Objection Reviewing Officer, Northern Region
Federal Building, 26 Fort Missoula Road
Missoula MT 59804

Subject: Gold Butterfly Project Objection

Date: January 13, 2022

Commentor: Jeff Lonn[redacted]

I submitted comments on the Gold Butterfly DSEIS in July, 2021, and submitted an objection to the withdrawn ROD in 2019. All comments below were previously brought up in these two documents, unless it is new information not available previously. Comments on new information are first:

DROD—New Information

According to p. 3 of the new DROD, the following modifications were made to the original project:

1. **Convert 258 acres of old growth regeneration cuts to commercial intermediate treatments**. Although this appears to be a positive change, it had already been made under modified Alternative 2 chosen in the withdrawn 2019 ROD because regeneration harvest of old growth is prohibited by HFRA, which authorizes this project. These modifications have already been addressed in my 2019 Objection (attached), and commented on in my 2021 SEIS comments (below in this document).
2. **Convert 154 acres of old growth regeneration cuts to non-commercial treatment.** This is a positive change, but this change had also already been made in the modified Alternative 2 chosen in the original ROD.
3. **Convert 37 units of >40 acre regeneration harvest to 40 acres or less.** While this appears to be a positive change, it appears that the larger areas have been changed to intermediate harvest. It is unclear whether intermediate harvest could leave as few trees as a shelterwood or seed tree cut and still be in effect a regeneration harvest. **REMEDY:** Please disclose the definition and limits of intermediate harvest.

DROD, Appendix B—New Information

One other significant modification in the DROD (Appendix B, p. 4) is the reduction of old growth to be maintained in MA 2 and MA3b third order drainages from 8% to 3% in violation to the Forest Plan. This information was not included in the SEIS, and effects have not been analyzed. **REMEDY:** Either analyze the effects of this change or drop the change from the amendment.

I am also disturbed that my cited literature was dismissed, without explanation, as being less "accurate, relevant and reliable" than that provided in the FEIS (DROD, Appendix B, p. 5). **REMEDY:** Review the cited papers and respond as to why you are discounting them.

Gold Butterfly Whitebark Pine Biological Assessment (PF Supp BOTANY 002)—New information

In August, 2021, a Biological Assessment (BA) of whitebark pine for the Gold Butterfly project (PF Supp BOTANY 002, referred to as BA herein) was released following a proposal by USFWS to list whitebark pine as threatened under the ESA. This is new information, allowing new public comment during the objection process.

The Gold Butterfly whitebark BA, FSEIS, and FEIS fail to completely analyze effects, including cumulative effects, of the project on whitebark pine. They also fail to demonstrate that the project will not be detrimental to whitebark and fail to show that the project will follow the USFWS proposed rule and conservation measures:
The proposed ESA 4(d) rule would provide the following protections for whitebark pine: *Prohibit removing, cutting, digging up, damaging, or destroying whitebark pine on Federal lands.* USFWS recommended conservation measures for whitebark are: *"Avoid removing or damaging plus trees; Avoid timber cutting or ground disturbance in stands with healthy reproductive populations."* (BA, p. 16).
The BA assures that protection will be achieved through the project design features (BA, p. 10):

"If whitebark pine is found in any treatment units, trees 3" diameter at breast height or greater, would be avoided to the extent possible. All healthy and reproducing populations (cone-bearing or mature trees) of whitebark pine are to be avoided during vegetation management activities; unless it is to specifically benefit the species and discussed with a Forest Service Botanist. Mature cone bearing and trees showing rust resistance should be preserved. Whitebark pine (Pinus albicaulis) will be maintained and/or promoted in all stands where it occurs. Damage to existing whitebark pine individuals will be minimized to the extent possible.

However, it appears that insufficient data were collected to provide this protection. ' BA (p. 12) states: *"The project area was **partially** surveyed in 2012, 2013, 2016, and 2017 for rare plants. The surveys that were conducted confirmed the presence of whitebark pine in the project area.".*

If inventories are incomplete, how will whitebark be protected in the treatment units? How do you know where healthy cone-bearing trees are present? Keane et al (2017, p. 3) state that the first step in whitebark pine restoration is to "1. Assess condition. Conduct assessments that document the status and trend of whitebark pine forests within regions."

That whitebark will be"*avoided to the extent possible"* and *"damage minimized to the extent possible"* (BA, p. 10) are not reassuring considering whitebark is proposed to be listed as a threatened species under the ESA. BA (p. 15) states: *"Treatments will likely damage or kill some whitebark".* The ESA will not exempt the destruction of seedlings nor of non-healthy and non-reproducing populations. The ESA requires that you fully analyze the effects of your activities

on whitebark pines. While critical whitebark habitat has not yet been identified by the USFWS, it likely will be before project completion in 8-10 years.
The Biological Assessment (BA) for Whitebark Pine (PF-SUPP-BOTANY-002) concluded (p.16):

