October 28, 2023

USDA Forest Service,
Rocky Mountain Region
Attn: Reviewing Officer
C/O Director of Strategic Planning
2nd floor, 1617 Cole Blvd. Building 17
Lakewood, CO 80401

Subject: Grand Mesa, Uncompahgre, Gunnison National Forests Revised Land Management Plan
Responsible Official: Chad Stewart, GMUG Forest Supervisor
Submitted via: https://www.fs.usda.gov/goto/gmug/forestplan_objections

Dear Reviewing Officer:

The undersigned file this objection to the Final Land and Management Plan for the Grand Mesa, Uncompahgre, Gunnison (GMUG) National Forests under the process identified in 36 C.F.R. § 219 Subpart B. Notice of availability of the Draft Record of Decision (Draft ROD), Final Environmental Impact Statement (FEIS), and the Revised Land Management Plan (Revised Plan) was published in the *Grand Junction Daily Sentinel*, the GMUG's newspaper of record, on August 30, 2023, initiating a public objection period.

The parties listed below have all participated previously in the process for revising the GMUG Forest Plan and have submitted or endorsed comments submitted by various parties, including the comprehensive comments on the Draft Plan and Draft EIS dated November 24, 2021, submitted by High Country Conservation Advocates (HCCA) on behalf of numerous conservation organizations (hereafter "HCCA et al. (2021)"). More detailed identification of where objection issues were previously addressed is stated in each objection section below. The deadline for the submission of objections is October 30, therefore, this objection is timely.

This is Objection I of two objections we are submitting. Objection II, addressing issues with designation of species of conservation concern, has been submitted separately.

Rocky Smith shall be the lead objector, per 36 CFR 219.54(c)(3).

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I. GMUG FOREST-WIDE ISSUES

The objectors have previously raised concerns about each issue detailed in this objection to the Draft Plan and Draft Environmental Impact Statement (DEIS) in coalition comments submitted by lead commenter High Country Conservation Advocates (HCCA), November 2021 (HCCA et al. (2021)),[1] unless otherwise specified.

A. The timber suitability analysis is flawed.

Objectors addressed this issue beginning on page 50 of the HCCA et al. (2021) on the Draft Plan and DEIS.

1. Introduction

As with the Draft Plan, the Final Plan appears to have increased timber production as a goal, even though trees are much more valuable standing, as they provide for biological diversity and carbon storage. Even so, the GMUG has published a semi-final Revise Plan that emphasizes production of wood products. The Response to Comments states that "maintaining timber industry in the region is of high importance in accomplishing desired forest conditions and is why the timber program in this preferred alternative projects an ambitious conifer program relative to historic production. … FEIS III at 356.

It is hard to see what desired conditions require cutting on steep slopes to be accomplished. Cutting more timber, including some on steep slopes, would reduce the likelihood of meeting other desired conditions, including, but not limited to:

- FW-DC-WTR-01 (maintain watersheds in, or move toward, properly functioning condition; plan at 22).
- FW-DC-ECO-08 (old forests are well distributed and support dependent species; Plan at 33).
- FW-DC-ECO-05 and FW-DC-32 (provide for connectivity of wildlife habitat and lynx, Plan at 31 and 48).
- FW-DC-IVSP-01 (invasive species are low in abundance to non-existent, Plan at 36).
- FW-DC-SPEC-01 (provides for native species persistence and movement, Plan at 39).

[1] The HCCA et al. 2021 comments on the Draft Plan and draft environmental impact statement can be found in the Forest Service Public Reading Room for the GMUG revised forest plan in the file named HCCA_etal_GMUG_DraftPlan_Cmts_11-24-2-21.pdf on this page: https://cara.fs2c.usda.gov/Public/Letter/2800447?project=51806. The Reading Room lists the author as Matt Reed, organization as High Country Conservation Advocates (HCCA), date submitted as 11/24/2021.

- FW-DC-SPEC-12 (maintain habitat blocks to support wildlife populations, Plan at 42).

- FW-DC-SPEC-17 (maintain at-risk and most native species, Plan at 45).

- FW-DC-SOILS-01 (maintain soil quality and function, Plan at 58).

- FW-DC-SCNY-01 (high quality, natural-appearing scenery and scenic values persist in viewsheds from areas with high public use, Plan at 98).

The timber program for preferred alternative B is described as "ambitious." FEIS I at 589. Yield for the preferred alternative is said to be "optimistic." FEIS I at 425-426. There's no evidence that what is proposed would accomplish the desired conditions.

2. Areas with spruce beetle kill should not be found suitable.

According to the Plan, the beetle has affected 343,000 acres on the GMUG, including 113,000 acres that might be suitable for timber production. Revised Plan, Appendix 8 at 2. The FEIS acknowledges that areas recently cut for salvage "will not regrow such that they are ready for harvest entry not only for the life of the plan but for decades beyond." FEIS I at 426. Yet, 192,800 acres of spruce-fir and 191,300 acres of spruce-fir-aspen are considered possibly suitable for timber production. Revised Plan, Appendix 8 at 10. "Per policy, areas impacted by spruce beetle… were included in the lands suitable for timber production, as they will be merchantable again in the long term, at the end of a new forest rotation… ." FEIS III at 343.

Lands affected by spruce beetle were also used in the sustained yield calculation. Id at 342.

