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Comments: 6. Statement that Demonstrates a Connection between Prior Specific Written Comments On the Project and the Content of the Objection.

NEC and A WR provided comments on the draft Environmental Impact Statement (DEIS) and draft Revised Forest Plan for the Custer Gallatin National Forest on June 6, 2019. We are incorporating by reference all these extensive comments into our Objection in order to avoid repetition. We addressed many issues in these comments including: fire and fuels management; carbon storage; weeds; management of shrublands and woodlands; management of riparian habitats; conservation of watershed networks; terrestrial vegetation management; forested vegetation management; snag and old growth management; fire effects on wildlife vegetation, snags and old growth; management of wildlife based on the Range of Natural Variation; management of the threatened grizzly bear; designation of focal species; definition of big game security habitat; livestock management; timber management; opening sizes exceeding 40 acres; logging of unsuitable timber lands; failure to mange open road densities; violation of the Roadless Area Conservation Rule; failure to designate wilderness areas form wilderness study areas; failure to define how restoration can be achieved in various roadless lands; inappropriate size of geographic areas; failure to map wilderness study areas; failure to identify focal species for monitoring, and why they represent management impacts on wildlife; failure to identify that logging may increase fire risks; failure to implement valid conservation measures for the lynx; allowance of sagebrush burning in sage grouse habitat; failure to use a valid primary conservation area for the grizzly bear on the Custer Gallatin National Forest; failure to use the current best science in analysis and management of the wolverine; failure of the DEIS to include any assessments on almost all wildlife species, including those associated with snags and old growth; use of an outdated snag strategy; failure to evaluate the planned impacts on big game displacement from public lands in the hunting season; and overall failure of the Plan to meet the requirements of the NFMA to maintain a diversity of wildlife, since there are habitat standards for almost the total wildlife species that occur on the Custer Gallatin National Forest.

NEC and A WR recommended that in order to address the agency's failure to provide a wildlife alternative, in spite of endless public concerns about wildlife (e.g., many objections and legal claims implemented against agency vegetation projects), that the agency develop a true wildlife alternative that promotes wildlife on these public lands. This alternative would maintain exactly half of all watersheds across the forest for wildlife conservation. We misrepresented this proposal somewhat by stating it should be half of each watershed, when we actually meant that at least half of all watersheds on the forest be designated for wildlife conservation. Dividing each watershed into wildlife habitat and areas for timber management would create the massive habitat fragmentation and road network that we believe needs to be avoided. These watersheds that are selected for wildlife conservation would also address adverse impacts created by livestock grazing. There would be no exceptions for any type of management activities in these wildlife conservation watersheds, including false habitat improvement projects such as prescribed burning.

7. Supporting Reasons for the Reviewing Officer to Consider

In our objection, we expanded on those draft EIS/draft Revised Forest Plan

comments that we felt were the most important concerns. In addition, we

provided the literature citations to support these concerns. The flaws of this

Revised Forest Plan and associated FEIS are huge, and we will only attempt

to summarize those we believe are in most need of additional reviews by the agency. These include failure to evaluate and manage for migratory birds, including 39 species of western forest birds; failure to implement conservation strategies that ensure persistence of the Canada lynx; failure to update the primary conservation area designated for grizzly bear management to reflect current population distribution; failure to provide controls on open road and total road densities in big game summer range, as well as in occupied grizzly bear habitat, in spite of the well-documented impacts roads have on elk and grizzly bears; failure to correctly define big game hiding cover and security; use of a snag management strategy that was identified as invalid over 30 years ago; failure to map and require old growth habitat across the forest for associated species; failure to develop valid conservation measures for the wolverine based on current science; failure to prevent severe habitat fragmentation due to large openings; failure to validate claims that prescribed burning benefits wildlife; failure to validate that claimed restoration activities in various roadless lands restore degraded wildlife habitat; failure to demonstrate that logging and burning unsuitable timber stands benefits wildlife; failure to control the agency's practice of never-ending increases in noxious weeds, since weed management is not a budget priority; and failure to identify why the agency is proposing to exacerbate climate change with massive vegetation treatments.

8. Remedy

The draft Revised Forest Plan is simply a jobs program for the agency as well as a massive subsidy of taxpayer dollars to the timber industry. Every single alternative developed will have severe adverse impacts on wildlife. In

addition, this plan contains no valid habitat standards for almost all wildlife that occur on these forests. The only way that wildlife will be conserved is to designate specific areas where no vegetation management activities are allowed, and as such, no wildlife standards are actually required. We propose that the NEPA requires the agency to develop an additional action alternative to address the many well-documented public issues in regards to wildlife conservation. As we noted above, this alternative would, with a collaborative citizens group comprised of members who have no financial stake in forest management, create a design or designs whereby at least half of the total watersheds across the forest are designated as wildlife conservation areas, where no vegetation activities of any kind, as well as road construction, are allowed (no exceptions). Existing roadless lands, such as wilderness areas, wilderness study areas, and inventoried roadless lands, would all remain as is at present, and be included as part of the wildlife conservation areas.

9. Description of those Aspects of the Proposed Project and Analysis Objectors that Violate Law, Policy or Regulations.

I. The Forest Service Revised Forest Plan (RFP) is violating the NEPA, the NFMA, the AP A and the ESA by failing to conserve the threatened Canada lynx.

The Northern Rockies Lynx Management Direction (hereafter "Lynx Amendment") will not conserve the lynx and the habitat they depend upon, including occupied lynx habitat and lynx critical habitat. The Lynx Amendment does not protect the threatened lynx from extinction, in violation of the ESA, nor does it provide a valid measure of project impacts

on lynx as per the NEPA, the NFMA, and the ESA, including impacts on lynx critical habitat. The Lynx Amendment also violates the APA by providing implausible conclusions regarding lynx conservation.

A. The Lynx Amendment does not requires that analysis of project impacts be limited to the average size of a female lynx home range.

The Lynx Conservation Assessment and Strategy (LCAS 2000) recommends that the analysis area for project impacts on lynx occur within the average size of a female lynx's home range (LCAS 6j-2). The LCAQS at 7-3 defined the average size of a lynx home range as from 16,000-25,000 acres, while the ROD at glossary 12 for the Lynx Amendment defines a lynx home range as varying from 25-50 squires miles ('6,000 to 32,000 acres). More recently Holbrook et al. (2017b at pages 5 and 9) defined the mean size of a female lynx home range as 55 squires kilometers, which comes to 13,440 acres. The size of most LA Us on the Custer Gallatin National Forest exceed this size by up to 6 times, such as the Rock Creek LAU and the Rosebud LAUs in the Greater Red Lodge area. The percentage of the LAU that will be impacted by vegetation projects has consistently been used by the Forest Service as a measure of project impacts on the lynx, such as for the Greater Red Lodge Project (2015 FEIS 2-8, 82). Thus the impact of individual projects is being "washed out" by the agency's use of inappropriately-sized LA Us. This inappropriate use of LAU size is not prohibited by the Lynx Amendment.

B. The Lynx Amendment bas no definitive criteria for defining lynx habitat and lynx critical habitat, which results in large

portions of lynx habitat being dismissed for management; the requirement that only tine pieces of the landscape be protected for lynx means that project impacts on lynx habitat are not only not accurately disclosed, but highly detrimental impacts are concealed from the public; the current best science required by both the NEPA and the ESA, contradicts strongly with the definitions of lynx habitat in the Lynx Amendment, which bas never been amended and is based on the LCAS completed in 2000, is thus outdated by 20 years; continued use of the Lynx Amendment ensures rather than prevents extinction of the lynx in the N ortbern Rockies, in violation of the ESA; the Lynx Amendment also violates the ESA by allowing long-term adverse modification and possibly destruction of lynx critical habitat.

The Lynx Amendment defines 5 types of lynx habitat by structural states, but only 2 o9f these require protection and management. Unsuitable Structural Stage (ROD Glossary at 12: ROD at 9) is defined as logged areas where trees do not protrude above the snow in the winter.

Stand Initiation Structural Stage (ROD Glossary at 14) is defined as logged areas where young trees extend over the snow in the winter. This structural stage is noted to provide important snowshoe hare winter habitat (ROD at 11). This stage does not require any minimum density of saplings, although densities of 4,500 stems per acre are identified as needed to provide adequate levels of snowshoe hare hiding and thermal cover (LCAS at 1-4, 6-3). Brittell et al. (1989) reported that youngforest stands provide

winter hare habitat need to have from 4690-13, 440 stems per acres, and that less than 3, 000 stems per acre provide inadequate hiding and thermal cover for snowshoe hares. Existing stand initiation structural stages are to be protected as per Standard VEG S5.

