist natural processes and change through active manipulation of the wilderness are not only at odds with the Wilderness Act, but the Forest Service's own management guidance. Vegetation changes, fire interval and intensity, and wildlife disbursement attributable to a changing climate cannot logically represent degradation of wilderness character. See 36 C.F.R. [sect] 293.2(a) (dictating that, in wilderness, "[n]atural ecological succession will be allowed to operate freely to the extent feasible"). The Forest Service Manual directs the Forest Service to "[m]aintain wilderness in such a manner that ecosystems are unaffected by human manipulation and influences so that plants and animals develop and respond to natural forces." FSM 2320.2. Thus, if there are actions the Forest Service may take to reduce impacts to the wilderness without manipulating natural processes (e.g. practices on private land that reduce structure flammability), it must take those measures and allow natural processes to take it from there.

The terms "natural conditions" and "untrammeled" are complimentary (and not to be conflated), and thus the Wilderness Act isn't internally inconsistent, as the DEIS seems to suggest on page 290. The canons of statutory construction dictate that natural conditions be in harmony with wildness (untrammeled). *United States v. Powell*, 6 F.3d 611, 614 (9th Cir. 1993) ("It is a basic rule of statutory construction that one provision should not be interpreted in a way which is internally contradictory or that renders other provisions of the same statute inconsistent or meaningless"); see also *Wilderness Society*, 353 F.3d at 60 ("a fundamental canon that the words of a statute must be read in their context and with a view to their place in the overall statutory scheme"); *Kmart Corp. v. Cartier, Inc.*, 486 U.S. 281, 291 (1988) ("In ascertaining the plain meaning of [a] statute, the court must look to the particular statutory language at issue, as well as the language and design of the statute as a whole."); *United States v. Lewis*, 67 F.3d 225, 228-29 (9th Cir. 1995) ("Particular phrases must be construed in light of the overall purpose and structure of the whole statutory scheme."). Thus, what is natural for the area necessarily flows from what is untrammeled, especially since the Wilderness Act refers to natural conditions. Otherwise, the default position will always be to trammel Wilderness to comport with a land manager's notion of what is natural, even though various complicated factors[mdash]many of which we do not fully understand and cannot control[mdash]are always necessarily at play in shifting natural conditions. Wilderness is "in contrast" to areas where our actions and decisions dominate the landscape. Nature should roll the dice in Wilderness, not managers.

The DEIS fails to adequately analyze the impacts to the Mission Mountains Wilderness. It merely acknowledges that the area will be trammelled by the agency-ignited fire and the reforestation (white bark pine). These impacts are not quantified or evaluated in terms of severity. Further, the agency-ignited fire (FSM 2324.04b) is left to the Regional Forester and reforestation activities to the Chief (FSM 2323.04b). As such, the Forest Supervisor can't approve the ROD. These kinds of oversights and mistakes plague the analysis.

The DEIS at 290 cites to Landres et al. 2020, a journal article, as authority for manipulating Wilderness. Aside from the fact it is not legal, logical, or based upon the best available science, there are two other problems with this approach illustrated in the bullet points below that relate directly to the Landres et al. reference.

#### 1. The Origins and Consequences of Defining Wilderness Character through Fragmenting The Eloquent Whole of the Wilderness Act

Landres and others identified their various attributes of wilderness character by dissecting the Wilderness Act. It was an exercise in reductionism. From our communications with Landres, the main purpose behind this exercise was to be able to objectively monitor changes in wilderness character in the National Wilderness Preservation System. Hence, the protocol titled Keeping it Wild and Keeping it Wild 2. While this process to define wilderness character was undoubtedly a well-intended effort, as time has passed, it is clear it has serious negative unintended consequences for Wilderness. Other wilderness specialists and researchers recognize these failings in their pointed critique (see Cole et al. 2015). A prime example of a negative consequence is the erroneous idea

that managers could trade off various components of wilderness character against each other, thereby reducing the Wilderness Act into a procedural process via an MRDG, rather than a substantive law. See DEIS page 293 for the so-called justification based upon white bark pine. This management mindset, which effectively repeals and rewrites the Wilderness Act, is a recent development. It is doubtful even those wilderness specialists who defined wilderness character in a reductionist manner would concur. That leads to the second point below.