With the death of the overstory spruce trees from beetle attacks, more sunlight hits the forest floor. This has likely led to an increased herbaceous ground cover (of grass, forbs, and shrubs) in beetle-affected stands. With a thick ground vegetation cover, there may be no places for new seedlings to establish. But even if there are such areas, spruce does not regenerate or survive well in the early years in open areas. In any habitat, spruce seedling mortality is quite high, especially in the first year after establishment.

As Alexander (1987) noted, "[r]emoval of the overstory…will produce new microhabitats, many of which will be unfavorable to initial survival and seedling establishment."[2] Alexander further noted that "spruce does not establish readily in the open at high elevations in the Rocky Mountains," and that even seedlings planted in open areas often die.[3]

[2] Alexander, R. R. (1987). Ecology, silviculture, and management of the Engelmann spruce--subalpine fir type in the central and southern Rocky Mountains (No. 659). US Department of Agriculture. 27.

[3] Alexander. (1987).

In short, there is no indication or a likelihood, that spruce trees will soon naturally regenerate significantly in areas affected by spruce bark beetle. Planting could be done on some acres, but certainly not on all of the spruce-fir and spruce-fir-aspen acres affected by beetles that are considered suitable for timber, due to cost and the logistical difficulty of planting that many acres. Even if all or most of these acres were planted, seedling survival and growth into mature trees appropriate for future wood product use would be questionable at best. Also, any cutting in spruce-fir stands (e.g., for removal of standing dead spruce) is likely to destroy much of the existing understory, which could include spruce trees.[4] Thus any existing spruce seedlings or ones that regenerate in the future could be destroyed.

Yet, the timber suitability analysis apparently assumes that spruce will very soon regenerate on many acres. Table 16 in FEIS I at 98 shows adequate regeneration in spruce-fir stands. However, this data comes from FIA plots in 2017. It is not clear if this includes any data from stands affected by the beetles. If it does, most of the seedlings on plots affected by spruce beetle may be all or mostly subalpine fir. But as argued below, subalpine fir is not a commercial species.

Based on the available information, this assumption of existing and future regeneration of spruce and growth into harvestable trees is not at all justified.

On many sites where beetles killed spruce trees, subalpine fir trees of various sizes likely remain. These trees could be cut on suitable lands, but subalpine fir (*Abies lasciocarpa*) is not a commercially valuable species. It does not have much strength and warps badly when kiln dried. Also, Worrall and Nakasone (2009), determined that subalpine fir trees over 150 years old or greater than 9.5 inches diameter had average decay of 35 percent of board-foot volume.[5] Nevertheless, lands with this non-commercial species are apparently not excluded from the suitability analysis. See Revised Plan, Appendix 8 at 2.

3. Steep slopes and lands with high erosion potential should not be suitable.

In response to concerns about land with high erosion potential being found suitable for timber production, the GMUG states that such areas have been reduced (FEIS III at 344), but apparently not eliminated. In fact, the land found suitable in alternatives B and C includes "most areas with steep slopes that are otherwise suitable (including areas with a slope greater than 40 percent". This results in 86,000 to 103,000 acres with slopes of 40-60 percent being found suitable and 26,000 to 36,000 acres over 60 percent also considered suitable. Revised Plan, Appendix 8 at 8. See also FEIS I at 427.

[4] Alexander, id. at 44, stated that "any king of cutting is likely to destroy at least half of the advanced growth."

[5] Worrall, J. J., and K. Nakasone (2009). Decays of Engelmann Spruce and Subalpine Fir in the Rocky Mountains. USDA Forest Service, Forest Insect and Disease Leaflet 150, April 2009.

Six percent of the lands found suitable are in the very high erosion category, 11 percent have high erosion potential, and 44 percent have moderate potential. FEIS I at 426. Operations (logging, skidding, road construction) in such areas would increase the probability of landslides and soil erosion.

Up until now, little logging appears to have occurred on steep slopes; [a] variety of logging systems can and have been used on steep slopes, such as skyline cable, helicopter, and others, but these have not been used frequently on the GMUG due to the cost and the value of the harvested trees." FEIS III at 353.

The FEIS discusses new technology being used in a project at Monarch Pass. FEIS at I 566. Even assuming the impacts to soils and watershed are acceptable from logging steep slopes with this equipment, it is not clear if this technology is available for all operators. It could be expensive and might require large volumes of the larger trees to be cut in order for any sales to be economical for whatever companies had the technology. It might not be practical or affordable for smaller operators. The larger trees are the ones that should be retained, as they store the most carbon[6] and help provide large future snags[7] for cavity-nesting species of wildlife.

Another question is reforestation of areas that use this new technology, which is said to reduce impacts by putting down a "slash mat," i.e., limbs and other unmerchantable material, that equipment rides over, which then "provides a layer of woody debris that buffers equipment disturbance", thereby reducing impacts to soils. See FEIS I at 427. With a slash mat, could natural regeneration occur? Or would areas have to be seeded or planted? If so, the costs go up considerably. See more below in subsection F, Economic Analysis.

The FEIS notes there is already uncertainty about regeneration, i.e.: "whether forests in the GMUG continue to regenerate naturally without management intervention, which is in turn dependent on currently uncertain impacts of climate change within the planning area." FEIS I at 146.