Older multistory structural stages are defined in the Lynx Amendment ROD Glossary at 13 as containing many age classes and vegetation layers, and contains large old trees. These are identified as important winter hare habitat (ROD at 13). There is no requirement for any level of multistory habitat; only existing multistory habitat is to be protected as per Standard VEGS6.

Stem exclusion structural stage is defined as having a closed canopy with a limited understory (ROD glossary at 14). No stem exclusion habitat has to be protected.

Understory re-initiation structural stage (ROD glossary at 14) is where a class of young trees begins to develop after the overstory trees begin to die or have been removed; over time a moderately dense unevenaged overstory developed, with some shade-tolerant trees in the understory. There are no standards for this structural stage and it is not used in analysis of projects in the Custer Gallatin National Forest.

Currently, there are published definitions of what type of habitats lynx are using in the Northern Rockies. These differ drastically from the vague as well as limited descriptions oflynx habitat provided in the Lynx Amendment. The most current definitions of lynx habitat were published by Kosterman et al. (2018, Table 1 and 1036). What is key is not only the

relatively definitive description of the vegetation, but as well, there is a description of the density of hares that would be present, something the Lynx Amendment lacks. Also a huge difference between current best science and the Lynx Amendment is the former recognizes based on research that all forest types within lynx habitat have a conservation value to lynx. On the other hand, the Lynx Amendment defines lynx habitat as small scattered "pieces" of habitat within a much larger landscape that has no conservation value for lynx, and in tum, no protection and management of these extensive areas is required.

The current best science descriptions of lynx habitat in Kosterman et al. (2018) are as follows:

Open: low density of hares; no trees or canopy.

Sparse Forest: low density of hares; sparsely stocked with trees with a discontinuous canopy, low horizontal cover.

Small-diameter regenerating forest: trees 4-5 inches dbh, intermediate canopy cover; capable of having a high density of hares which are difficult for lynx to access because of high stem densities.

Medium-diameter regenerating forest: medium-sized trees, 6-8 inches dbh, a continuous canopy, and high horizontal cover; capable of producing high hare densities over a limited time frame, but hares are somewhat accessible due to intermediate stem densities.

Mature Forest: multistoried or uneven-aged stands, average tree dbh of 10 inches, a high proportion (22%) of large trees over 15 inches dbh; substantial understory and horizontal cove r, continuous canopy, no recent disturbance; capable of producing medium density of hares over a long time

frame, with higher kill rates of hares by lynx because densities are lower than regenerating classes.

In Kosterman et al. (2018), all of the habitat within a lynx's core home range was classified as lynx habitat and defined as to the quality of foraging potential as per hare densities for a female lynx's core home range, which was approximately half of the average home range size. Holbrook et al. 2017b identified the medium size of a female lynx's home range as 55 square kilometers, which comes to 13,440 acres. The average composition of these 5 structural stages in a core home range was as follows:

Open: 4%

Sparse Forest: 10%

Small Regenerating forest: 13%

Medium Regenerating forest: 24%

Mature forest: 49%

These actual measure of habitat within a female lynx's core home range show a huge difference from this verified science with the Lynx Amendment. The Lynx Amendment allows 30% unsuitable habitat, where Kosterman et al. (2018) reported only 14% unsuitable habitat (open and sparse forest) in a female lynx's core home range. This is less than half allowed by the lynx amendment. Also the Lynx Amendment does not require any level of snowshoe hare habitat within lynx habitat, while Kosterman et al. (2018) found that up to 86% of a female lynx's home range contained snowshoe hare habitat (small regenerating forest of 13%, medium

regenerating forests of 24%, and 49% mature forest). As for habitat

connectivity, Kosterman et al. (2018) reported that also 86% of the female lynx's core home range contained cover suitable for travel. The Lynx Amendment requires the agency to "maintain" connectivity, but there is no actual definition or minimum level required. This also does not require maintaining the "status quo." What constitutes a minimum level of habitat connectivity is never defined in this Amendment, so the standard ALL S 1 is relatively meaningless, in spite of the recent recognized importance of habitat connectivity for female lynx. Kosterman et al. (2018) noted that habitat connectivity was one of the 2 most important habitat conditions associated with a female lynx's ability to produce a litter of kittens.

C. The Forest Service has recognized that the Lynx Amendment is highly inconsistent with the current best science; in the recent analysis of project impacts on lynx in the Greater Red Lodge Project, the agency made many changes to the habitat descriptions in the Lynx Amendment, without completing any actual amendments or public involvement, in order to reduce the huge discrepancies between the current best science and the Lynx Amendment; these changes to habitat descriptions in the Lynx Amendment continue to provide arbitrary definitions of lynx and lynx critical habitat.

The Forest Service has since modified the vegetation structural stages defined in the Lynx Amendment without any Forest Plan amendments or NEPA procedures, attempting to update this amendment to address current science. For example, the 2015 Greater Red Lodge project analysis for lynx added the "other" structural stage (Table 3.16.7 at 3.412) which includes the stem exclusion structural stage and possibly denning habitat. The Lynx

Amendment FEIS and ROD have no definition of"other" lynx habitat. While it is claimed that "other" habitat includes the stem exclusion structural stages, the 2015 map for lynx habitat in the Greater Red Lodge NEPA analysis (maps 71-73 for the 2015 FEIS) actually separates out "other (yellow) from "stem exclusion" habitat (orange). So it appears that "other" habitat is just denning habitat. The Lynx Amendment has no structural stage definition for denning habitat.

For the 2019 DSEIS for the Greater Red Lodge Project, the Forest Service further modified the definitions of lynx habitat in the Lynx Amendment to include a "mature" structural stage (Table 3 at DSEIS 17). The "other" habitat definition is more extensively defined in this DSEIS as including both stem exclusion (closed canopy with little understory), denning habitat, and stem exclusion stands with an open canopy and little understory. The Lynx Amendment definition of stem exclusion habitat requires a closed canopy, so this is a significant change from the Amendment definition. The 2019 DSEIS added another category "mature" forest, which includes multistory foraging habitat as well as multistory non-foraging habitat, which are a subset of stem exclusion habitat. The mature stage was added to the structural stages for lynx based on review of the most current best science for lynx, including Holbrook et al. 2017, Holbrook et al. 2018, and Kosterman et al. 2018 (Table 3 ofDSEIS at 17). The analysis of"mature" forest reported that this category included 6,603 acres of the Rock Ctreek LAU, and only 2,787 acres of the Rosebud LAU. Thus mature forest habitat is defined as only 4.3% and 1.7% of the LAUs, respectively. This seems

highly implausible on it face, but especially as the 2015 FEIS at 3,406 stat5es that most of the project area is heavily forested and dominated by mature forest stands.

There is no definition in the Lynx Amendment as to what constitutes "nonforaging multistory habitat." So it is not clear how this differs from multistory habitat that contains snowshoe hares in the Lynx Amendment.

There was no monitoring data provided in this update as to how the lack of snowshoe hares was determined, just as this has never been verified for the "stem exclusion" and "other" forest types. However, the agency has still identified many forest types in occupied lynx and lynx critical habitat as lacking hares, without any actual data to support these contentions.

Even with the modifications made to the implementation of the Lynx Amendment, without any actual NEPA procedures of Forest Plan Amendments, both the 2015 as well as the 2019 agency descriptions of lynx habitat as well as critical habitat in the Greater Red Lodge Project Area provide highly implausible results. The implementation of the Lynx Amendment, including modifications, precludes almost the entire landscape of lynx habitat and lynx critical habitat from management and thus conservation of the lynx.

In summary, even with updates, the proposed management of lynx habitat including lynx critical habitat, requires almost no actual management. In 2015, for the Rock Creek LAU, only 16% of the landscape was defined as lynx or potential lynx habitat (FEIS 2015 Table 3.16.7); only 13.4% of the Rosebud LUA was defined as lynx habitat. Lynx foraging habitat, defined as stand initiation structural stages and multi-story forest, is defined as 6.1 % of

the landscape (9,309 acres) for the Rock Creek LAU, and 4.6% of the landscape (7,430 acres) for the Rosebud LAU. Thus only 4.6-6.1 % of the LAUs were to be protected for any management by the Lynx Amendment. This would be a maximum protection, as those habitats located within the WUI would not be protected.

The same protections for lynx are required for lynx critical habitat.

Maps 71,72 and 73 of the Greater Red Lodge 2015 FEIS provide a good demonstration of the acres of lynx habitat that require management as per the Lynx Amendment. Stand initiation structural stages and multistory structural stages are mapped by color. These protected areas comprise a tiny portion of the lynx critical habitat.