## 2. The Monitoring Protocol Itself Does Not Offer Support for the Manipulation Proposed for the Mission Mountains Wilderness

In Keeping It Wild 2: An Updated Interagency Strategy to Monitor Trends in Wilderness Character Across the National Wilderness Preservation System, Landres et al. 2015. RMRS-GTR-3403 has this to say about untrammelled:

To preserve the Untrammelled Quality of wilderness, managers need to exercise restraint when authorizing actions that manipulate any aspect of the wilderness[mdash] in general actions that trammel should be avoided as an essential principle of wilderness stewardship unless it can be shown that these actions are necessary to preserve wilderness character as a whole (Kaye 2014).

Landres et al. 2015 at 34. It is hard to conceive of trammeling actions that would be necessary for this purpose. The Strategy cited above and its associated Monitoring Selected Conditions Related to Wilderness Character: A National Framework. Landres, et al. 2005. RMRS-GTR-151 cite two of the Forest Service's preeminent wilderness researchers in describing how the untrammelled quality of Wilderness affects management. Cole (2000) in Framework states that untrammelled "suggests more about the process of management than it does about the outcomes of management." (Emphasis added). The Strategy paper states,

Lucas (1973, p. 151) stated, "If ecological processes operate essentially uncontrolled within the Wilderness frame of reference, the results, whatever they might be, are desirable by definition. The object is not to stop change, nor to recreate conditions as of some arbitrary historical date, nor to strive for favorable change in big game populations or in scenic vistas. The object is to let nature 'roll the dice' and accept the results with interest and scientific curiosity."

Landres et al. 2015 at 33. The proposed actions in the Mission Mountains Wilderness are not consistent with this guidance.

In the sections below, we further expand on how the best available science and agency policy do not support the view taken by the Forest Service for manipulating the Mission Mountains Wilderness.

### Agency-Ignited Fire

Regarding fire, Wilderness Watch supports allowing lightning-caused fire to play its natural role in the Wilderness, but the Forest Service plan proposes to significantly manipulate the Wilderness in ways that will harm wilderness character.

Section 4(d)(1) of the Wilderness Act, while allowing measures to control fire, does not address the issue of manager-ignited prescribed fires. This is a misreading of the Act and conflicts with the Forest Service Manual which recognizes there is no broad discretion to light fires in Wilderness (see FSM 2324.22 parts 6, 7 and 8).<sup>4</sup>

Specifically, section 4(d)(1) uses control rather than prevention or pre-suppression of fire. Presuppression manipulation is inconsistent with the Act. One can't control something that doesn't (yet) exist. The control of fire was narrowly written to apply to fire suppression and detection. The DEIS misreads the Act sharply with it and the Forest Service Manual.

When Congress felt pre-suppression actions were warranted; it approved those activities in specific legislation. One example is legislation establishing some of the additions to the Ventana Wilderness where undefined but "acceptable" "pre-suppression" activities in Wilderness were allowed. The Wilderness Act and Public Law 93-632, the law that established the Mission Mountains Wilderness, have no such provisions.

While the status quo may trammel Wilderness via firefighting, Section 4(d)(1) of the Wilderness Act was written, for better or worse, to address the specific issue of fire suppression itself rather than engaging in trammeling actions like agency ignited fire.

The DEIS suggests the action is important so that fire cycles are not missed. While that premise itself is contrary to the body of scientific evidence, it should also be pointed out that unlogged and unmanipulated areas are much more resilient to the effects of large fire even with supposedly missed fire cycles. Naficy et al. 2010 found a significant distinction between fire-excluded ponderosa pine forests of the northern Rocky Mountains logged prior to 1960 and paired fire-excluded, unlogged counterparts:

We document that fire-excluded ponderosa pine forests of the northern Rocky Mountains logged prior to 1960 have much higher average stand density, greater homogeneity of stand structure, more standing dead trees and increased abundance of fire-intolerant trees than paired fire-excluded, unlogged counterparts. Notably, the magnitude of the interactive effect of fire exclusion and historical logging substantially exceeds the effects of fire exclusion alone. These differences suggest that historically logged sites are more prone to severe wildfires and insect outbreaks than unlogged, fire-excluded forests and should be considered a high priority for fuels reduction treatments. Furthermore, we propose that ponderosa pine forests with these distinct management histories likely require distinct restoration approaches. We also highlight potential long-term risks of mechanical stand manipulation in unlogged forests and emphasize the need for a long-term view of fuels management.