We find no analysis of the likelihood of regeneration of areas cut on steep slopes, only that there is not likely to be any difference in regeneration among the action alternatives or that regeneration would vary only by the acreage treated in alternatives B, C, and D. Ibid. In other words, the FEIS does not evaluate potential reforestation success on steeper slopes, where little timber on the GMUG has been previously cut.

This may not comply with the requirement in the National Forest Management Act (NFMA) that "[t]imber will be harvested from National Forest lands only where – … [t]here is assurance that such lands can be adequately restocked within five years after harvest" 16 U.S.C. 1604(g)(3)(E)(ii).

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[6] See Mildrexler et al, (2020).

[7] FW-GDL-SPEC-11 encourages the retention of "larger dead and live trees". Plan at 41.

One plan component is said to reduce impacts from logging on steep slopes: [t]o reduce the potential for rill or gully erosion occurring along equipment tracks, untethered ground-based mechanical equipment should not operate on sustained slopes greater than 40 percent. FW-GDL-SOILS-04, Plan at 58.

This indicates that the way to protect steep slopes is to stay off them. As is discussed above, it is unclear if the new technology being tested in steep slopes would be widely available even if it is shown to reduce impacts to an acceptable level. With uncertainty of availability and regeneration, it is inappropriate to find steep slopes suitable for timber production.

4. Land with high scenic integrity objective must not be suitable for timber production.

Under the preferred alternative, 89,000 acres of land suitable for timber has a high scenic integrity objective (SIO). FEIS I Table 157 at p. 588. In areas with high SIO, "Management activities are unnoticeable, and the landscape character appears unaltered." Plan Glossary, Plan at 210; FEIS I at 519.

The plan requires that management conform to the applicable SIO(s): "…all national forest management activities should be consistent with or move the area toward achieving the desired scenic integrity objectives…" FW-GDL-SCNY-03; Revised Plan at 98. This direction is confirmed by the following: "It is assumed that, through site-specific project design or mitigation, the landscape would move toward scenery desired conditions under all alternatives." FEIS I at 521.

It is hard to imagine that any kind of tree cutting would be unnoticeable. Or if it was unnoticeable, it would have to be such minor cutting that that commercial output of timber would be very low. It would hardly be worth having such area suitable for timber production, as very little if any timber could be produced while still maintaining the high SIO.

Any impacts to scenery from operations on lands suitable for timber would not necessarily be "temporary." Areas cut for uneven-aged management might have repeated, and frequent, entries. Skid trails and temporary roads would be visible. Clearcutting of other tree species would be noticeable for some time, as skid roads, slash piles, and other artifacts of logging would likely remain visible for more than just a short period of time.

Treatment on steep slopes would especially be likely to be noticeable because it would be higher and easy to see, and because timber cutting would likely be intensive to help the operator realize the return on his/her investment.

5. Maintenance level 1 roads must not be suitable for timber production.

The timber suitability analysis excludes land with maintenance level 2-5 roads from being suitable for timber. Revised Plan, Appendix 8 at 2. That presumably means that areas with maintenance level (ML) 1 roads are considered suitable. These are system roads, which, by definition, means that they will never have any trees growing on them, or any trees that do grow would be promptly removed, as they need to be maintained for administrative use.

According to GMUG (2015 at 6, Table 4) there are 282 miles of ML 1 roads on the GMUG.[8] It is likely that some of these roads are in areas found suitable for timber production. Failing to exclude these from possibly suitable timber lands distorts the amount of land that could be suitable.

6. An economic analysis for timber suitability is required.

Under NFMA, economics is one of the factors that must be considered in determining which lands are suitable for timber production:

> In developing land management plans pursuant to this Act, the Secretary shall identify lands within the management area which are not suited for timber production, considering physical, economic, and other pertinent factors, to the extent feasible, as determined by the Secretary. 16 U. S. C. 1604(k).

However, the GMUG did not perform an economic analysis as part of its suitability determination:

> Given the potential for changes in markets, mill infrastructure, and timber harvest technology and approaches, future economic feasibility is difficult to predict, and as such, in-depth economic feasibility analysis was not done as part of the timber suitability analysis. FEIS III at 344.

But some areas that were not considered economically feasible to harvest in previous analyses (Forest Plan, 1983; major plan amendment, 1991) are now considered suitable. Revise Plan, Appendix 8 at 3, Appendix 8 at 4. Where is the analysis that shows that these lands are now economical to harvest?

The lack of economic analysis is glaring, given that two of the assumptions for the suitability analysis are that 1) "New technology and approaches could make timber harvest in areas with steep slopes (greater 40 percent) economically feasible," and 2) "Timber harvest may be done in areas historically difficult to access and that will require new or more extensive infrastructure,

[8] GMUG, 2015. Final Travel Analysis Report, June 1, 2015.

such as longer temporary roads than are typical and/or new permanent roads." Revised Plan, Appendix 2 at 3; see also FEIS at 570.

But previously, such areas were not logged: "A variety of logging systems can and have been used on steep slopes, such as skyline cable, helicopter, and others, but these have not been used frequently on the GMUG due to the cost and the value of the harvested trees." FEIS III at 353.

This indicates that, for logging on steep slopes to be economical, large trees would need to be sold and cut to make sales profitable to industry. However, these are the very trees the GMUG should retain, given the need for wildlife habitat, watershed integrity, and carbon storage. See subsection C above and section on protecting old forests, below.