"The implementation of the Gold Butterfly Project as proposed is ***not likely to jeopardize*** *the continued existence of whitebark pine. This determination is based on the following rationale:*
• Whitebark pine will be avoided to the extent possible, especially larger trees 3" dbh and greater would be avoided to the extent possible and reproducing populations (cone-bearing or mature trees) of whitebark pine are to be avoided during vegetation management activities (see project design features).
• Proposed activities would not increase any of the primary stressors of whitebark pine: white pine blister rust, mountain pine beetle, altered fire regimes, or the effect of climate change; but would decrease the likelihood of another landscape level mountain pine beetle epidemic and reduce the potential for catastrophic fire by introducing greater heterogeneity to the landscape.
• The proposed action may beneficially affect whitebark pine habitat conditions by reversing a negative trend of vegetation encroachment created by the absence of fire and reducing the risk of a stand replacing fire in the units. Any impacts to limited individuals would be offset by the benefits of returning controlled fire to the project area and thus creating higher-quality habitat conditions for whitebark pine..

The BA (p. 15-16) also admits detrimental effects of the project: *There are a multitude of past, present and future actions across the Forest that could have limited negative impacts to localized populations of whitebark pine. Activities that will remove or damage individuals or groups of trees include timber harvest, vegetation management, road work, and fire suppression*.

Therefore, benefits of the project to whitebark pine appear to be speculative, but detrimental effects are certain. Neither Keane (2021), Keane and others (2017), nor Larson and Kipfmueller (2012) advocate for a reduction in mixed severity wildfire, including stand-replacing wildfire, as a whitebark restoration technique. In fact, Keane (2021) suggested that mixed-severity wildfire, including stand replacing fires, are beneficial to whitebark. Keane et al (2017; p. 78) recommended avoiding "treatments designed only to reduce disturbance agents, such as fuel treatments. Embrace a holistic wildland fire policy that balances losses with gains in competition-free burned areas". Larson and Kipfmueller (2012) state: "The implication of fire suppression as a widespread cause of declines of whitebark pine communities may be inaccurate for much of the range of the species and could result in misguided restoration efforts. Suggestions that the current mountain pine beetle outbreaks are unnatural must be firmly placed within the context of the extremely short historical record relative to the pace of forest dynamics in whitebark pine communities…The fundamental message we hope to convey is that management of whitebark pine communities, although urgent, must be approached cautiously…..lest generalizations blur recognition of the mechanisms driving declines of this singular species and lead to more harm than good.". Similarly, the whitebark summary on the Federal Register (2020) similarly states "we do not know at what scale the impacts of fire exclusion and resultant forest succession have affected whitebark pine".

There is no evidence in the scientific literature that your activities will decrease the likelihood of another MPB epidemic, and in fact, some studies (e.g. Six et al, 2014, 2018, 2021; Kichas et al, 2020) found that the opposite might be true. According to Larson and Kipfmueller (2012), MPB outbreaks may be beneficial for whitebark.

How do you propose to "promote whitebark in all stands where it occurs"? You provide no evidence that commercial whitebark daylighting is an effective tool in promoting whitebark, and, in fact, it may be deleterious. How do you know that the lodgepole and subalpine fir that you propose to remove are not living in symbiosis with the whitebark? Keane (2021) and Keane et al (2017) stated that proactive silvicultural work is less effective and much more costly than managing wildfire "do the work" (Keane, 2021). They also stressed the importance of mycorrhizal fungi to seedling survival. Mycorrhizal fungi are often negatively impacted by tree-cutting, soil compaction, mechanical disturbance, woody debris removal, and removal of understory plants (Keane et al, 2017); all result from commercial timber harvest. Six et al. (2021) suggested "Where silvicultural practices are applied, they should be implemented with caution……Anthropogenic change is creating or enhancing a number of stressors on forests. To aid forests in adapting to these stressors, we need to move beyond traditional spacing and age class prescriptions and take into account the genetic variability within and among populations and the impact our actions may have on adaptive potential and forest trajectories." Pfister et al. (1977) noted that Whitebark pine habitat types are very low in productivity, and recommended that they be left alone.

While the BA states that **non-commercial** daylighting has been shown to be beneficial, there are no data showing that commercial logging is beneficial. The BA states that some units with whitebark are being treated for research, but obviously the research is ongoing, and so commercial activities should be kept out of all non-research whitebark units until more is known. Instead, use them as a control for the research. Please disclose which units will be used for research.

BA (p. 11-12) states that in units 6, 7, 10, 55, 59, 80, 90, 103, and 107, whitebark pine was found but the areas' elevation *"is too low for this species".* What evidence do you have for this statement? Flanary and Keane (2019) found that whitebark in southwest Montana had expanded to lower elevations, with no evidencethat it was moving upward as expected from climate change.