Further, it is questionable whether fire suppression has had any meaningful effect on the Mission Mountain Wilderness. Its remote nature and history suggest otherwise. According to Wilderness.net, which is the cooperative effort between the federal agencies (including the Aldo Leopold Research Institute and the Carhart Center) and the University of Montana:

The Mission Mountains are a land of ragged peaks with snow on them most of the year, small active glaciers, alpine lakes, meadows, clear streams that run icy cold, slab-like boulders, vertical cliff faces, and talus slopes. The average elevation is 7,000 feet. In the northern portion you'll find the terrain less severe and more heavily timbered. The southern portion, however, receives more visitors, primarily around the alpine lakes (most of which do not thaw until mid-June). The dense forest includes pine, fir, larch, and western red cedar. In summer high basins are painted with a sea of wildflowers. The Flathead and Pend Oreille Indians once hunted, fished, gathered berries, and sought visions (they would go into the Wilderness alone, often depriving themselves of food and water, in hopes of seeing a vision) in the rough and broken Mission Mountains. The first organized exploration of this area did not occur until 1922, after which part of the region was set aside as the Mission Mountains Primitive Area in 1931 and then expanded in 1939. The Wilderness you see today stretches for about 30 miles and varies from two to six miles in width. Wildlife lives in abundant numbers in the Missions: elk and deer, black bears and grizzly bears, mountain goats and mountain lions, a few gray wolves, and a wealth of smaller furbearing animals. Approximately 50 species of birds have been identified, including bald eagles. A small population of fish is generally confined to the lakes. About 45 miles of maintained trails are used almost exclusively by backpackers, the terrain being generally unsuitable for horses. Few of the trails are easy, and many are tremendously steep. There is no overnight camping at Glacier, Upper or Lower Cold Lakes. The area shares its entire western and southern boundaries with the Flathead Indian Reservation. A permit must be obtained from the Confederated Salish and Kootenai Tribes to enter the Mission Mountains Tribal Wilderness.

There is little scientific support for assuming that ecosystems can be restored or continuously maintained by such

manipulative actions. Biologist Roger Payne states the following:

One often hears that because humanity's impact has become so great, the rest of life on this planet now relies on us for its succession and that we are going to have to get used to managing natural systems in the future[mdash]the idea being that since we now threaten everything on earth we must take responsibility for holding the fate of everything in our hands. This bespeaks a form of unreality that takes my breath away[hellip] The cost of just finding out enough about the environment to become proper stewards of it[mdash]to say nothing of the costs of acting in such a way as to ameliorate serious problems we already understand, as well as problems about which we haven't a clue[mdash]is utterly prohibitive. And the fact that monitoring must proceed indefinitely means that on economic grounds alone the only possible way to proceed is to face the fact that by far the cheapest means of continuing life on earth as we know it is to curb ourselves instead of trying to take on the proper management of the ecosystems we have so entirely disrupted.

(Payne 1995). Weather conditions such as drought and wind are the primary drivers of fire behavior, and generally override on-the-ground forest conditions. Large wildfires are not generally influenced by previous fuels reduction measures. Similarly, research suggests most fires are not unhealthy (and most forests are not out of whack just because of fire suppression) as stand-replacing fires are normal in many forest types, including ponderosa pine forests5. See for example, Lydersen et al. 2014, Noss et al 2006, Baker and Williams 2015, Williams and Baker 2014, Baker et al. 2007, Baker 2105, Pierce et al. 2004, Baker and Ehle 2001, Sherriff et al. 2014, Odion et al 2014, and Schoennagel et al. 2004.

We also refer you to the following books: Fire Ecology in Rocky Mountain Landscapes by William Severity Fires: Nature's Phoenix, edited by PhD ecologists Dominick DellaSala and Chad Hanson, which synthesizes published, peer-reviewed science investigating the value of mixed- and high-severity fires for biodiversity, and Wildfire: A Century of Failed Policy, edited by George Wuerthner. These along with the citation above provide a counterpoint to the narrative in the DEIS. In fact the science cited in the DEIS itself does not make the case for the heavy-handed manipulation of the Mission Mountains Wilderness.

The Mission Mountains Wilderness is not at increased risk of high severity fire. In fact, wilderness burns with lower severity than forests that have been logged. See Bradley et al. 2016 and the ICEBMP science reports. As such, the stated reason in the DEIS for the wilderness burning is baseless.