The FEIS states that areas more than 1.5 miles from permanent roads are usually not included in timber sales "due to the high costs associated with new road construction", yet such areas are included as part of the preferred alternative's suitable timber lands. FEIS I at 425, 426. The FEIS admits that "the projected timber program in alternative C may require permanent roads, or at least extensive temporary roads, to harvest areas historically not accessed." FEIS I 429.

Some of this would likely be needed for the timber program in preferred alternative B. The need for expanded infrastructure certainly would affect the economics of the timber program, as costs would increase. Logging that requires "new or extensive infrastructure" may be inconsistent with numerous plan components, including but not limited to: having invasive plant species be "nonexistent or low in abundance and do not disrupt ecological function," FW-DC-IVSP-01; forest management providing for native species persistence and movement within and among the National Forest System and adjacent lands, FW-DC-SPEC-01; and create large contiguous habitat blocks and big game security areas, FW_GDL-SPEC-16. As discussed in Sean P. Healey's 2020 Research Letter, "Non-native plants are twice as common within 152 meters (500 feet) of a road as farther away"[9] and nearly twenty years of monitoring data show that eliminating road prohibitions would not improve forest health. The Forest Service cannot ignore the best available science that roads are a vector of deterioration of forest health.

There would be costs to design, engineer, and construct any new roads. And would the GMUG be able to close and decommission these roads? The Draft Plan contains the following objective: "Eliminate at least one unauthorized travel route annually." FW-OBJ-REC-06. In other words, without the new roads that probably would be required to log on steep slopes, the GMUG is committed to eliminating only one unauthorized route each year. There would be an additional expense for decommissioning any authorized new roads used for logging.

Without performing an economic analysis, the GMUG has no basis for assuming that it will be economical to harvest timber in an expanded area, including areas with steep slopes, where extra infrastructure (with increased cost) and unproven technology would have to be used.

[9] Healey, Sean P., (2020). Long-term forest health implications of roadlessness, Environ. Res. Lett. 104023.

7. Specific timber-suitable areas of concern.

1) The area surrounding the Mt. Emmons Iron Fen seems to be identified as suitable for timber. This area has been identified as a special management area in the 2023 Plan. It has also been recognized by the Colorado Natural Heritage Program (CNHP) as hosting a globally unique fen. According to the CNHP, fens require special management considerations, including for upstream logging. See this excerpt from the CNHP website:

> Because groundwater provides the main water source for fens and fens are very sensitive to changes in groundwater supply. Fens are altered by on-site or off-site impacts. On-site impacts include filling, hydrologic alteration such as by drainage ditches that dewaters a fen, snow compaction such as occurs by ski runs or snowmobiles, trampling such as may occur by livestock or humans, and mining. Off-site impacts include upland habitat development that indirectly alters fen condition by altering hydrology, sediment and water chemistry inputs such as may occur with ski area development or logging; and direct hydrologic alteration that may occur with development activities such as water diversions and groundwater pumping. In Colorado, global climate change is resulting in increased temperatures, which is driving declines in the spring snowpack, earlier snowmelt and increased fraction of winter precipitation falling as rain. The sensitivity of fens to environmental change likely varies, with individual responses depending on both peatland type and the relative stability of hydrological conditions supporting peat accumulation.[10]

2) A large part of the Coal Creek watershed above the Town of Crested Butte (CB) has been found suitable for timber production. Logging here could adversely affect the Town of CB's drinking water supply (see Splain's Gulch, Elk Creek, the Coal Creek drainage).

3) A large part of the Upper Taylor River basin has been found as eligible for timber production. The Upper Taylor River has been designated as outstanding waters by the State of Colorado.[11] Large-scale timber production could adversely impact water quality in this basin.

4) Most of the Cement Creek basin has been found suitable for timber. Cement Creek was identified as eligible for recreational designation under the Wild and Scenic Rivers Act due to a unique fen (situated 2/3 down the basin in the catchment area). Plan at 11-25-27. Extensive timber activity upstream of this feature could impact the fen itself. See comment above on the Mt. Emmons Iron Fen.

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[10] See: https://cnhp.colostate.edu/projects/ecological-systems-of-colorado/details/?elementID=365208.

[11] The Taylor River was designated as an outstanding water during the Regulation 35 rulemaking hearing in 2022. The designation can be found in 5 CCR 1002-35.51. Importantly, the Taylor (and a number of other streams in potential timber areas) was designated both for its actual water quality AND for having outstanding remarkable values; the latter is a requirement of both outstanding waters designation and wild and scenic eligibility.

5) Timber activity along the corridor of the lower Taylor River could impact both the scenic ORV and the Gold Medal trout fishery.

Suggested Improvements

- Reduce the timber emphasis in the plan overall, and provide enforceable standards that emphasize and protect the values of standing live and dead trees for biological diversity and carbon storage;

- Areas with heavy spruce beetle mortality must not be suitable for timber production;

- Areas with steep slopes and high erosion potential must be unsuitable for timber production;

- Areas with high SIO must not be suitable for timber production;

- The areas surrounding the Mt. Emmons Iron Fen, the areas of Coal Creek above Crested Butte, the Upper Taylor River, Cement Creek basin, and corridor of the lower Taylor River need to be unsuitable for timber;

- Reduce the area of timber suitability in the watersheds described above in subsection F, paragraphs 2-5, above. At a minimum, all areas with steep slopes should be unsuitable; and

- An economic analysis on the proposed timber program must be done as required by NFMA.