For the 2019 DSEIS analysis provided for lynx habitat in Table 3 at 17, the Rock Creek LUA includes only 21.5% lynx habitat, while the Rosebud LAU includes 19.2% lynx habitat. Foraging habitat, which is defined as stand initiation and multistory habitat, comprises only 4.6% of the Rock Creek LAU (1,163 stand initiation acres and 5,785 multistory acres) and only 4% in the Rosebud LAU (5,044 stand initiation habitat and 1.406 multistory acres). The new category added, "mature forest" does not add any foraging habitat, and is only 4.3% of the landscape in the Rock Creek LAU (6,603 acres), and only 1.7% of the landscape in the rosebud LAU (2,787 acres). Even the miniscule amount of identified "mature" structural stage does not require any protection in the Lynx Amendment.

D. The agency has never validated that the extremely limited distribution of snowshoe hares, a key lynx prey species, defined in the Lynx Amendment actually occurs on the ground in lynx

habitat and lynx critical habitat.

The driving rationale for the agency's conservation strategy that fails to protect 95-96% of lynx critical habitat, or only those 2 structural stages reported to contain snowshoe hares, including stand initiation and multistory) has never required any substantiation that the highly restricted and limited distribution of snowshoe hares actually exists on the ground. However, the suggestion that snowshoe hares only occur within 5-6% of the landscape occupied by lynx, including critical habitat, is not supported by any science. For example, in 2007, Squires and Ruggiero reported that snowshoe hares existed at variable densities across the landscape. In the summer, mature forests averaged 0.34 hares/ha, open mature forests averaged 0.18 hares/has, young dense forests averaged 0.64 hares/ha, and young open forests averaged 0.47 hares/ha. In the winter, mature dense forests average 0.53 hares/ha, open mature forests average 0.2 hares/ha, young dense forests averaged 0.47 hares/ha, while young open forests averaged 0.12 hares/ha. More recently, Holbrook et al. (2017a) measured hare occupancy across large areas of Montana, and reported that 67% of their plots were occupied by hares; densities varied markedly from habitat to habitat, ranging from 028 hares/ha, 0.81 hares/ha, 1.48 hares/ha, up to 4.21 hares/ha. Densities will vary according to the quality of the habitat, since many areas may provide mediocre (Lewis et al. 2011) and/or suboptimal (Brittell et al. 1989 at 87) habitat. As was noted by Squires and Ruggiero (2002) lynx habitat is an array of forest types. The entire basis of the Lynx Amendment, that only a few areas provide snowshoe hares for lynx, and only these areas require protection and management, is a strategy to promote timber harvest, not lynx.

E. The rationale for the Lynx Amendment limitations of lynx habitat protections to only 5-6%, as measured in the recent Custer Gallatin National Forest analysis for the Greater Red Lodge project LAUs, is never provided in the ROD or the FWS Biological Opinion (BiOp) for the Amendment.

The Lynx Amendment ROD at 9 and 16, as well as the FEIS for the Lynx Amendment at 72, note that the basis for the 3 0% VEG SI standard, with no more than 30% unsuitable lynx habitat within an LAU, was based on the Brittell et al. (1980) recommendations for lynx habitat. However, the remaining portion of these recommendations were never incorporated into the Lynx Amendment-the agency "cherry-picked" what parts of these recommendations they wanted to apply to lynx conservation, leaving out other major parts of these recommendations. For example, the Britten et al. (1989) recommendations including a strategy for the entire landscape, with habitat maintained within each 640 acres. This election of management requirements for 70% of the landscape is never addressed in the FEIS or ROD, or in the FWS BiOp. The Brittell et al. (1989) recommendations include management of 100% of the landscape for lynx (e.g., pages 34, 100 in USDA 1992). These include 6% denning habitat, 30% travel habitat, 30% hiding cover/thermal cover/stalking habitat, and 33% nonlynx habitat, that would include natural openings. The Lynx Amendment does not require any analysis of natural openings in lynx habitat or lynx critical habitat; these openings do not count against the 3 0% unsuitable standard in the Lynx Amendment. For example, if 10% of the landscape is natural openings in lynx habitat, this does not count against the 30%

unsuitable standard, which is a direct contradiction of the Brittell et al. (1989) recommendations.

The Brittell et al. (1989) recommendations for lynx conservation, only a portion of which was incorporated into the Lynx Amendment, called for 66% of the landscape to provide lynx habitat. These recommendations are surprisingly similar to the current best science for lynx conservation. For example, Kosterman (2014) reported that a productive female lynx's home range averaged 50% mature forest and 15% advanced regenerating forest, which would mean that 65% of the lynx home range provided suitable habitat. More recently, Kosterman et al. (2018) reported that a female lynx's core home range average 49% mature forest, 13% smaller-sized regenerating forest, 24% medium-sized regenerating forest. Thus 86% of this core home range provided suitable lynx habitat, with only 4% natural openings and 10% sparse forest, areas generally avoided by lynx. Even if the smaller-sized regenerating units lacked good hiding cover for lynx, there would still be 73% of the core home range that provided travel cover. This is a vast difference from the levels of hare habitat claimed by the Custer Gallatin National Forest as per the Lynx Amendment strategy for the Greater Red Lodge Project where only roughly 4-6% of the landsdcape was claimed to provide lynx habitat. This is 14 times less habitat than is reported by the current best science, as well as 11 times less habitat recommended for lynx conservation by the 1989 Brittell recommendations.

Using the Kosterman et al. (2918) publication as the current best science for lynx habitat, it is clear that the requirements of the Lynx Amendment have essentially no conservation value for the lynx. Lynx foraging habitat can be defined as little as 5-6% of the landscape as per the Custer Gallatin National

Forest application of the Lynx Amendment, as indicated by the analysis in the Greater Red Lodge project. The current best science indicates that lynx select breeding habitat with 70-86% suitable habitat.

F. The Lynx Amendment has no requirements to prevent extensive fragmentation of snowshoe hare habitat, and as a result, snowshoe hare populations are threatened with severe declines and/or extirpation where the amendment is applied on the Custer Gallatin National Forest, including within critical lynx habitat.

The Lynx Amendment totally ignores how the proposed conservation strategy will impact populations of snowshoe hares, which means that the ultimate impact of the proposed conservation strategy is not addressed, since hares are the key to lynx persistence. In 2005, Walker clearly identified that management of hares requires management of the larger landscape, not just the optimal patches of habitat, such as dense forests. Hare populations were correlated with the amount of open forest within 300 meters of dense foreste patches; hares used suboptimal matrix habitat, as opposed to dense forest patches, as travel habitat and to supplement resources; thus these matrix areas provided important support for hare populations, and reduce predation. High quality matrix habitat also promoted population connectivity for hares, which in tum promoted populations levels and persistence across the landscape. When matrix habitat was poor, hare populations tended to exist as small, remnant populations vulnerable to extinction. The importance of Walker's thesis (2005) was noted in a publication by Lewis et al. (2011), where it was again noted that densities of hares were affected by the amount

of open, less suitable habitat surrounding their home ranges. It is clear that management of the lynx requires landscape management of hare populations which is not required in the Lynx Amendment.

G. The Custer Gallatin National Forest application of the Lynx Amendment to specific projects, such as the Greater Red Lodge Project, demonstrates that the Lynx Amendment has no specific binding requirements for mapping and evaluating lynx habitat, including lynx critical habitat; definitions of lynx habitat can apparently be "adjusted" without any NEPA procedures or Forest Plan amendments; this arbitrary process is likely to continue in the new planning period where the Lynx Amendment will continue to be implemented.

The Greater Red Lodge Project is a good example of how the Custer Gallatin National Forest is applying the Lynx Amendment for lynx, including within critical lynx habitat. The 2015 FEIS for that project at Table 3.16.7 at 3.412 identified that the Rock Creek LAU had 16% lynx habitat, while the Rosebud LAU had 13% lynx habitat. In 2020, the agency identified in Table 3 at SFEIS, page 17, that the Rock Creek LAU had 21.5% lynx habitat, while the Rosebud LAU had 19 .2% lynx habitat. Thus in 2020, the agency added 17,350 acres of lynx habitat from the original analysis done in 2015. These changes included the addition of 5141 acres of early stand initiation (unsuitable) habitat, the subtraction of 8482 acres of multistory foraging habitat, the addition of 3,589 acres of stand initiation habitat, and the addition of 17,102 acres of"other" habitat. The SFEIS at 17 states that these changes were due to refinements of the Canfield 2013 analysis, refinements that were completed on 3/21/18. There was no actual

rationale provided as to why specific structural stages were added or deleted. However, the percentage of lynx habitat in the LAUs remained extremely small in spite of the additions, at 21.5-19.2% (Table 3, FEIS at 17). In turn, the maps of lynx habitat provided in the 2015 FEIS and the 2020 FEIS are quite different (maps 71-73 for the 2015 analysis, and Figure 2 in the 2020 FSEIS.