Similarly, the DEIS does not indicate how often the agency perceives burning would need to be redone. The 13,500 plus acres would be burned during a 15 year-time frame, but we don't know how long the trammeling would occur in the future. The DEIS admits that fire suppression would continue under alternative B (pages 295 and 296), though it may be reduced in the future by an unknown amount. Aside from the inadequate analysis of future impacts, it seems obvious that regardless of whether the agency ignites fire on over 13,500 acres, the Forest Service may not allow natural fire to play its role in the Mission Mountains Wilderness at all. Research (see Baker and Rhodes 2008, and Rhodes 2007) show that it is unlikely that these treatments would occur where a fire might strike anyway. Thus, the project is not the minimum necessary for the purpose of the Act.

Last, but not least is the use of helicopters in the Wilderness to ignite the fires. This is a violation of the Wilderness Act. Helicopter intrusions in the Wilderness are prohibited under the Wilderness Act "except as necessary to meet minimum requirements for the administration of the area" as wilderness. 16 U.S.C. [sect] 1133(c); see also 36 C.F.R.[sect] 261.18(c) (Forest Service regulations prohibiting "[l]anding of aircraft, or dropping or picking up of any material, supplies, or person by means of aircraft, including a helicopter" in National Forest Wilderness); 36 C.F.R. [sect] 293.6 (prohibiting "mechanical transport," "landing of aircraft," and "dropping of materials, supplies, or persons from aircraft" in wilderness except as provided by Wilderness Act). In Idaho, the Idaho Federal District Court noted "Helicopters carry 'man and his works' and so are antithetical to a wilderness experience. It would be a rare case where machinery as intrusive as a helicopter could pass the test of being 'necessary to meet minimum requirements for the administration of the area.'" Wolf Recovery Foundation, 692 F.

Supp. 2d at 1268. The impacts in this case would be in addition to helicopter use for emergency response, and fire suppression efforts. The DEIS does not fully analyze those cumulative impacts.

#### Planting

The proposal to plant white bark pines is trammeling at its worst, violating the idea that wilderness administrators need to be guardians not gardeners. This action strikes at the very heart of wilderness as untrammelled or self-willed. Overt trammeling, regardless of the scale, harms wilderness character. Character includes both tangible and intangible qualities. It is more than merely the biological resources. Wilderness character is about allowing natural processes to operate. The question needs to be asked where in the Wilderness Act is active restoration valued above the untrammelled nature or process of wilderness?

To our knowledge, a white bark pine program like this has never been done in Wilderness in Region I. As such, it is precedential. The obvious question is why can't this be done outside of Wilderness, as required by Forest Service policy? The DEIS admits direct seeding has very spotty results, from 8 to 45 percent. DEIS at 120. As such, it is an experiment that must be tried outside of Wilderness, if at all, before the agency even considers going into Wilderness. See FSM 2324.42. The DEIS cites to Keane et al., but fails to follow its guidance, which requires that areas outside of Wilderness be prioritized, whether significant improvement in survival will occur, and the impacts on Wilderness. Thus, the DEIS does not adequately evaluate the impacts to Wilderness.

The Manual direction is clear; this kind of activity is to only occur in extremely rare circumstances. The proper citations are not referenced and were apparently ignored (see FSM 2323.52 and 2323.54). In addition, the reforestation referred to seems directed at an unnatural event that prevented any trees from growing back. Natural reforestation is occurring even if the percentages of some species, like white bark pine, are much less than it was historically.

Similarly, the other purported benefits would be well beyond the time horizon of this project, including benefits to grizzlies. The question that needs to be answered is whether planting seeds now will result in 80 plus years, a viable white bark pine forest? This is not considered at all. Indeed, it will take decades to determine if this experiment, for that is what it is, will even work. There is no analysis of the amount or viability of white bark pine stands in the project area or Mission Mountain Wilderness. Simply put, it has nothing to do with a legitimate recovery plan for a species and everything to do with manipulating wilderness. Finally, showing restraint is how we honor and respect Wilderness.

Regarding blister rust, nature is slowly healing the destruction wrought by humans through natural selection of resistant trees and seedlings. This natural process will provide the most durable and effective resistance to one of the pests (rust). In host-pathogen interactions, when a virulent pathogen first meets its host, it usually kills it quickly. However, this is neither advantageous to the host nor the pathogen. Thus, the relationship evolves over time, and eventually the pathogen does less and less damage to the host, until eventually the relationship may become mutualistic or symbiotic. Meddling in this natural process by artificially increasing the numbers of some resistant genotypes, is likely to select for virulence in the pathogen and extend the process, or even short circuit it.