- Provide a standard that prohibits the creation of new permanent roads.

B. The plan does not provide sufficient protection for old forests.

Objectors addressed this issue on pp. 64-65 of the HCCA et al. (2021) on the Draft Plan, where we asked for "additional [plan] components…to ensure protection and retention of the GMUG's remaining old forests" The exception is on the issue of compliance with E. O. 14072, as that EO was not issued until April, 2022, well after close of the comment period on the Draft Plan.

On April 22, 2022, President Biden issued Executive Order 14072. 87 Fed Reg 24851 et seq., April 27, 2022. This E.O. declared that it is the government's policy to "conserve America's mature and old-growth forests on Federal lands". E.O. section 1. Agencies, including the Forest Service, were directed to inventory mature and old forests and to:

> develop policies, with robust opportunity for public comment, to institutionalize climate-smart management and conservation strategies that address threats to mature and old-growth forests on Federal lands.

E.O. section 2(c)(iii). This direction does not appear to be reflected in the GMUG Plan. In fact, the Plan does not even acknowledge this E.O. as applicable to the GMUG Plan revision. See Plan at 5-67, Table 46.[12]

Best available science from Kellett et al, 2022, is unequivocal that the Forest Service's approach must be re-evaluated:

> A campaign is underway to clear established forests and expand early successional habitats—also called young forest, pre-forest, early seral, or open habitats—with the intention of benefitting specific species. . . in the face of urgent global crises in climate, biodiversity, and human health, we conclude that public land forest and wildlife management programs must be reevaluated to balance the prioritization and funding of early-successional habitat with strong and lasting protection for old growth and mature forests, and going forward, must ensure far more robust, unbiased, and ongoing monitoring and evaluation.[13]

Yet, the agency has acknowledged that "the GMUG does not have a Forest wide assessment of old-growth occurrence." FEIS at 139. Without this baseline information, the Forest Service and the public cannot determine what the actual impacts of any of the alternatives would be on old forests. Indeed, there has been no analysis of the direct, indirect, or cumulative impacts of these alternatives on old-growth and disclosure of the degree of harm the alternatives would have. The loss of many trees that likely were in this category due to recent beetle activity further underscores the imperativeness of the Forest Service ensuring its plan protects the old forests and the habitat they provide rather than leaving them vulnerable to destruction from timber management activities. Relatedly, the Forest Service has failed to conduct and disclose any analysis that would support its perfunctory statement that "It is not expected that the preferred alternative or Alternative D will have a measurable effect on the amount of old-growth forest in the GMUG." FEIS at 139.

The Revised Plan has an adequate desired condition to address old forest retention, but it fatally lacks any enforceable standard to ensure protection and retention of old forests. FW-DC-ECO-08 encourages the GMUG managers to see that old forests are "well-distributed within all forested

[12] Nonetheless, FEIS III at 337 states that there will likely be improved inventories of old forests, in part because of E. O. 14072.

[13] Kellett, Michael J., Maloof, Joan E., Masino, Susan A., Frelich, Lee E, Faison, Edward K., Brosi, Sunshine L., and Foster, David R. 2022. Forest-clearing to create early-successional habitats: Questionable benefits, significant costs, Front. For. Global Change 5:10736377.

ecosystems, and occur in amounts and patch sizes needed to support species that depend on old forest characteristics."

However, other plan components are not sufficient to ensure this desired condition will be achieved; see FW-GDL-SPEC-11:

> To maintain population persistence and nesting habitat for the guild of cavity dependent species (e.g., bats, owls), active management should maintain larger dead and live trees within residual patches. These patches should be scattered throughout the treatment area where feasible, and the total extent retained should be determined during site-specific analysis to meet the purpose of the guideline for cavity-dependent species.

This encourages but does not require that only residual patches of old forest be retained, and only where "feasible"[14], in treatment areas. It does not address the issue of retaining old forests in all tree species well-distributed across the landscape of the GMUG National Forest.

FW-GDL-ECO-07 is also referenced below DC-ECO-08 as another plan component addressing old forests. But it sets recommended level for retention of snags and down wood. These are important components of old forest, but this guideline does not require retention of old forests.

MA-ECO-08.b prioritizes retention old forest characteristics for at-risk species. But it is a mere management approach (MA), which has no force: "management approaches are not plan components; they are not requirements to be met during the course of the plan implementation." Draft ROD at 66. Therefore, this management approach is not at all required and would certainly not ensure retention of old forests.

One MA even encourages logging large trees:

> Consider reduction of stand densities in sites susceptible to beetle infestation. Use caution when thinning shallow-rooted species in mature stands, such as Engelmann spruce and lodgepole pine, as individual trees are prone to windthrow. Windthrown trees can trigger beetle outbreaks, leading to additional tree mortality. If different size classes are present, consider removing larger trees, as these are more likely to be favored as beetle hosts. This will temporarily reduce the live tree carbon pool but may increase the rate of carbon uptake and resiliency to future disturbance. (Resilience).

[14] "Feasible" is not defined. It could mean convenience for the contractor. In any case, it provides a possible wide loophole to a non-requirement to protect old forests.

MA-TMBR-20, Plan at 105; emphasis added. The larger trees should always be retained unless they are hazard trees. The larger trees store the most carbon and make better wildlife trees (snags and down dead) after death, as is discussed above. See Mildrexler et al. (2020).[15]

In sum, the GMUG Plan does not ensure retention of old forests, nor of compliance with E. O. 14072. With the death of much of the mature spruce and some of the mature lodgepole pine on the GMUG from bark beetle attacks, protection of remaining old forests is needed more than ever.