H. The implementation of the Lynx Amendment on the Custer Gallatin National Forest appears to arbitrarily delete important lynx habitat in order that timber harvest can be promoted; this arbitrary use of the Lynx Amendment to log lynx habitat, including critical lynx habitat, will likely continue into the new planning period where the Lynx Amendment continues to be implemented without updating, actions which will clearly threaten lynx conservation across the Custer Gallatin National Forest.

It is unclear why vast portions of LA Us on the Custer Gallatin National Forest as defined as nonlynx habitat, and thus are not protected from logging and fuels treatments under the Lynx Amendment. The recent analysis for the Greater Red Lodge project is a good example. It is unclear why vast portions of the LAUs in this project area, including critical habitat, are defined as nonlynx habitat. For the areas being proposed for logging, it is clear that these areas were subtracted as lynx habitat because of the presence of lodgepole pine and aspen. Using a criteria of lodgepole pine fo9r removal as lynx habitat would require that is is a dry, climax lodgepole pine type as per the LCAS at 1-3, and the Glossary at 4. It is clear that the lodgepole pine

stands eliminated as lynx habitat in the areas planned for logging are not climax lodgepole pine stands. In FSEIS Table 2.1 at 2020 to 2-24, at least 15 of the stands proposed for logging are defined as mixed conifer stands. And 4 of these stands proposed for logging are identified as containing spruce and fir. It seems unlikely that climax lodgpeole pine stands exist within this mosaic of mixed conifer stands. Excluding climax lodgepole pine stands, lodgepole pine forests are repeatedly defined as "primary lynx habitat" in the LCAS (e.g., Summary at 3, 1-3, Glossary at 4). Even in the 1989 Brittell et al. recommendations it was noted that forests managed for lynx should contain a large percentage of lodgepole pine. In 2012, Berg and others reported some of the highest hare use in their study area in Wyoming within dense lodgepole pine stands 30-70 years old. Most recently, Holbrook ete al. (*2017b) noted that the abundance of snowshoe hares in northwestern Motanan was associat3ed with the abundance of lodgepole pine, and that there was a positive effect of lodgepole pine abundance, along with horizontal cover, on hare occupancy; they noted that lodgepole pine provides a highly nutritious winter forage for hares, while spruce/fir provides the necessary hiding and thermal cover, so that this combination provides optimal habitat for hares. In the Greater Red Lodge analysis, the forest is eliminating current and future optimal habitat for hares from any protection by classifying lodgepole pine as non-lynx habitat.

Also, many of the stands identified for logging in the Greater Red Lodge project that are not classified as lynx habitat contain aspen. Table 2.1 at FSEIS 2-20 to 2-24 shows that 35 out of the 53 commercial units identified contain some level of aspen. The LCAS clearly notes that aspen stands, even though defined as secondary habitat, need to be combined with primary

habitat when interspersed with these other habitats (LCAS Summary 3, 1-3, Glossary at 4). The LCAS also repeatedly notes that aspen can provide important summer foraging habitat for snowshoe hares (e.g., LCAS 1-3, 2-13, 4-8, 5-2, and 8-3). Berg et al. (2012) reported that in Wyoming, some of the highest snowshoe hare densities they sampled were in mixed conifer/aspen stands.

The elimination of areas planned for logging in the Greater Red Lodge Project area was clearly arbitrary, as the habitat conditions clearly appear suitable for some level of hare throughout the year, and/or in the summer for aspen stands.

The lodgepole pine and aspen stands at the lower elevations of the Greater Red Lodge Project landscape are clearly lynx habitat as per current habitat conditions. And a 1999 Montana Fish, Wildlife and Parks lynx distribution map shows a lynx home range at low elevations in this landscape, relatively close to Red Lodge.

I. The Lynx Amendment ignores the irretrievable impacts that clearcutting lodgepole pine has on hares and lynx due to (1) the potential for poor regeneration and hence failure to develop into hare habitat over time, (2) the permanent elimination of what would develop into high-quality winter hare and winter lynx habitat, and (3) the irretrievable loss of large amounts of logs; due to these severe deficiencies, this conservation strategy promotes the extinction rather than the conservation of the lynx.

The Lynx Amendment claims that clearcutting lodgepole pine will eventually create young dense stands of trees that provide winter hare habitat, which would benefit lynx (e.g., ROD at 10-11). The ROD at 10 also encourages logging of stem exclusion habitat to create dense understory trees for hare habitat. However, there is no guarantee that the clearcut areas will develop the dense lodgepole pine seedlings and saplings (up to 4500 per acre) needed to provide hiding and thermal cover for hares as per the LCAS at 1-4, glossary 3). Although the Lynx Amendment "assumes" that all clearcuts will provide winter hare habitat in nl 5-20 years, there was never any actual analysis completed to demonstrate this will happen in all clearcuts. It is certain that an unknown percentage of lodgepole pine clearcuts do not develop dense seeding/sapling stands that provide winter hare/lynx habitat. To ignore this result of clearcutting means that the benfits of clearcutting in the Lynx Amendment are certainly overestimated, but to what degree is unknown. As was noted in Berg et al. (2012) in their study area on the Bridger Teton National Forest, many logged sites in their study area did not regenerate to the densities required by hares. In spite of this, the Lynx Amendment claims that all clearcuts will provide winter hare habitat within 15-20 years, regardless of a lack of dense regenerating lodgepole pme.

The Lynx Amendment recommendation that clearcutting lodgepole pine benefits hares and thus lynx is invalid due to a failure to address the identified impacts on the future development of high quality lynx/hare winter habitat. The development of subalpine fir and spruce in the understory of lodgepole pine stands infested with beetles will create optimal habitat for hares within the near future, as lodgepole pine provides optimal

forage and spruce/fir provide optimal hiding and thermal cover (Holbrook et all. 2017b). This process was noted by Malcolm (20120 that the pine beetle may impact a characteristic critically lacking in many pine forests - structural complexity and species diversity; as overstory logdpole pine trees die out, there will be increased regeneration of other tree species, including aspen, and spruce fir trees; subalpine fir trees have been shown to recruit underneath unlogged beetle-infested lodgepole pine stands, but rarely so in logged bettle-infested stands; harvesting will perpetuate the dominance of lodgepole pine.

In addition, unlogged lodgepole pine stands that are infested with pine beetles will have a huge increase in downed wood, which is highly beneficial to both hares and lynx (Berg et al. 2012). Brittell et al. (19899 reported at 92 that logs provide both hiding and thermal cover for hares. There is also the delayed use of clearcuts and other logged stands by hares, which would not occur without logging. Holbrook et al. (2018) reported that all clearcuts stand were avoided by lynx and hares for at least 10 years, and that it takes from 34-40 years for hare/lynx hares to reach 50% of previous use levels.

J. The agency definitions (FS, FWS) of "matrix" habitat are arbitrary and have no conservation value for lynx; the claim that these areas do not contain any snowshoe hares has never been verified.

The definition of matrix habitat for critical habitat includes dry conifer forest types, and hardwood forest, that lack snowshoe hares. AS per the LCAS, kaspen habitats can be important habitat for hares, and as such, aspen habitat

would not qualify as matrix habitat. The Custer Gallatin National Forest is using the vague, unverified definition of matrix habitat to exclude vast areas of lynx habitat, including critical habitat. For example, a large portion of lynx critical habitat in the Greater Red Lodge LA Us is mapped as matrix habitat. This results in a significant amount of lynx habitat that is deleted from management direction in critical habitat. Table 5 of the Greater Red Lodge FSEIS shows that 67.5% of the LAUs are mapped as matrix habitat. These areas are defined as occurring between patches of boreal forest habitat that do not support hares. It is not clear why many of the proposed logging units are not mapped as at least matrix habitat, even though many are categories as mixed conifer/aspen stands. The FSEIS at 3,421 states that matrix habitat mostly is below the critical habitat boundary. Matrix habitat needs to be defined correctly as per the Lynx Amendment and Constituent elements for lynx by demonstrating that no snowshoe hares are actually present in these areas, so that hares and thus lynx will not experience any direct habitat loss from vegetation treatments. Direct impacts include habitat fragmentation for hares, and the creation of travel impediments for lynx. The FWS has no criteria for how matrix habitat may be impaired by barriers due to vegetation treatments. So they do not provide any basis for determining that fragmentation of matrix habitat will not degrade lynx critical habitat. There is considerable current science that indicates that sparse forest and openings create travel impediments for lynx (e.g, Squires et all. 2010; Holbrook et al. 2018; Kosterman et al. 2018).

K. The recommendation that management of occupied lynx areas is essential for conservation is not included in the Lynx Amendment.