The BA (p. 15-16) states: "*The cumulative effects of the proposed action on rare plants are unknown. Invasive plants have also caused a decline in habitat quality. The proposed action alternatives would contribute to invasive plant spread in the project area by disturbing the soil and opening the forest canopy, in and near areas, where invasive plants are found. Hand piling, landings, and new road construction cause the most detrimental disturbances for rare plant species. Soil disturbance would occur between 1% and 14% within units that have rare plant populations and habitat. These numbers do not take into account hand piling that would occur in some of those units which would increase the percentage and make it much higher.*

NEPA requires the analysis of cumulative effects on all rare plants, including whitebark.

The Federal Register Whitebark summary (2020) stated: *"the rate of decline appeared to be most sensitive to the rate of white pine blister rust spread, the presence of genetically resistant individuals (whether natural or due to conservation efforts), and the level of regeneration."*

While the Gold Butterfly project treatments may not increase blister rust spread, they could negatively affect whitebark genetics and the level of regeneration.

BA (p. 16) states: *"Under the Forest Plan and Green et.al, regarding old growth, there would be no effect to whitebark pine since stand exams show that there is no old growth within those whitebark pine stands within the project area. Tree ring dating showed that the oldest trees were 110 years of age."*

However, the BA (p. 10) admits that the area has only been partially surveyed for rare plants that include whitebark pine. Until inventories are complete, there is no basis for this claim.

BA (p. 16) restates USFWS recommended conservation measures for whitebark: *"Avoid removing or damaging plus trees; Avoid timber cutting or ground disturbance in stands with healthy reproductive populations.*

You have not completed inventories and so occurrences of plus trees (rust resistant trees) are unknown. Commercial timber harvest always results in extensive ground disturbance that is likely detrimental to mycorrhizal fungi. Mycorrhizal fungi are important to seedling survival (Keane, 2021).

REMEDIES: It is clear that whitebark pine preservation and restoration are complex, and the effects of silvicultural treatments are largely unknown, especially in the face of climate change. First, whitebark pine inventories must be completed before project approval. BA (p. 14) states that inventories have not been done in commercial harvest units 75, 76, or 185. Note that unit 76 is a regeneration unit. Second, abandon the commercial harvest and road building in all whitebark units that are not being used for research. These include 5, 63, 71, 72, 77, 79, 82, 93, 183 (BA, p. 12-14). Third, disclose which units will be used for research, and what activities will be studied.

2021 DSEIS comments resubmitted as objections:

It appears that no other significant changes have been made to the project following either the original DROD objection period or the DSEIS comment period. Therefore, I also submit as an objection my 2019 Objection (attached as a separate pdf) and my 2021 DSEIS comments which follow below in this document. New comments and remedies based on the DROD are added in blue italics.

Below are Jeff Lonn's comments on the proposed site-specific Forest Plan amendment to Old Growth (OG) standards on the Gold Butterfly project as detailed in the draft SEIS. I oppose the proposed amendment, based on the following reasons in **bold**. Requests for more information are underlined.

A Site-Specific Amendment of Old Growth Standards is not appropriate given that the same amendment is requested for the BNF Mud Creek project and the proposed BNF Bitterroot Front project. Both are large projects, and together with Gold Butterfly cover a large percentage of BNF's area outside the Wilderness areas. Site-specific amendments are meant to address unique characteristics of a particular forest area, not to repeatedly address conditions that are common throughout an entire forest or region. The Forest Service is applying this amendment for all ongoing projects because it is no longer workable for the forest as a *whole*. The SEIS, p. ii, states: "the Bitterroot has been using Green et al. criteria to inventory and monitor old growth since this best science became available", violating the 1987 Forest Plan for almost 30 years. Clearly, the amendment must be proposed as a forest-wide Forest Plan amendment, not amended away one geographic area at a time. BNF must conduct the required forest-wide planning and NEPA processes to amend old growth standards. Please provide an assessment of the proposed amendment's significance in the context of the larger forest plan as required (36 C.F.R. § 219.10(f), FSH 1922.5). Please evaluate this proposed forest plan amendment as to whether it would constitute a significant change in the long-term goods, outputs, and services projected for an entire National Forest as required by NFMA. Please explain what unique characteristics occur in the Gold-Butterfly area that qualify it for a site-specific amendment when other identical amendments are proposed on two other large projects. Please provide analysis of cumulative effects of using this site specific amendment together with the other similar site specific amendments for the Mud Creek and Bitterroot Front projects.

FS response (Appendix C, p. 6*):"* ***A project-specific amendment is an "amendment that applies to only one project or activity" as described in commenters quotation of 36 CFR 219.13(b)(3). As such it is not a considered a significant change in the plan for the purposes of the NFMA."*** Exactly! This amendment is being proposed for all ongoing and proposed projects, not to only one project or activity, and is a violation of NFMA. **REMEDY*:*** Go through the NEPA process for approval of a forest-wide old growth amendment.