The related white pine issue provides an interesting lesson. With the resistant white pine breeding program, ratios of resistant to susceptible F2 progeny are very close to the 3:1 ratio expected with a single dominant resistance gene (Fins et al. 2001). The ability of pathogens to quickly mutate at avirulence loci to overcome resistance genes is well documented in many plant-pathogen interactions. In plants which are re-planted each year, this problem can be managed by monitoring the pathogen genotypes in the field, and then selecting host genotypes for the next year which are resistant to the current pathogen genotypes. Obviously, this is not possible with trees. Apparently, mutation to overcome white pine blister rust resistance has already occurred in California and Oregon (Fins et al. 2001). It is likely that this has also already occurred in Idaho locations where up to two

thirds of the genetically resistant trees have been killed by rust (Fins et al. 2001).

In any case, in the light of global warming this may all be for naught. Global warming could allow a native species, mountain pine beetle, to increase their elevation range as has occurred in the Greater Yellowstone Ecosystem and the Southern end of the Frank Church-River of No Return Wilderness. Pine beetles are as effective and even quicker at killing white bark pines as blister rust.

#### Other

The DEIS forgoes an analysis of the cumulative impacts to the adjacent Mission Mountains Tribal Wilderness. The entirety of the analysis is this, "The Mission Mountains Tribal Wilderness lands is just to the east of the Mission Mountains Wilderness and would be impacted by prescribed burning: noise from helicopters during operations, and possible smoke drift." That is far from adequate.<sup>7</sup>

The reference to "barren" lakes and fish stocking is puzzling. Is fish stocking ongoing or was it a relict of past and misguided management actions take by state and federal agencies? How is this relevant to the current proposal?

#### Summary

This project has a significant negative impact on wilderness. It overtly trammels wilderness whereas the results of global warming, though undesirable, are not trammeling, as they are inadvertent. Further, fire suppression has been allowed in wilderness. The best way to deal with impacts of past fire suppression is to allow natural fire to play its role.

The DEIS is inadequate and confused. The project should be scrapped. Any experiment of this type should be confined to nonwilderness lands, if at all.

Please keep Wilderness Watch updated on this project. We would be interested in meeting with you or other project staff, perhaps on site, to explore the project and our concerns in more detail.

#### References:

Baker, W. L., and D. Ehle. 2001. Uncertainty in surface-fire history: the case of ponderosa pine forests in the western United States. *Can. J. For. Res.* 31: 1205-1226.

Baker, W. L., T. T. Veblen, and R. L. Sherriff. 2007. Fire, fuels and restoration of ponderosa pine-Douglas fir forests in the Rocky Mountains, USA. *J. Biogeogr.* (2007) 34: 251-269.

Baker W.L. And J.J. Rhodes. 2008. Fire Probability, Fuel Treatment Effectiveness and Ecological Tradeoffs in Western U.S. Public Forests. *The Open Forest Science Journal*, 2008, 1, 1-7

Baker, W.L. 2009. *Fire Ecology in Rocky Mountain Landscapes*. Island Press

Baker, W. L., and M. A. Williams. 2015. Bet-hedging dry-forest resilience to climate-change threats in the western USA based on historical forest structure. *Frontiers in Ecology and Evolution*. 2: 88: 1-7.

Bradley et al. 2016. Does increased forest protection correspond to higher severity in frequentfire forests of the western United States? *Ecosphere* 7(10): 1-13, Article e01492.

Brown, Perry L., Norman L Christensen, Hannah J. Cortner, Thomas C. Kiernan, William H.

Meadows, William Reffalt, Joseph L. Sax, George Siehl, Stewart Udall, Deborah L. Williams, and James W. Giltmier. 2001. Ensuring the Stewardship of the National Wilderness Preservation System. Pinchot Institute for Conservation (2001)

Cohen, J. 2000. Preventing Disaster: Home Ignitability in the Wildland-Urban Interface. *Journal of Forestry*.

Cole, David, Ed Zahniser, Doug Scott, Roger Kaye, Kevin Proescholdt, and Geroge Nickas.

2015. The Definition of Wilderness Character in "Keeping It Wild" Jeopardizes the Wildness of Wilderness. 2015.

DellaSala, D.D. and C. Hanson. 2015 The Ecological Importance of Mixed-Severity Fires: Nature's Phoenix. Elsevier.