In 2002, in his review of the Lynx Amendment, Dr. John Squires noted that lynx may have a restrictive distribution, and the few areas that support lynx need to be identified and managed accordingly. This recommendation was not included as a recruitment for the Lynx Amendment, even though Dr. Squires is a leading expert on lynx, and also works for the Forest Service as a research scientist. This recommendation is never even addressed in the FEIS for the Lynx Amendment. Instead, the Lynx Amendment considers all identified occupied lynx habitat as equal as per conservation benefits. This amendment allows significant losses of lynx habitat, not only due to the failure to protect most of the habitat that is used by lynx, but as well, due to exceptions and exemptions on many acres of lynx habitat. These exemptions include the habitat that is not even occupied by lynx on national forests. This increases the potential that important hot spots for lynx will be impacted by the Amendment.

The importance of protecting lynx hot spots identified way back in 2002 by Dr. John Squires has recently been verified by publish science. King et all. (2020) did an expansive survey of lynx in Washington based on camera placed across potential lynx habitat. This study found that lynx in Washington have a very restricted distribution, as they occurred in only 20% of the potential lynx habitat surveyed. The serious implications this study has on lynx conservation was noted by Weintraub (2020) in the New York Times. One of the identified threats is continue loss of forest habitat due to wildfire. However, logging creates the same type of habitat, but on a much more severe level, especially clearcutting by removal of basically all vegetation in logging units, as opposed to a snag forest created by fire. The

failure of the Lynx Amendment to require identification of occupied lynx home ranges that will be targeted for special protection means that this conservation strategy is completely incapable of protecting and maintaining lynx across the Northern Rockies. Instead of protecting occupied lynx core areas, the Lynx Amendment allows random habitat removal across vast areas of mapped lynx habitat, and no protection of lynx habitat within Wills. If Will areas contain small remnant populations of lynx, such as the low elevation highly productive habitat in the Greater Red Lodge Area documented as historically containing lynx (MFWP 1998), these populations can easily be eliminated by the Lynx Amendment.

The King et al. (2020) paper noted that their monitoring methods using remote cameras, provided an effective means of monitoring lynx occurrence across large landscapes. This type of monitoring is clearly needed before any more impacts are created on lynx critical and lynx occupied habitat. To date, based on NEC's Freedom of Information Act (FOIA) request in regards to the Greater Red Lodge Project, which is lynx critical habitat, the Forest Service still has not conducted any type of lynx or hare surveys since the release of the 2015 decision, or over 5 years ago. The lack of monitoring of lynx to identify occupied home ranges means that the Lynx Amendment is a clear threat to the conservation of the lynx in the northern Rockies. Since the Amendment does not actually protect lynx habitat, application of this Amendment across the Custer Gallatin National Forest creates a very high probability that lynx will be extirpated from this forest due to the failure of past as well as planned vegetation management activities in lynx habitat to protect occupied lynx home ranges.

L. The Lynx Amendment does not require any assessment of

how traffic levels will impact displacement of lynx.

To date the Custer Gallatin National Forest has not provided any assessment of the displacement impact of traffic on lynx, such as in the Greater Red Lodge Project. This is in part due to the fact that the Lynx Amendment does not require any such assessment. The report by Squires et al. (2010) that low traffic volumes seem to be tolerated by lynx, especially when dense cover occurs along roads and motorized trails, identified "low traffic levels" as 8 vehicle trips per day. This would be greatly exceeded with logging traffic. As well, since the Lynx Amendment does not require any identification of occupied female lynx home ranges, the impact of high volumes of logging traffic may be significant, and impede the ability of female lynx to hunt for kittens, especially if roads are in prime hare habitat.

II. The Custer Gallatin Revised Forest Plan is a violation of the ESA, the NMFA, and NEPA and the AP A by failing to promote conservation of the threatened grizzly bear, and by failing to disclose to the public in the Revised Forest Plan FEIS how implementation of this plan will have multiple severe adverse impacts for the grizzly bear.

A. The Designation of the Primary Conservation Area (PCA) on the Custer Gallatin National Forest, areas where grizzly bear conservation is emphasized, is invalid.

The current PCA on the Custer Gallatin National Forest is the same PCA that was defined in 1982 by the USFWS Recovery Plan, areas occupied by an estimated 229 bears. Then again, with just slight changes, this PCA

remained mostly unchanged in the 1993 USFWS Recovery Plan. Currently, the protections for grizzly bears in secure habitat on the Custer Gallatin National Forest do not apply to extensive occupied grizzly bear habitat outside the PCA. This huge increase in occupied grizzly bear habitat is not the result of a population increase. Instead, the Yellowstone grizzly bear population has remained at roughly the same numbers since 2015 (Mattson 2018). Thus over the last 15 years, this population has more or less stopped growing, while the distribution of these bears has expanded 3 fold (Wilcox 2019). This Yellowstone grizzly bear population may possibly have even been declining since 2007, even while the distribution has increased by over 40% (Mattson 2019).

A good example of the outdated (by almost 40 years) is the PCA boundaries in the Greater Red Lodge Area (see map of PCA in Appendix C). A map of grizzly bear sightings for that project (Appendix C) shows that almost all of the 16 grizzly bear sightings identified in 2015 were outside the PCA boundaries, but instead were in the Rock Creek Bear Analysis Unit. The expanded distribution of grizzly bears across the Custer Gallatin National Forest was also displayed in a recent Montana Outdoors issue, page 24 of the July-August 2020 issue (Appendix C).This map provides a good display of the PCA boundary versus areas outside it where grizzly bears have been documented.

In spite of the well-known failure of the current PCA on the Custer Gallatin National Forest to accurately depict occupied habitat of grizzly bears in the PCA, the Forest's Revised Forest Plan has not modified this PCA boundary to promote the conservation of the grizzly bear. Instead, vast portions (possibly more than 40% of the Yellowstone grizzly bear's habitat) will have

no protections for secure habitat. Secure habitat has been identified as one of the 2 key features essential to reduce mortality of grizzly bears in the Yellowstone Ecosystem (Schwartz et al. 20100. Currently, the mortality rate of grizzly bears in this ecosystem is extremely high, and is clearly a significant management issue. During 2020, according to federal data, more than 3 00 bears have died during the past 5 years in this ecosystem (Willcox and Mattson 2020).

B. The Custer Gallatin Revised Forest Plan has no protections in occupied grizzly bear habitat outside of secure areas for grizzly bears against the mortality and displacement impacts of active motorized routes and mountain bikes.

The only protections for grizzly bears in the Revised Forest Plan are for maintenance of secure habitat inside the PCA. These areas will be generally protected, even though road construction and logging is allowed on 1 % of the Bear Subunit Landscapes over time. It is not clear that even secure areas are protected from mountain bike activities. Given that there are no such restrictions identified in the Revised Forest Plan, it seems apparent that this problem is not being addressed. The general substance of Mattson's (2019) summary of some of the impacts of mountain biking on grizzly bears as follows:

Data pooled from various reports show that 87% of all documented encounters between mountain bikers and grizzly bears were at distances less than 50 m, and that 52% involved females with young; of these close encounters, 89% resulted in the biker either being approached or charged by the involved bears; of 41 encounters reported in another study, bears

were startled during 66% of encounters with mountain bikers.

The percent of encounters that elicited some kind of aggressive response from involved bears is an astounding 14-times greater for mountain bikers compared to for pedestrians.

One study noted that mountain biking is a perfect recipe for hazardous close encounters with grizzly bears given that bikers are often traveling silently at comparatively high speeds per hour, which increases the odds of r rapid closure prior to detection along with amplified reactivity among even highly tolerant bears.

The disproportionately large number of encounters between mountain bikers and female grizzly bears with young is also not surprising; females with young are predictably challenged and delayed by marshalling their offspring before being able to depart, even if they detect an oncoming bicyclist at a distance; the plausible outcome would be the female bears defense of her young.

Mountain bikers likely have a short- and long-term impacts on involved bears; rapid and sustained flight by bears could have longer-term energetic and physiological costs associated with impaired foraging, increased movements, and displacement of activity to suboptimal times of the day.

The weight of evidence unambiguously supports concluding that mountain biking is far more hazardous for involved people and more impaciful on affected bears compared to any other pedestrian activity with the exception of hunting; these impacts likely are why Parks Canada seasonally or permanently closed trails to mountain bikers several years ago in areas where chances of hazardous encounters were high.

The Custer Gallatin Revised Forest Plan also provides no restrictions on active motorized route density or total road densities, even though research has demonstrated that roads are a significant factor in grizzly bear mortality in the Yellowstone Ecosystem. As early as 1991, Mattson and Knight reported that mortality of grizzly bears in this ecosystem was related to developments, but as well to secondary roads; roads appeared to effect bears through a host of human activities facilitated by improved access, including increased frequency of encounters between bears and humans, usually with negative consequences for bears. Mace et al. (1996) reported that roads in the Swan Mountains of Montana increased mortality risks to grizzly bears through illegal killing and through management removals of bears conditioned to human foods. These findings have been more recently verified by more research on grizzly bears in the Yellowstone Ecosystem. Schwartz et al. (2010) reported that roads were one of 2 key factors affecting grizzly bear mortality.