BNF fails to demonstrate the necessity of amending the Forest Plan "to change Management Area direction related to minimum stand size to classify stands smaller than 40 acres as old growth to better align with Forest Service handbook direction and to protect smaller stands of old growth that

are ecologically important" (SEIS, p. 2). In reality, "*the Bitterroot has been using Green et al. criteria to inventory and monitor old growth since this best science became available*"(SEIS, p. 2). If so, BNF has violated the Forest Plan for almost 30 years. It is not clear why the Forest Plan was not amended then, nearly 30 years ago, but now it is suddenly a necessity**.** There is currently nothing that prohibits BNF from protecting any and all old growth defined by any definition now, including the "*smaller stands of old growth that are ecologically important"* (SEIS, p. 2). BNF does not need a Forest Plan amendment to protect any and all old growth by any definition if that's what it wants to do. It seems more likely that BNF needs this amendment to allow them to cut more old, large trees. In fact, SEIS p. 12, appears to state exactly that: *"The proposed old growth amendment is responsive to the purpose of the project which is to improve landscape resilience to disturbances (such as insects, diseases, and fire)* ***by modifying forest structure and composition****, and fuels."* (emphasis added). And SEIS, p. 2 states: "*It is important to note that the Gold Butterfly Project analyzes various treatments, including commercial harvest, within stands that qualify as old growth*."

BNF complains that *"the Plan criteria do not specify any minimum age for the large trees used to determine whether a stand qualifies as old growth. Large trees used to determine the presence of old growth are defined only by size as quantified by diameter at breast height (dbh). This is problematic because several common local tree species (e.g. ponderosa pine, Douglas-fir, Engelmann spruce) growing on productive sites can exceed the Forest Plan criteria of 20" dbh size minimum when they are younger than ages typically associated with old growth*." (SEIS, p. 11). Why would this be a problem if BNF's intention is to "*replace old growth standards with more ecologically sound direction which will provide for old growth habitats"* (SEIS, p. 3). A 20" diameter limit would protect all old growth by either definition. For example, the Como Forest Health Project placed an upper dbh limit of 20" for treatment units that contained any old growth regardless of acreage. From the Como ROD: "*We would reduce stand density in both units to between 60 and 80 BA and would not harvest trees 20 inches diameter at breast height (DBH) or larger. One of the old growth criteria in Green et al (2005) is a minimum of eight trees 21 inches or larger****. By retaining trees 20 inches or larger, we will retain all the trees that qualify as old growth and provide replacement trees as the older, larger trees age and die. We also meet the minimum stand density characteristic for old growth by maintaining stands above 60-80 BA (Green et al. 2005)"*** (emphasis added). The Como project appears to have been more forward-thinking than the Gold Butterfly project, or perhaps the politicians have since increased the timber mandate.

Green et al caution: *"Do not accept or reject a stand as old growth based on the numbers alone; use the numbers as a guide****."*** In other words, there is more to old growth than the trees; there is also understory, ground cover, wildlife cover, down woody debris, snags, soil organic matter, etc. Green et al provide no minimum criteria for any of these associated characteristics. The Forest Plan Old Growth standards do include minimum criteria for snags and down debris, and the Forest Plan states that in old growth, heart rot, broken tops, and lichens/mosses are common; stands are uneven aged or multistoried (p. II-19).

While eliminating the Forest Plan's 40-acre old growth minimum will require the protection (protection is already allowed) of smaller old growth stands, small stands do not always have the same ecological value as larger ecologically connected stands. Green et al (p. 12) state:

"The third point to bear in mind when evaluating old growth is that a stand's landscape position may be as important, or more important than any stand old growth attribute. The landscape is dynamic. We need to do more than draw lines to manage this dynamic system. Consider the size of old growth blocks (large blocks have special importance), their juxtaposition and connectivity with other old growth stands, their topographic position, their shapes, their edge, and their stand structure compared to neighboring stands. Stands are elements in dynamic landscape. We need to have representatives of the full range of natural variation, and manage the landscape mosaic as a whole in order to maintain a healthy and diverse systems."

USDA Forest Service (1987) states: "*Isolated blocks of old growth which are less than 50 acres and surrounded by young stands contribute very little to the long-term maintenance of most old growth dependent species***."**

It appears that the Bitterroot Forest Plan (p. III-4) also recognized the importance of landscape position, directing BNF to: "*Provide 40-acre stands of old growth by coordinating management activities in this area with activities in adjacent management areas and with intermingled riparian and unsuitable management areas*."

Clearly, a bunch of isolated, small old growth stands do not equal a few large, well-connected old growth stands.

To help us evaluate the necessity of this Forest Plan amendment, please provide maps comparing old growth in the project area using both definitions (Forest Plan and Green et al standards). For the project area, please provide existing percentages for old growth habitat by management area and drainage using Forest Plan standards, just as you have done for Green et al standards in the SEIS, p. 12. Demonstrate that use of the Green et al standards will indeed result in more old growth habitat preservation. Please provide comparisons of projected timber production from Gold Butterfly treatment units that contain old growth for each definition/standard. Please provide all old growth monitoring results for BNF since 1992 using either standard.