Fins et al. 2001. Return of the giants: restoring white pine ecosystems by breeding and aggressive planting of blister rust-resistant white pines University of Idaho.

Kammer, Sean 2013. Coming to Terms with Wilderness: The Wilderness Act and the Problem of Wildlife Restoration, 43 *Environmental Law* 83, 86 (2013)

Landres, et al. 2005. Monitoring Selected Conditions Related to Wilderness Character: A National Framework. USDA Forest Service. RMRS-GTR-151

Landres et al. 2015. Keeping it Wild 2: An updated interagency strategy to monitor trends in wilderness character across the National Wilderness Preservation System. USDA Forest Service.

RMRS GTR-340

Naficy et al. 2010. Interactive effects of historical logging and fire exclusion on ponderosa pine forest structure in the northern Rockies. *Ecological Applications*, 20(7), 2010, pp. 1851-1864

Noss et al. 2006. Managing fire-prone forests in the western United States. *Front. Ecol. Environ* 4(9): 481-87.

Odion et al. 2014. Examining Historical and Current Mixed-Severity Fire Regimes in Ponderosa Pine and Mixed-Conifer Forests of Western North America. *PLOS ONE* Vol. 9(2) pp. 14, e87852.

Payne, Roger 1995. Among Whales. A Delta book published by Dell Publishing, New York, NY.

Pierce, J. L., G.A. Meyer and A. J. T. Jull. 2004. Fire-induced erosion and millennial scale climate change in northern ponderosa pine forests. *Nature* 432: 87-90.

Rhodes, J.J. 2007. The Watershed impacts of forest treatments to reduce fuels and modify fire behavior. Pacific Rivers Council.

Schoennagel, Tania & Veblen, Thomas & Romme, William. (2004). Interaction of Fire, Fuels, and Climate Across Rocky Mountain Forests. *The Bark Beetles, Fuels, and Fire Bibliography*. 54. 10.1641/0006-3568(2004)054[0661:TIOFFA]2.0.CO;2.

Sherriff, R. L., R.V. Platt, T. T. Veblen, T. L. Schoennagel, and M.H. Gartner. 2014. Historical, observed, and modeled wildfire severity in montane forests of the Colorado front range. *PLOS ONE*: 9: 9 17 pages.

Williams, M.A. and W.L. Baker. 2014. High-severity fire corroborated in historical dry forests of the western

United States: response to Ful[eacute] et al. Global Ecology and Biogeography.

Wuerthner, G. ed. 2006. Wildfire: A Century of Failed Policy. Island Press

FOOTNOTES:

1 In particular, we refer you to the science, which shows that threats to property outside of Wilderness can be best addressed outside of the Wilderness itself, within 40 meters of structures. For example, see Cohen 2000.

2 In any case, "naturalness" does not appear in the Wilderness Act. It is natural conditions.

3 Again we have serious concerns with this protocol, see attached critique (Cole et al. 2015). Nonetheless, it does recognize that trammeling negatively affects Wilderness. Our comments expand upon this concern.

4 That said, while the Manual puts constraints on the use of management-ignited prescribed fire[mdash] constraints that are largely ignored in this DEIS--we would note that manager-ignited prescribed fire is at odds with the Wilderness Act, regardless of Manual direction.

5 There is also a difference between pulse and press disturbances. Forests and watersheds have evolved with stand-replacing pulse disturbances, which provide watershed benefits.

6 A review of Dr. Baker's book, written by a Forest Service researcher and listed on the Forest Service research website (Yaussy 2010) notes that, "Baker contends, with documented support, that frequent lowintensity fires have had little effect on shaping the ecosystems that exist, now or in the past, within the Rocky Mountains. Large, infrequent, high-severity fires are the only events which covered enough landscape area to be influential in his opinion." It continues, "To support the conclusion of infrequent, high-severity fires, the author relies on his expertise in fire history research. Misinterpretation of fire history statistics is a bone of contention for the author, and Baker devotes a chapter to informing his readers what, exactly, the different metrics mean, and how they should be interpreted, while giving examples of errors in the literature. Later in the book, it is revealed how some of these misinterpretations have carried over into the fire behavior software which is relied upon by fire management teams."

7 The Mission Mountains Tribal Wilderness is to the west of the Mission Mountains Wilderness.