Mace and others (1996) reported that bear mortalities were directly influenced by road access through illegal killing, and through management removal of bears conditioned to human foods in developed areas; some bears even avoided closed roads. More recently, grizzly bear scientists have comprised a summary of research published on road in1pacts on grizzly bears. Proctor et al. (2020) found that motorized access affected grizzly bears at the individual and population levels through effects on bear' habitat use, home range selection, movement, population fragmentation, survival and reproductive rates that ultimately were reflected in population density, trend, and conservation status; motorized access management was effective

in mitigating these effects. They provided recommendations for management of grizzly bear occupied habitat, based on a large amount of research: open road densities should not exceed 0.96 miles per section, and at least 60% of a unit's area should be over 500 meters from an open road in patch sizes of 2,464 acres. These recommendations are somewhat similar, yet less expansive, that the recommendations developed by Dr. David Mattson, who spent many years doing research on the Yellowstone grizzly bear. He recommended that in this ecosystem, grizzly bear security areas should be about 7,000 acres and comprise 57% of a unit (Mattson 1993). He also recommended that road densities (active motorized routes) should average less than 0.26 miles per section at the Bear Management Unit scale.

So even though there is strong scientific consensus that active motorized routes need to be carefully restricted to mitigate their impacts on grizzly bear displacement as well as mortality risk, the Custer Gallatin Revised Forest Plan has no such restrictions on roads either within or outside of the PCA, with the exception of within security areas where active motorized routes would not be open to the public. However, this restriction is meaningless for displacement of grizzly bears, as vehicle trips exceeding 10 per day have been documented to displace grizzly bears (Mace et al. 1996). The FEIS for this Plan did not provide any rationale as to why such restrictions are not important for grizzly bear conservation. This is especially relevant with the current high onging mortality rate of grizzly bears in this ecosystem, with 300 bear deaths document in the last 5 years (Willcox and Mattson 2020).

Research has shown also that roads cause habitat displacement of grizzly bears. For example, as early as 1996, Mace and others reported that grizzly bear habitat use in the Swan Mountains of Montana decreased as the density

of roads increased;

Research has shown also that roads cause habitat displacement of grizzly bears. For example, as early as 1996, Mace and others reported that grizzly bear habitat use in the Swan Mountains of Montana decreased as the density of roads increased; female grizzly bears used unroaded habitats greater than were available; generally grizzly bears used habitats having a total road density of 0.1 to 2 miles per section as available, while areas above this road density were used less than available; bear preference indicated a shift in use of an area when precise open road densities approached 1 mile per section; adult females used areas with an open road density of 0 miles per section greater than expected.46% of the cumulative female home range was unroaded; 21 % had no roads or trails, and 25% had trails bur no roads; 18% of the habitat in the cumulative adult female home range was at total road densities over 2 miles per section; this compares to 39% outside the home range; bears used the 0-100 meter distance from roads significantly less than expected.

Mace and Manley (1993) also reported that unless a road has completely revegetated, managers should assume that some level of human use is occurring along closed roads, and grizzly bears will respond to that use. Thus simply closing temporary roads will not negate the displacement impact on some bears. In addition, closed roads will be used by hunters, which has been identified as an important mortality risk to grizzly bears (Schwartz et al. 2010) and Mattson (199.

C. The FEIS for the Custer Gallatin Revised Forest Plan

claims without any documentation that logging will increase

forage for grizzly bears.

The basis for this claim was never provided. It is known that if huckleberries increase in logged areas, this provides forage for bears, although this huckleberry habitat would have existed before logging, and this is a shadetolerant and shade-benefited species in the Yellowstone ecosystem. In the Swan Mountains, research demonstrated that treated stands less than 12 years old were used significantly less than expected by bears relative to older treated stands; the vast majority of treated stands in the study were never used by grizzly bears; in part, this avoidance may have been due to road access; benefits of increased huckleberries in treated stands may only apply where grizzly bear security is maximized (Mace and Manley 1993).

D. The definition of grizzly bear security habitat used for the Custer Gallatin Revised Forest Plan is invalid and is not an effective conservation measure.

The updated 2016 Conservation Strategy defines grizzly bear security habitat as areas at least 10 acres in size that are 500 meters from an open motorized route, although since administrative use is allowed on roads in security areas, so this definition clearly has loopholes. There has never been any literature cited for the basis of this 10-acre minimum size for grizzly bear security areas. In 1993, grizzly bear security areas in the Yellowstone Ecosystem were defined as areas at least 7,000 acres in size and provided on at least 57% of a bear management unit (Mattson 1993). In the Northern Continental Divide Ecosystem, grizzly bear security areas were defined as having a minimum size of 2500 acres, and comprising 68% of the bear management unit (Protocol Paper 2008). The recent review of grizzly bear management by Protor et al. (2020) on conservation recommendations for

the grizzly bear included a recommendation that security areas be at least 2,464 acres in size, and be provided on 60% of the landscape. So not only is the Custer Gallatin Revised Forest Plan definition of grizzly bear security habitat drastically different from the current best science, has no actual documentation upon which the size determination was based, and finally, has no required percentage of the landscape that provides this security. The conservation value of these criteria for security thus is highly questionable.

III. The agency is violating the NEPA, the NFMA, the APA and the MBTA by failing to define how the proposed vegetation treatments and associated road construction will affect both game and nongame wildlife over the planning period.

A. The agency has failed to define to the public how habitat effectiveness will be managed to avoid significant displacement of big game as well as the wolverine during the massive amounts of vegetation treatments that are proposed for the next 15 year planning period.

There are no standards for open road densities in the Revised Forest Plan, so the level of displacement of elk and other wildlife, including the wolverine and grizzly bear, is unknown and has not been defined to the public, as is required by the NEPA. Also, what are likely severe adverse impacts on a host of wildlife species results in a failure of the planning process to ensure a diversity of wildlife species will be maintained across the planning area due to high open road densities. The current best science indicates that open road densities over 2 miles per section will significantly displace elk (Christensen

et al. 1993). No rationale was ever provided to the public as to why controls of open roads are not needed for wildlife. It is not clear that the vast acres of proposed vegetation treatments can be achieved without significant adverse impacts on summer wildlife habitat, even though this is critical information that needs to be provided to the public. The expected average open road densities that will be required for an average project needs to be included in the Revised Forest Plan FEIS to provide adequate public understanding of how wildlife and vegetation treatments will be coordinated. At present, there is no evidence of any such coordination, which means that the impact of the proposed vegetation treatments has not actually been assessed.

The impact of a lack of controls on open road densities will also impact vulnerable species, as the wolverine. This proposed species has been reported to avoid roads (Scrafford and Boyce 2019; Scrafford et al. 2018). There are also no standards in the Revised Forest Plan to define how the disturbance impact of vegetation treatments alone will impact wildlife use in the summer. It is unclear if the level of proposed vegetation treatments will allow a reasonable level of undisturbed habitat to be maintained within a localized area to promote wildlife summer habitat use. This is important not only to elk, but to vulnerable wildlife species as well, such as the wolverine. The disturbances associated with vegetation treatments, including prescribed burning in roadless lands, will clearly have an adverse impact on the wolverine, which has been demonstrated to have a high degree of sensitivity of human activities on the landscape (Fisher et al 2013; Stewart et al. 2016).

B. The agency has failed to define to the public how the proposed vegetation treatments and road construction will impact elk displacement to private lands in the fall hunting

season, even though this is a recognized problem.

The problem of elk displacement from public lands to private lands in the fall hunting season is well recognized (e.g., Lundquist 2014; Byron 2017; Dickson 2015). Due to the inability of the Montana Fish, Wildlife and Parks to control elk numbers due to this displacement, over half of the hunting districts in Montana are currently over objectives (Dickson 2015). The MFWP has in fact released 2 studies in the Journal of Wildlife Management where elk displacement was studies (Proffitt et all. 2013: Lowrey et al. 2020). This displacement also results in a reduced hunting opportunity for the public, as hunting on private lands is restricted. In spite of this ongoing problem, the Revised Forest Plan includes no standards for elk security on the national forests. The most referenced recommendations for elk security call for at least 30% of the landscape to provide security, which is defined as a block of contiguous forest cover at least 0.5 miles from an open motorized route (Hillis et al. 1991; Christensen et al 1993). This model was derived from several Montana research projects, where it was found that elk consistently selected a conformation of habitats that provided access to the larger, continuous forest communities (Lyon and Canfield 1991). This research was also supported by a later master's thesis where it was found that elk that survived the hunting season were not in close proximity to open roads, were in an area that had low open road densities, and contained forested cover in large patches, which had no significant change in vegetative cover within the past 10 years, and provided substantial hiding cover (Weber 1996). This study reported that elk security areas must meet not only cover and topographic requirements, but they must also be large

enough to ameliorate the effect of concentrated hunting pressure. This study also noted that elk vulnerability increased in areas that had sustained vegetation losses by any of the various timber harvest methods, including shelterwood, selection, seed tree, or clearcut treatments.