FS responds that using Green et al will result in more old growth identified than using the Forest Plan. However, no background data or maps are provided, and we must just take your word for it. It's disturbing that the BA on whitebark (p. 12) states: ***"The project area was partially surveyed in 2012, 2013, 2016, and 2017 for rare plants",*** *indicating the entire project has not yet been completely surveyed. Does this include old growth surveys?* ***REMEDY: P****rotect all old growth, including individuals, by either the Forest Plan or Green et al definitions. You are allowed to do so. The easiest and most effective way to accomplish this without doing more surveys is through dbh limits, which may vary by species (for example, 20" for DF and PP). The only reason not to impose a dbh limit is to meet your timber mandate. Your lack of monitoring is addressed in comments below.*

BNF fails to demonstrate the necessity of amending the Forest Plan "*to accurately measure the amount and type of old growth within the project area….evaluate whether we are meeting Forest Plan goals…. and monitor whether we are moving away from or towards Forest Plan goals*" (SEIS, p. 18-19). The SEIS, p. 17, also states **"***Additionally, by adopting Green et al. we are able to monitor old growth because the Bitterroot National Forest has used the Northern Region monitoring approach.*"

While the Forest Plan standards include more minimum criteria than Green et al, they are not particularly hard to measure-- dbh, trees per acre, tons of CWD debris, presence of heart rot/broken tops, presence of lichens and mosses, 40 acre minimum size, 75% canopy closure**.**

The SEIS, p. 11, complains: "*Even if we understood what potential canopy closure was, canopy closure is difficult and laborious to measure on the ground and is subject to a high degree of subjectivity. It is not one of the measurements collected during common stand exams. Further, canopy closure is not measurable using remote-sensing tools*." An internet search reveals several ways to measure canopy closure (https://www.ecologycenter.us/forest-ecology/measuring-canopy-closure.html). Coring trees is also laborious and not measurable using remote-sensing tools, but amending standards to Green et al's will require coring. Concerning the use of remote sensing to identify old growth, it is worth noting that remote-sensing tools and walk-throughs failed to identify a 25-acre old growth stand on the Westside project, which was subsequently logged and taken out of old growth status as defined by Green et al, violating HFRA. Amending the old growth standards will not necessarily solve that problem; only ground-truthed stand exams are reliable.

While your attention to measurement, evaluation, and monitoring are commendable, on past projects I have seen little, if any, post-project monitoring and no use of those data to evaluate results and practice adaptive management. Please provide old growth monitoring data and results for the entire Bitterroot National Forest since 1992. Please disclose the methods used or planned for identification of old growth in the Gold Butterfly project (GIS data, remote-sensing, stand exams, walk-throughs, etc). Please analyze and disclose the natural historic range vs. current conditions regarding patch size, edge effect, and amount of interior forest old growth in the BNF as Green et al suggest.

FS response (Appendix C, p. 42) is: ***"Please see Forest Plan monitoring reports posted to the Bitterroot Forest website Bitterroot National Forest - Planning (usda.gov)."*** *However, this provided link shows no monitoring reports available after 2015 (reports from 2009-2015 only).The most recent old growth monitoring appears to be in 2013 (2010-2013 Monitoring Report). In the 2013 report, FS reports old growth percentages in the Stevenville district (location of the Gold Butterfly project) to be MA1—11%; MA2--5%; and MA3a—9%. The 5% in MA2 falls well short of the 8% required by the Forest Plan. In addition, the 2013 report shows old growth decreased from 2006 to 2013 in all MAs from 4-10%. The 2013 reports states:* ***"Forest Plan old growth standards need to be carefully evaluated for each 3rd order drainage where vegetation management projects are planned."*** *It appears that no monitoring of old growth has been done since 2013. Clearly, concerns about lack of monitoring are well-founded.* ***REMEDY:*** *Complete and disclose new monitoring of old growth. Preserve areas that will recruit old growth to bring MA2 up to the 8% required by the Forest Plan. Ensure that monitoring of all aspects of the project, both during and after, is funded* ***prior to*** *project approval.*

FS response regarding monitoring of pine marten and pileated woodpeckers is (Appendix C, p. 34-35): "Marten inventory efforts and results within the project area are disclosed in the Wildlife Report (PF-WILD-001) on p. 87. The results of Forest Plan monitoring efforts for marten are summarized in the Wildlife Report (Ibid) on p. 92, and are described in detail in a section of the annual Forest Plan Monitoring and Evaluation Report from 2014-2015 (PF-WILD-094).

"Pileated woodpecker detections within the project area are disclosed in the Wildlife Report (PF-WILD-001) on pp. 109-110. The results of Forest Plan monitoring efforts for pileated woodpeckers are summarized in the Wildlife Report (Ibid) on p. 114, and are described in detail in a section of the annual Forest Plan Monitoring and Evaluation Report from 2014-2015 (PF-WILD-095)."