Suggested Improvements

- Fully comply with E.O. 14072 by retaining old forests on the GMUG.

- Add to the plan a standard requiring all old forests in all ecological types to be retained to ensure they are well-distributed across the landscape and support associated wildlife and plant species and ecological processes, including carbon storage. Narrow exceptions can be allowed for public safety, such as removal of hazard trees near infrastructure.

- Add a standard to the Plan that would require forests with a good chance of developing old forest characteristics in the next 50 years to also be retained.

- Remove or amend MA-TMBR-20 and any other direction that encourages cutting of large trees for reasons other than public safety.

C. The plan does not provide adequate protection of wildlife and people from recreational drone activity.

Objectors addressed this issue in section M.1. of the HCCA et al. 2021 on the Draft Plan and DEIS, dated November 24, 2021.

We asked for: 1) drone restrictions for Management Area (MA) 2.3 Fossil Ridge, MA 3.1 Roadless Areas, MA 3.2 Wildlife Management Areas, MA 3.3 Special Management Areas - (as delineated in Alt D in the DEIS). 2) We recommended there be no exceptions to the prohibitions on drone use in MAs 1.1, 1.2, 2.2, 4.1, 4.2, and at developed recreation sites, 3) We asked that special use permits allowing drone use for the "certain circumstances" under which they could be issued must be spelled out in considerable detail so that operators know where drones are restricted or prohibited and the public knows what to expect with regard to drones when they visit the GMUG.

[15] Mildrexler, D. J., Berner, L. T., Law, B. E., Birdsey, R. A., & Moomaw, W. R. (2020). Large trees dominate carbon storage in forests east of the cascade crest in the United States Pacific Northwest. *Frontiers in Forests and Global Change*, 127.

1. Background

In the Draft EIS/Workplan the FS proposed restrictions on drone use:

> **FW-STND-REC-09:** All unmanned aircraft systems, also known as drones, flown from and above National Forest laws System lands must comply with Federal Aviation Administration and U.S. Forest Service, regulations, and policies. Public recreational use, including launching, landing, and operating of unmanned aircraft systems shall be prohibited within MA 1.1 (Wilderness), 1.2 (Wilderness to be Analyzed), 2.1 (Special Interest Areas), 2.2 (Research Natural Areas), 4.1 (Mountain Resorts), 4.2 (Recreation Emphasis Corridors), at developed recreation sites (campgrounds, designated campsites, trailheads, visitor centers, parking lots, overlooks, day-use areas, boat launches), on Forestwide roads and trails, and at trail summits. Consistent with Federal law, drones shall be prohibited to be flown overhead any visitor to National Forest System lands. **Exception:** Recreational operation of unmanned aircraft systems via special use permit could involve flight over or close to occupied use areas under certain circumstances, only if all permit requirements ensure compliance with Federal Aviation Administration and Forest Service laws, regulations, and policies. (Revised Land Management Plan, August 2021)

The Final EIS/Workplan reduced significantly the areas where drones are restricted:

> **FW-STND-REC-09:** All unmanned aircraft systems, also known as drones, flown from National Forest System lands must comply with laws, regulations, and policies of the Federal Aviation Administration, the State of Colorado, including Colorado Parks and Wildlife, and the U.S. Forest Service. In accordance with Federal law, public recreational use, including launching, landing, and operating of unmanned aircraft systems, shall be prohibited within Management Area 1.1 (Congressionally Designated Wilderness). Specific to the GMUG, public recreational use, including launching, landing, and operating of unmanned aircraft systems, shall be prohibited within Management Areas 1.2 (Recommended Wilderness) and 4.1 (Mountain Resorts), and developed recreation sites. **Exception:** The forest may authorize, via special use permit, recreational operation of unmanned aircraft systems within developed recreation sites and Management Area 4.1 (Mountain Resorts) if all permit requirements ensure compliance with the existing legal framework at the time of the special use authorization. (Revised Land Management Plan, August 2023, p. 80)

2. Arguments

a) The Forest Service did not address the HCCA et al. 2021 comment that "special use permits for the "certain circumstances" under which they would be allowed must be spelled out in considerable detail so that operators know where drones are restricted or prohibited and the public knows what to expect with regard to drones when they visit the GMUG."

b) The Objectors disagrees with the statement in the FEIS that "managing the potential disturbances of wildlife by drones is not within the scope of the Revised Plan standard...". FEIS I at 546. The Forest Service makes conflicting statements thorough out the documents about the FS obligation to protect wildlife by restricting drone use.

> While the potential disturbance of wildlife is not within the scope of the Revised Plan standard, Colorado Parks and Wildlife has drone regulations to manage this potential impact. Draft ROD at 23.
>
> Though the FAA has regulations for drone usage, those regulations do not consider protections of, nor impacts on, NFS lands, resources, or visitors, which necessitates the addition of Plan direction. FEIS III at 183, #9.
>
> The Forest Service is also proposing direction to protect wildlife and wilderness values that are outside the scope of FAA rules. FEIS III at 183, #7.

It is clear that the FS has, and attends to fulfill, the obligation to manage drone use for the protection of wildlife. This requires the adoption of a standard as we requested in our draft comments.

c) The FS provided only vague, not scientifically based reasons, for allowing more drone use.