As of 2013, the 1v1FWP accepted the Hillis Paradigm defining elk security, or large blocks of contiguous forest cover at least 0.5 miles from an open road (Proffitt et al. 2013). However, 1v1FWP has recently revised their definition of elk security based on research in the Elkhorn Mountains of Montana. Lowrey et al. (2020) studies elk habitat use in the hunting season in the Elkhoms Mountains of Montana; 50% of the elk use was within areas with an average canopy cover of 53% and 2 miles from an open motorized route; the top-ranked security model contained positive relationships with canopy cover, distance to motorized routes, terrain ruggedness, and slope; based on this research, they recommended managing for security with canopy cover values of 23-60%, and distance from motorized routes of 1.1-2.3 miles; where possible, the implementation of more stringent objectives at the upper end of the canopy cover and distance to road thresholds will more strongly reflect preferred security values.

The Revised Forest Plan does not require hiding cover to be present in security areas. The definition of security in the glossary requires only 0.5 miles from an open road. There is currently no published research or management recommendations that include security areas without hiding cover. So even if the agency had actually evaluated the impact of all the vegetation treatments and road construction on elk security, and hence displacement during the upcoming planning period, this analysis would have been invalid due to the use of a faulty definition of security. However, there

is no such analysis in the FEIS regarding how vegetation treatments and road construction will impact security. Without any standards for security, the actual impact is unknown, but it is likely that the current situation of elk displacement will be severely exacerbated with massive road construction and vegetation treatments in the face of no security standards.

The elk displacement issue is also having an adverse impact on the vulnerable wolverine, since this scavenger will have a reduced access to hunter gut piles.

C. The agency has failed to define to the public how much elk hiding cover will be maintained on summer range during the next planning period in the face of massive vegetation treatments; the public cannot determine whether adequate levels of hiding cover will be maintained, as there are no standards for hiding cover on elk summer range across the forest; in addition, the agency is using a false definition of hiding cover, so that any impacts on hiding cover that will be reported in the upcoming planning period will provide the public with false information and analyses.

There are no requirements for any level of hiding cover in the Revised Forest Plan. Hiding cover has been recommended at a minimum of 40% (Black et al. 1976). But good hiding cover has been reported based on a 15 year study on Montana elk as 66% (Lyon et al. 1985). The upcoming planning period, given the massive vegetation treatments planned, will likely create massive displacement impact on elk on summer range, due to a loss of hiding cover. These displacement impacts will be exacerbated by the level of

roads that will be required to implement thousands and thousands of acres of vegetation treatments, all of which will reduce hiding cover. The impact of this loss of hiding cover will be exacerbated by the agency's claim that a 40% canopy cover level is equal to ground-level hiding cover that conceals 90% of an elk within 300 feet (Black et al. 1976). The claim that 40% canopy cover is an accepted definition of hiding cover is based on in-house monitoring, which has never been subjected to any peer review from outside agencies or the public. In fact, the 2013 Forest Service/Montana Fish, Wildlife a.Tld Parks collaborative recommendations clearly note there is a difference between hiding cover provided by a tree canopy and that provided in the understory. Page 11 of these recommendations notes that it is important to distinguish between canopy cover, which shelters an animal from above, and ground cover, which is what hides an animal viewed from a ground position.

Although Lowrey et al. (2020) noted that elk will use forest stands with a little as a 23% canopy cover, they also noted that elk selected for high canopy cover, up to 60%. This means that a 40% canopy cover would not be providing optimum security habitat for elk. More importantly, logged stands could easily be defined as elk hiding cover as long as the resulting canopy remained at or above 40%. This would be inconsistent with Weber's (1996) study of elk security, where he noted that elk that survived the hunting season did not use forest stands that had been logged in the last 10 years. Also, the study area in the Elkhoms had extensive ground-level cover from standing dead and downed trees (Lowrey et al. 2020), which would improve the ground-level hiding cover being provided in these stands.

A key factor in the problem with the agency's modified definition that a

canopy cover of 40% provides hiding cover is that it will not be appropriate for mule deer. The Helena Lewis and Clark National Forest identified this issue in their Middleman Environmental Assessment, in the big game report. This report at page 37-38 noted that deer are different enough from elk that resource management, vegetation manipulation in particular, needs to account for certain local habitat configurations that are important specifically to deer; favorable habitat features include local patches of hiding cover and structurally diverse forests with irregular canopies, complex layering and understory patchwork, and a tight juxtaposition of cover and forage.

A 40% canopy cover would not provide the thermal cover requirements for either elk or mule deer. Thermal cover for elk is defined as a stand at least 40 feet tall with a canopy closure of at least 70% (Black et al. 1976). At least 10% of the 40% recommendation for elk summer cover should be thermal cover. Id. Thermal cover for deer is defined as a stand with a 75% crown closure that is at least 5 feet tall, or a forest stand of at least sapling size with 60% crown closure (Black et al. 1976). Thermal cover levels for mule deer are recommended to be at least 10% on summer ranges. Id. Thus for both elk and mule deer, there is a recommendation of at iast 10% thermal cover on the summer range. If hiding cover is defined as a stand of at least 40% canopy cover, then deer and elk summer range could end up with no actual thermal cover.

Thermal cover on mule deer summer range has been identified as a key habitat feature by Parker and Gillingham (1990); they reported that thermal cover will reduce thermal stress to deer in the summer, which would in tum

increase energy that is available for lactation, growth, fattening and movement, and may therefore influence immediate survival of the individual and production and future survival of its offspring; for example, thermal cover in the summer because of the shade may be 20 degrees cooler than other areas.

D. The agency failed to disclose to the public the severe loss of both big game and nongame habitat that will result from the planned prescribed burning treatments on sagebrush and woodland ecotone areas that are key habitat for these species.

The FEIS and Revised Forest Plan repeatedly claim that burning sagebrush and trees in ecotones will maintain and/ or improve big game winter ranges. No claims were made in regard to nongame species, although these activities would supposedly be habitat improvement for "terrestrial species" which would include nongame species. No where in the FEIS does the agency provide any evidence that burning ecotones, including sagebrush and woodland trees in these ecotones, will benefit wildlife in any manner. This proposed vegetation management program laid out in the Revised Forest Plan provides false information to the public, as it is claimed as a benefit rather than a severe habitat loss for game and nongame species alike.

The value of sagebrush habitats has been demonstrated for many years, benefits that continue to be ignored by the Forest Service, who instead intends to continue with the long-standing practice of burning sagebrush to increase forage for cattle. In 1995, The Montana Fish, Wildlife and Parks published a report on the value of sagebrush to wildlife (Peterson 1995); among other things, this report noted that sagebrush provides over 12%

crude protein for big game in the winter, while grass provides only about 4% crude protein. So replacing sagebrush with grass by burning is not a benefit for forage quality. The Montana Fish, Wildlife and Parks subsequently completed a Memorandw-n of Understanding with the Beaverhead National Forest back in 1998 to reduce the loss of sagebrush through prescribed burning. This MOU identified 41 species of birds that use sagebrush habitats, including 9 that are currently Montana Species of Concern. There are 10 of these bird species that are also associated with juniper/conifer woodlands in ecotones, including 2 Montana Species of Concern. There were 24 mammal species identified as using sagebrush areas, including 2 Montana Species of Concern. And there were 8 species of reptiles and amphibians identified that use sagebrush ecosystems. So the importance of sagebrush habitats to wildlife in general is very high.

The 1998 MOU identified key areas that should be protected from sagebrush burning. These include winter range for elk, deer, antelope and sage grouse, habitats for species of special concern, and key calving, fawning areas for elk and mule deer, and sage grouse breeding areas.

More recently, the Montana Fish, Wildlife and Parks expressed concern about proposed prescribed burning of mule deer winter ranges for the Middleman Project on the Helena Lewis and Clark National Forest (Deleray 2020); it was noted that areas identified for prescribed burning may be shrub communities/stands such as mou8ntain mahogany, antelope bitterbrush, mountain big sagebrush and chokecherry that provide important browse habitat for mule deer during the winter; these habitat types also provide

yearlong habitat, and the ecotones between these habitat types and areas of timber cover are often used for calving or fawning areas; mountain big sagebrush provides habitat for a variety of sagebrush obligate species; the agency also has concerns about the apparent treatment of understory canopy layers in multi-story stands, particularly old growth stands; multi-storied canopies provide hiding and thermal cover benefits, such as wind break on winter range, to species such as elk and mule deer; additionally they provide important wildlife habitat to a variety of species; we suggest assessment of impacts from single layer canopy habitats.