However, there is no information on marten monitoring on p. 87 or p. 92 of WILD OO1. WILD OO1 does state the following:

P. 83: "The Forest does not have population estimates for marten within the Gold Butterfly area, but marten are known to occur within the project area. Inventories conducted by the project wildlife biologist in areas identified as potential marten habitat did result in one observation of a marten in September 2017."

p. 85: "The Forest established multi-carnivore bait stations designed to detect fishers, marten, wolverine and lynx at up to seven locations within the project area in the winters of 2014-15, 2015-16, 2016-17 and 2017-2018. Most of these stations detected martens,"

p. 88-89: ***"The Forest has not completed many marten monitoring transects since 1993, as a result of other funding priorities. Nine marten transects were completed in 2004. The average number of miles surveyed per marten track in 2004 was considerably lower than the average from 1988 to 1996. Put another way, a lot more marten tracks were seen in 2004 than in previous years."***

WILD-094 just repeats the above vague information, with the addition that through 2015 the marten "havest" was dramatically increasing.

There is no information on pileated woodpecker detections in Wild 001 on p. 109-110 or p. 114. Habitat is discussed p. 109-110. No monitoring. Wild-095 is just the Biological Assessment letter for Canada Lynx, and not applicable to the comment.

REMEDY: *It is clear that there are no monitoring data available for indicator species since at least 2015, and for marten since 2004. It's now 2022. The Forest Plan requires baseline population estimates for indicator species pine marten and pileated woodpecker based on recent monitoring surveys. Complete surveys for these species in the Gold Butterfly area before signing approval for the project.*

BNF failed to rigorously explore and objectively evaluate all reasonable alternatives as required by NEPA (40 CFR 1502.14). What could be more arbitrary and capricious than amending the plan to match standards that BNF has illegally been using for almost 30 years? Numerous deficiencies in Green et al have been pointed out by other scientists (Yanishevsky, 1994; Shultz 1992), including a lack of peer review, a lack of new field work to verify existing plot data, no estimates of the natural range of variation of old growth, and no criteria for the evaluation of old growth quality. Green et al include only two quantifiable measurements: trees per acre meeting age and dbh minimums, and basal area. If BNF wanted to more accurately assess old growth, they could have developed criteria that built on Green et al and analyzed the new standards as an alternative. For example, in old growth Ponderosa/Doug Fir, they could have increased the trees per acre to Green et al's average of 17, specified Green et al's

average of 6 snags per acre, included a minimum for CWD, specified a number of broken-topped/hollow trees per acre, etc. Such an alternative amendment would certainly be more scientifically sound than the only one offered in the SEIS. Please develop a third alternative that considers ALL of Green et al's data, results, and recommendations, and includes more quantifiable criteria than either Green et al or the Forest Plan.

Green et al. (1992) does not represent the best available science for the management of Old Growth. Even if Green et al. (1992) represents the best available science for **identifying** old growth in BNF, it does not represent the best available science for **managing** old growth. Numerous other, more recent publications give recommendations for the management of old growth and are discussed below. An important question, not answered in the Gold Butterfly SEIS, is: How will BNF use Green et al's **identification** criteria to **manage** old growth on the Gold Butterfly project and other future and ongoing projects? I am concerned that BNF will use the new standards to cut more old and large trees. They will be able to do this in several ways: 1) Although GB SEIS states (p. 2) "*treatment units containing old growth would retain their old growth status*", using Green et al allows old growth status in Ponderosa Pine/Douglas Fir to be retained if old/large trees are cut to their minimum of only 8 old/large trees per acre versus the 15 required in the existing Forest Plan, and the 17 per acre average of Green et al.; 2) BNF could use the new standards to eliminate the old growth habitat defined by the Forest Plan, thereby cutting more large trees; 3) Using Green et al's standards may bolster the old growth percentages above the Management Area (MA) minimums, thereby allowing old growth to be cut down to the MA minimums of 3-8%.

The SEIS (p. 18) states: "*The 1987 Forest Plan requirement that old growth stands meet a minimum of 40 acres could be detrimental to wildlife species associated with mature or over-mature forests or old forest components because patches of old growth less than 40 acres could be removed and still meet the 1987 Forest Plan standard.'* A similar argument can be used against the proposed amendment: that it could remove stands that do not quite meet the age requirements, but that are already functioning as old growth habitat for some species. For example, SEIS, p. 19, claims "*Pileated woodpeckers and marten are not old growth dependent species. They are associated with mature and over-mature forests that contain habitat components such as large trees, large snags and down woody material that are often found in old growth forests, but also utilize younger forests that contain some of those habitat components. Therefore, forests that do not meet the old growth definitions can and do provide habitat that contributes to the viability of these species at several scales……While pileated woodpeckers are often associated with mature forests, the presence of large trees or snags for nesting is reported to be more important than forest age.* But the proposed amendment will allow BNF to cut the mature and over-mature forests you discuss above, so it appears that the proposed amendment could be detrimental to pileated woodpeckers and marten, who apparently do not have a minimum tree-age requirement (see the section on wildlife effects below for more detail). Without data and maps comparing the acreage of Forest Plan old growth to Green et al old growth, it is impossible to assess the effects of the proposed amendment. Please provide existing percentages for old growth habitat by management area and drainage using Forest Plan standards to compare with the percentages using the Green et al standards in the SEIS, p. 12. Please provide maps of the project area comparing old growth using the two different standards.