See, in the responses to comments on drones in FEIS III at 183, #11, "FW-STND-REC-09 has been modified to provide protections for wildlife in general, but it does not categorically prohibit drones in MA 3.2." And see FEIS III at 184 #16:

> Initial proposed Plan direction has been modified to more conditions-based guidance rather than prohibiting drones on large swaths of the landscape. The new proposed direction is consistent with Forest Service and FAA guidance, provides protections specific to the GMUG NFs and its visitors, and allows for use of drones in many areas of the Forest. FEIS III at 184, #12; emphasis added.

> The GMUG strives to create balanced Plan direction regarding drones, providing opportunities for both quiet uses and the use of drones where appropriate. The Recreation Management Approach to recreational use of unmanned aircraft systems on National Forest System lands is consistent with national Forest Service guidance. FW-STND-REC-09 provides direction to protect specific GMUG resources such as wilderness areas and areas to be managed as wilderness, establishes conditions for use around wildlife populations, and prohibits operation in crowded areas while still allowing drones to be used under appropriate circumstances. (emphasis added)

d) The Forest Service provided a fallacious argument about the need for unrestricted use of drones "so trampling vegetation would not be necessary."

See FEIS III at 184 #16:

> Plan direction was modified to add restrictions on NFS lands in accordance with wildlife standards set by Colorado Parks and Wildlife. Language was also changed to allow operation on much of the Forest such as trails and roadsides, so trampling vegetation would not be necessary. Operation of drones in wilderness is prohibited by federal wilderness regulations, and reiterated in the forest plan in FW-STND-REC-09.

Off trail use can, and should be, controlled by FS recreation regulations and education to the public. Potential bad or illegal behavior by some drone users is not a valid reason to allow unrestricted drone use.

e) Part of the changes from Draft Plan to Final Plan includes the addition of language that the Forest Service will follow Colorado Parks and Wildlife (CPW) guidance on NFS lands to lessen the impact of drones on wildlife.

See FEIS III at 183, # 10, and FEIS III at 184, #16 states, "FW-STND-REC-09 now protects wildlife by aligning with Colorado Parks and Wildlife guidance while protecting Forest visitors and infrastructure by prohibiting use in populated areas such as campgrounds and visitor center parking lots." (emphasis added)

The FS refers to CPW regulations, which support regulating drones throughout CPW controlled land to protect wildlife. Here are the pertinent sections of CPW rules and regulations:

> **State Wildlife Area Access Rules**. Except when specifically authorized, the following activities are prohibited on lands, waters, frozen surfaces of waters, rights-of-way, buildings or devices under CPW control: #22. To launch, land or operate aircraft or NEW

unmanned aerial vehicle, including, but not limited to, drones and model airplanes. See State Wildlife Area Access Rules.[16]

Colorado State Parks Regulation 406-0-004C, Aids in Taking Wildlife: It shall be unlawful to use a drone to look for, scout, or detect wildlife as an aid in the hunting or taking of wildlife. (Colorado Parks and Wildlife 2 CCR 406-0-IV-004, 2 CCR 405-1 Colorado State Parks Regulation 405-1-100-c.24: It shall be unlawful to operate radio-controlled and/or fuel-propelled models, except in designated areas. Colorado Parks and Wildlife, 2 CCR 405-1.

Drones and wildlife harassment. "…drone operators should be aware that it is illegal to harass wildlife…The definition of harassment is causing any change in the behavior of the wildlife. So if the animal runs, if it changes direction, if it stops eating, that's harassment. Any change in the animal is considered harassment and it's illegal."[17]

Therefore, since CPW, through their regulations and statutes, provides restrictions on drone use to protect wildlife, the Forest Service should also include similar drone restrictions for the protection of wildlife.

f) The FS ignores all scientific evidence for risks to wildlife from drones.

One review comment section included the statement, "Some commenters question the need to limit drones to protect wildlife." (FEIS III at 183, #9) The FS did not provide any response with science-based information to address this issue.

The Forest Service guidance from the reference mentioned in the 2023 Workplan included the wording:

> Do not fly over or near wildlife as this can create stress that may cause significant harm and even death. Intentional disturbance of animals during breeding, nesting, rearing of young, or other critical life history functions is not allowed unless approved as research or management.[18]

[16] Colorado Parks and Wildlife, 2023 Colorado State Recreation Lands.

https://cpw.state.co.us/Documents/RulesRegs/Brochure/lands.pdf .

[17] Colorado Parks and Wildlife urges public to avoid harassing wildlife when using drones, 2021. https://cpw.state.co.us/Lists/News%20Releases/DispForm.aspx?ID=3208.

[18] https://www.fs.usda.gov/visit/know-before-you-go/recreational-drone-tips

Information is available on the impacts of drones on wildlife; See Mulero-Pazmany et al. (2017); Rebolo-Ifrán et al. (2019); Ditmer et al. (2015).[19]

The Forest Service should include scientifically based information on how well the agency's plan provisions on drone use will protect wildlife in all areas of the GMUG and is required to use the best available science per the Planning Rule.

g) The Forest Service did not provide details on what is meant by Forest Service guidance on drones, and how this guidance is science-based to protect wildlife and people.