The prescribed burning in ecotones will also impact elk calving and deer fawning habitat. Even the Forest Service acknowledges that vegetation treatments in these key areas is detrimental to elk and mule deer. The wildlife big game report for the Middleman Project on the Helena Lewis and Clark National Forest noted at page 16 that "an abundance of effective lowlevel cover - deadfall, thickets of regenerating conifers, dense shrub grow (mountain mahogany being frequently use) is key to hiding calves from predation and humans; low-level cover is provide din the project area in part by mountain mahogany, sagebrush and bitterbrush.

The Custer Gallatin National Forest includes portions of Yellowstone National Parks' northern elk/deer winter range. The use of sagebrush on this winter range was studied by Wambolt (1998); sagebrush was noted to be an important winter forage resource for both elk and mule deer. Research has also identified the importance of conifer species in big game winter range. A good example of Montana mule deer winter range (photos) is provided in Lovaas (1958); figures 2 and 3 show mule deer winter range that is characterized by scattered woodlands, the same type of woodlands that are

normally targeted in winter range burning programs on national forest lands. Lovaas (1958) reported that several species of juniper are key winter forage species for mule deer, along with some important use of these species in the spring as well, in the Little Belt Mountains, which lie just north of the Custer Gallatin National Forest. More recently, the Oregon Department of Fish and forage (Dawson et al. 1990). More recently, the Oregon Department of Fish and Wildlife published an article in the Journal of Wildlife Management expressing concern about the impact of juniper removal projects on mule deer; they found that mule deer selected juniper habitats on their winter range, in part because of the hiding and thermal cover it provided. Thermal cover has been identified as a key factor on mule deer winter range. Parker and Gillingham (1990) noted that thermal cover areas may be 15 degrees warmer than adjacent open areas in the winter; this cover may reduce wind speeds by 85%; thermal cover serves to reduce heat loss or gain and becomes physiologically important when its presence is necessary to maintain a positive energy balance.

E. The agency failed to disclose to the public that burning and slashing of big game winter range will reduce winter/spring carrion sources for the grizzly bear and wolverine, and will therefore be an adverse impact on the conservation of both of these vulnerable species.

Mace et al. 1996 identified the importance of big game winter ranges to grizzly bears in the Swan Mountains of Montana. Spring use of winter ranges by grizzly bears likely provides an important resource for grizzly bears on the Custer Gallatin National Forest as well. And winter carrion is

noted to be important for wolverine, including on the Helena Lewis and Clark National Forest (Gehman et al. 2014) as well as in Canada (Scrafford and Boyce 2018). It is also known that wolverine kill elk calves in the spring (Kuglin 2019).

F. The agency has failed to implement any conservation measures for the vulnerable wolverine, even though it is proposed for listing under the ESA, and it is highly vulnerable to vegetation management activities due to roads and landscape developments and disturbances.

The Revised Forest Plan assessment of implementation impacts on the wolverine was the classic agency claim that wolverine only use high elevation 'rocks and ice' so that vegetation management activities will not impact this proposed species. Although wolverine use higher elevation areas with good snowpack for denning, and storing food into summer in cold snowy places to preserve it, this species uses a variety of elevations, including down to big game winter ranges. Winter carrion is an important survival food for wolverine (Scafford and Boyce 2018). Also, wolverine prey on elk calves in the spring (Kuglin 2019), which also occur at quite low elevations. Monitoring of wolverine on the Helena Lewis and Clark National Forest in fact pointed out that wolverine in that landscape use low elevation habitats that would not qualify as wolverine habitat by current standards. Gehman et al. 2014 reported that wolverine use of low elevation use not only included winter ranges, but also habitats through the summer; these habitats contained high levels of horizontal cover, as well as boulder fields that hold ice well into the summer. Thus vegetation management of big game winter ranges will have a direct impact on this species, as will almost

any kind of logging and prescribed burning, because understory cover essential for the snowshoe hare (Holbrook et al. 201 7 a, 201 7b; Lewis et al. 201 I: Walker 2005) will be removed. Gehman et al (2014) noted that wolverine take snowshoe hares as prey. In summary, all of the proposed vegetation treatments planned in the Revised Forest Plan will have detrimental impacts on the wolverine. The cumulative impacts of these vegetation treatments along with the adverse impact of roads (Fisher et al. 2013; Scrafford et al. 2018; Steward et al. 2016) will clearly reduce habitat use by this species across currently-suitable areas of this forest. These adverse impacts were not disclosed to the public in the agency's NEPA analyses.

III. The agency is violating the NEPA, NFMA, AP A, MBT A, and the ESA by failing to support claims that management activities will maintain and/or restore wildlife habitat.

The Revised Forest Plan identifies many habitat improvement projects by decade that will be completed for species-at-risk and terrestrial wildlife. However, there is no information ever provided in the associated FEIS as to what these projects will be, or what science demonstrates these proposed projects will benefit wildlife. It seems likely that most of the proposed "improvement projects" will be prescribed burning of wildlife habitat, or removing it while the agency claims this removal is benefiting wildlife. The massive degradation of wildlife habitat that is ongoing with Forest Service prescribed burning projects was never addressed in the FEIS, and due to this lack of analysis and disclosure to the public, the agency then proceeded to

include these types of projects for the upcoming planning period to improve wildlife habitat.

There have been many habitat improvement projects on the Custer and Gallatin National Forests during the past planning period, and the effects of these treatments, such as burning big game winter range, cutting out trees in ecotones, and removing conifers from aspen stands, were not provided in the FEIS to support further programs of these types. Not only will the prescribed burning of big game winter ranges create adverse impacts on big game, as addressed previously in this Objection, and as well, remove habitat for many bird species that use sagebrush and woodlands, including many Montana Species of Concern, but the vast acreages of burning to remove the understory of conifer forests will have severe impacts on western forest birds, as well as forest predators from wolverine to pine marten to goshawks and great gray owls, due to the destruction of snowshoe hare habitat. The burning out of forest understories also has a severe impact on almost all western forest birds, birds that are in decline. And the burning programs create massive increases in infestations of noxious weeds and nonnative annual grasses, as cheatgrass. The increase of these weeds is unavoidable in burning programs, and these are irretrievable impacts, because the agency is not controlling noxious weeds. Burning results in the removal of wildlife habitat followed by replacement of wildlife habitat with noxious weeds. The actual impact of these burning programs has never been disclosed to the public in the FEIS.

Unless the agency can first demonstrate to the public that these burning programs are actually beneficial, rather than harmful to wildlife, these programs should not be included in the Revised Forest Plan. The Revised

Forest Plan programs are required to ensure a diversity of wildlife is maintained in the planning unit, and without any analysis of how much wildlife habitat will be destroyed with habitat improvement projects, the agency has not demonstrated that this will be achieved. Also, the Revised Forest Plan is supposed to demonstrate that public lands are being managed for a public benefit, which does not include destroying wildlife habitat and replacing it with noxious weeds, an impact that is irretrievable.

V. The Revised Forest Plan is a program that is intentionally increasing the impacts of climate change due to massive forest logging as well as massive prescribed burning of shrublands and woodlands; yet the agency and FEIS did not define why priorities are those that will exacerbate climate change, which is not a public benefit; the rationale for for est plan programs need to be clearly defined to the public, as is required by both the NFMA and the NEPA; also, there was no action alternative that addresses climate change, in violation of the NEPA and the NFMA, as climate change is having impacts on wildlife population viability.

The public has no idea as to why the agency budget priorities are to exacerbate climate change through vast vegetation treatments of both logging and prescribed burning. As with any agency, budgets are limited, and how these budgets are to be divided amongst important management

needs on public lands needs to be fully defined to the public. This information is essential in order for the public to understand why some programs are being emphasized while others are not. There is no rationale ever provided in the Revised Forest Plan or associated FEIS as to why budget priorities are to increase the effects of climate change rather than to address this serious problem. The public benefit of these budget priorities that exacerbate climate change were never provided to the public. The Revised Forest Plan includes table after table of various "desired conditions" for these public lands. The connection between these "desired conditions and climate change is completely absent. It seems logical, due to this absence of any connection between desired conditions and climate change, that climate change has played no part in how the agency established management priorities for the upcoming planning period. As such, there was clearly no action alternative ever developed that addresses this important public issue, in violation of the NEPA and the NFMA.