In focusing on the minimum criteria for old growth, BNF ignores other results of Green et al, most importantly that they surveyed 4,847 plots of Western Montana, Zone 1, Ponderosa-Doug Fir-Western Larch old growth and found an average of 17 old growth trees per acre (well above their minimum of 8), along with 6 snags per acre (no minimum required). Therefore, it appears that Green et al were establishing minimum criteria and not advocating that 8 trees per acre were plenty. Their management recommendations (p. 12) advise caution, and to remember that old growth stands are irreplaceable within human life spans:

"old growth is valuable for a whole host of resource reasons such as habitat for certain animal and plants, for aesthetics, for spiritual reasons, for environmental protection, for research purposes, for production of unique resources such as very large trees. Unusual natural communities, etc., the resource values associated with potential old growth stands need to be considered in making allocations.

At the same time, there may be some stands with trees so large or so old that they are unique. We should always maintain a good representation of these very old unique and outstanding stands, because they are irreplaceable within human life spans. Remember to value the truly unique and outstanding, wherever it may be."

BNF fails to analyze the proposed amendment's significance in the context of the larger Gold Butterfly FEIS, particularly concerning subsequent management of old growth and also the cumulative impact with the proposed CWD site-specific amendment. Amending old growth standards (identification standards) does not stand alone; BNF must disclose how old growth will be **managed** under a new definition. Many scientists have provided management recommendations for old growth, and all recommend retaining all or nearly all old/large trees (Yanishevsky; 1994; Hessburg et al., 2015; Fielder et al., 2007a,b; Wales et al., 2007). Rapp (2003) states "*No management activities should be implemented in old growth. Recent studies have shown that old growth ecological systems (not just the trees) are the most complex and important feature of a forest."*

Fielder et al (2007b) state that "*old-growth functions increase as numbers of large trees, snags, and downed logs increase*", again suggesting more is better. Green et al (1992) specified a minimum basal area of 60 ft^2/acre, and Fielder et al's (2007a) recommendations stated: *"Reserve basal areas of 10–18 m^2 per hectare (45-80 ft^2/acre) are prescribed for post-treatment stands. Densities at the high end of this range (80 ft^2/acre) are retained in stands dominated by large trees*." None of these other references are included or discussed in the SEIS or the Gold Butterfly FEIS, which speaks to my concern that the proposed amendment will be used to cut, rather than preserve, old growth. In fact, the Mud Creek ROD (p. B-22) states: "*while Green et al. (1992) and the Forest Plan provide minimum criteria for identifying old growth, that does not mean **all** stands will be treated and harvested to the minimum criteria numbers*." (emphasis added) Apparently, then, some old growth stands on the Mud Creek project, which is using the same old growth amendment, will be cut to the minimum, validating our concerns.

It is not clear why the SEIS (p. 12-13) lists perceived threats to old growth. These threats include: decreasing Ponderosa Pine composition, greater susceptibility of Doug Fir and Ponderosa Pine to insects and disease due to drought, Ponderosa Pine loss from the ongoing mountain pine beetle epidemic, loss of Doug Fir and Spruce from mistletoe and bark beetles, mortality of White Bark Pine from mountain

pine beetle, and severe fire due to large numbers of dead and dying trees. Are you implying that the amendment will reduce these risks? If so, how? By allowing more timber to be cut?

Please disclose how the proposed amendment will affect your management of old growth in the Gold Butterfly project, including specific treatments planned for old growth, how many old/large trees will be retained per acre, and minimum post-treatment basal area for units with old growth. Please show how you will be managing old growth under the Green et al standards, the differences in management between using the Forest Plan standards and the Green et al standards, and how that management will incorporate the best available science references cited above. Please analyze the proposed amendment's effects together with the proposed CWD site-specific amendment (Gold Butterfly FEIS).

FS responded (DROD, Appendix C, p. 47) to the above pages that ***"all treatment units containing old growth would retain their old growth status under the selected alternative. This is the intended management in old growth stands in moving forward with this project."*** *However, this does not ensure that old growth stands will not be cut down to the 8 old-growth trees per acre minimum. In fact, DROD, Appendix C, p. 7 , confirms that large/old trees will be cut in old growth units. The prescription states:* ***"retain all older ponderosa pine in form classes 3A-3B and 4A-4C regardless of basal area or spiked dead top and retain older ponderosa pine in class 3C-3D and 4D only if they exhibit signs of decay, woodpecker activity, or dead tops that are needed as live snag replacements. Favor the largest Douglas-fir for retention without spruce budworm damage, or mistletoe and have 40% or better crown ratio."*** *Class 3 is mature and Class 4 is over-mature (likely old growth) timber. A-D refer to vigor, with A being the most vigorous and D being least. Therefore, older PP with poorer crowns will be cut unless they are needed as live snag replacements. Old DF with spruce budworm damage or mistletoe are also likely to be cut. Most old DF have some mistletoe, but that does not mean they are not valuable ecosystem components and important carbon sequesters. Same for DF, spruce, and lodgepole. After treatments, some mortality of old trees always occurs, and so cutting to the minimum of 8 old trees per acre will likely take the stand out of old growth status within a year or two, violating HFRA. The only reason to cut old and large trees is to fulfill your timber mandate.* ***REMEDY:*** *Retail all old growth individual trees by either the Forest Plan or Green et al definitions. This can most practically be accomplished by imposing dbh limits for the various species, for example 20" for DF, PP and spruce; 12" for lodgepole pine; etc. Build no roads through old growth by either definition.*

BNF fails to analyze the effects of the old growth amendment on wildlife as compared to using the Forest Plan standards for the Gold Butterfly project. Wildlife species possibly detrimentally affected include cutthroat trout, bull trout, grizzly bear, lynx, fisher, elk, multiple migratory bird species, cavity-nesting birds (snag habitat), bats, raptors, red squirrels, wolverine, marten, etc. Possible detrimental effects on pine marten and pileated woodpeckers have already been discussed above. The minimum number of Old Growth trees under Green et al. may be too low for Flammulated Owls, a Montana Species of Concern and a U.S. Forest Service Sensitive Species, according to the Montana Field Guide: "*Territories consistently occupied by breeding pairs were those containing the largest portion (more than 75%) of old-growth (200 to 400 years), whereas territories occupied by unpaired males and rarely breeding pairs contained 27% to 68% old-growth.*" On the Gold Butterfly project, if the Green et al old

growth standards result in more commercial timber harvest than the Forest Plan standards would allow, then habitat would likely be fragmented and degraded, and more roads might be built.

The SEIS (p. 20) states that: "*A project-specific amendment to support using the old growth definitions in Green et al. for the Gold Butterfly project rather than the existing Plan old growth criteria would not result in negative direct or indirect effects to old growth or to wildlife species associated with mature or over-mature forest structure*". However, that statement does not constitute a "hard look" as is required by NEPA. The SEIS includes no documentation which indicates the Agency performed any research or post-project monitoring of past management actions that allows for a comparison of wildlife impacts from Forest Plan old-growth treatments vs. the proposed Green amendment old-growth treatments.

Please compare and contrast the effects on wildlife using Forest Plan old growth standards versus Green et al standards on the Gold Butterfly project.

BNF fails to analyze the effects of the proposed old growth amendment on climate change and carbon sequestration. Large, old trees store disproportionately large amounts of carbon, as carbon storage dramatically increases with size (dbh) (Mildrexler et al, 2020; Stephenson et al, 2014). With future climate crises probable, retaining large, old trees will not only help mitigate or buffer climate change, but will benefit ecosystems in other ways through their biodiversity and resilience to fire, disease, and drought. Will using the proposed amendment result in more large trees cut than if the Forest Plan standards were used? Will using the proposed amendment result in more commercial timber production than using the Forest Plan old growth standards? Numerous researchers (Campbell et al, 2011; Harris et al, 2016; Law and Warring, 2015; Law et al, 2017; Reinhardt and Holsinger, 2010; Stenzel et al, 2019) have found that logging emits significant atmospheric carbon, much more than wildfires. Please compare estimated carbon emissions and carbon sequestration using Green et al's standards versus the Forest Plan standards on the Gold Butterfly project.

FS response (DROD, Appendix C, p. 18, 47) was: ***"Fire and disease account for the highest losses of non-soil carbon stocks, and these together are multiple times higher than the non-soil carbon stock removed by timber harvest. Therefore, the net effect of harvest that leads to stands that are more resilient to fire and disease would result in more carbon stored. See Bitterroot Carbon Assessment paper (CLIMATE-004) page 14 for a discussion regarding that removing carbon from forests for human use can result in lower net contributions of greenhouse gases to the atmosphere than if the forest was not managed."*** *However, no data are given in support of these statements in either Appendix C or PF-CLIMATE-004, and FS conclusions are in opposition to the findings of researchers cited above. In addition, whether logging reduces fire hazard is highly controversial among scientists. Forest Service also argues that young regenerating forests sequester carbon more rapidly than old forests, but this argument does not account for all the carbon removed by timber harvest. The forest has a lot of catching up to do, which takes 100 years.* ***REMEDY:*** Implement a dbh limit by species to preserve large trees, the most important carbon sinks.

Summary: BNF is already allowed to preserve as much old growth, by any definition, as they want. They do not need any sort of Forest Plan amendment to do so. Green et al do not provide guidance on management of old growth, only identification.

REMEDY: *A solution to BNF's stated "problems" would be to prohibit commercial logging and road building in old growth using both definitions, Green et al's and the Forest Plan. The only reason to amend old growth standards is to enable BNF to better get the cut out. If you choose to continue with the proposed amendment, then you must follow NEPA procedures as outlined above. Management of old growth should follow the recommendations of the many cited references above, because Green et al do not provide management direction.*

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