Here are the pertinent sections which mention, but do not provide details on, Forest Service guidance in FEIS III at 184, #12;:

> Initial proposed Plan direction has been modified to more conditions-based guidance rather than prohibiting drones on large swaths of the landscape. The new proposed direction is consistent with Forest Service and FAA guidance, provides protections specific to the GMUG NFs and its visitors, and allows for use of drones in many areas of the Forest. (emphasis added)
>
> The GMUG strives to create balanced Plan direction regarding drones, providing opportunities for both quiet uses and the use of drones where appropriate. The Recreation Management Approach to recreational use of unmanned aircraft systems on National Forest System lands is consistent with national Forest Service guidance. FW-STND-REC-09 provides direction to protect specific GMUG resources such as wilderness areas and areas to be managed as wilderness, establishes conditions for use around wildlife populations, and prohibits operation in crowded areas while still allowing drones to be used under appropriate circumstances.

h) WMAs in the Plan should have restricted drone use, due to the intent in those areas to protect wildlife, following the example of the Colorado Parks and Wildlife.

The FS has categorized WMAs for protection of wildlife, stating in the Plan at 118,

[19] Ditmer, M. A., J. B. Vincent, L. K. Werden, J. C. Tanner, T. G. Laske, P. A. Iaizzo, D. L. Garshelis, and J. R. Fieberg, 2015. Bears Show a Physiological but Limited Behavioral Response to Unmanned Aerial Vehicles. *Current Biology*, 25(17), 2278-2283. https://doi.org/10.1016/j.cub.2015.07.024; Mulero-Pazmany M., S. Jenni-Eiermann, N. Strebel, T. Sattler, J. J.Negro, and Z. Tablado, 2017: Unmanned aircraft systems as a new source of disturbance for wildlife: A systematic review. PLoS ONE 12(6): e0178448. https://doi.org/10.1371/ journal.pone.0178448; Rebolo-Ifrán N, M. Grana Grilli, and S. A. Lambertucci, 2019: Drones as a Threat to Wildlife: YouTube Complements Science in Providing Evidence about Their Effect. Environmental Conservation 46: 205–210. doi: 10.1017/S0376892919000080.

> **MA-DC-WLDF-01:** Large blocks of diverse habitat are relatively undisturbed by route and associated recreational use, providing security for the life history, distribution, migration, and movement of many species, including big-game species. Habitat connectivity is maintained or improved as fragmentation by routes is restricted.

The intent of the WMAs is similar to the CPW definition for Colorado's State Wildlife Areas.

> State Wildlife Areas (SWAs) are state- or privately-owned lands that offer wildlife-related recreation to the public. While most activities focus on hunting and fishing, each SWA has different allowed activities, based on location and available resources. These parcels of SWA land are paid for by sportspeople and managed under state law by Colorado Parks and Wildlife employees for the benefit of wildlife. Colorado Parks and Wildlife manages about 350 WSA lands around the state. Drone use is not allowed in SWAs.[20]

The Forest Service looks to Colorado Parks and Wildlife for guidance on how to protect wildlife. Since CPW restricts drone use in State Wildlife Areas, the Forest Service should follow this lead, and should restrict drone use in all WMAs.

Similarly, drone use should be restricted in Colorado Roadless Areas (CRAs). A number of RAs are also WMAs, so this would fall under the Objectors' request for drone restrictions in WMAs. One objector has used Forest Service GIS information to determine that 465,913 acres of the GMUG are simultaneously in CRAs and WMAs. It would be administratively difficult to restrict drone use in only the portions of CRAs which overlap with WMAs, so drone use needs to be restricted in all roadless areas.

In addition, the FS recognizes that Colorado Roadless Areas should protect wildlife in the Revised Plan at 117:

> ***Desired Conditions***
> **MA-DC-CRA-01:** Colorado roadless areas encompass large, relatively unaltered and unfragmented landscapes characterized by high-quality scenery, soil, air, and water; diverse, native plant and animal communities; functional, connected habitat for terrestrial and aquatic wildlife species, outstanding backcountry recreational experiences, and other roadless area characteristics, as defined at 36 C.F.R. § 294.41.

[20] State Wildlife Areas, Colorado Parks and Wildlife, 2023 Colorado State Recreation Lands. See: https://cpw.state.co.us/Documents/RulesRegs/Brochure/lands.pdf.

i) The FS in the FEIS does not discuss or provide any evidence to evaluate and address how humans are impacted by drone activity in the recreational setting.

The Forest Service Drone guidance document states:

> Keep your UAS away from populated and noise-sensitive areas, such as campgrounds, trail heads, and visitor centers. Do not fly over congressionally designated wilderness areas or primitive areas as many people seek these places for the opportunities for solitude and quiet that they provide.[21]

j) Wilderness areas are not the only places where trail users look for solitude, or at least a minimum of human activities.

This is recognized by the FS in the desired conditions for Colorado Roadless Areas in the Revised Plan at 117:

> ***Desired Conditions***
> **MA-DC-CRA-01:** Colorado roadless areas encompass large, relatively unaltered and unfragmented landscapes characterized by high-quality scenery, soil, air, and water; diverse, native plant and animal communities; functional, connected habitat for terrestrial and aquatic wildlife species, outstanding backcountry recreational experiences, and other roadless area characteristics, as defined at 36 C.F.R. § 294.41. (emphasis added)

The FS discusses in the Revised Plan the designations of ROS allocations. The allocation of semi-primitive non-motorized includes wording about trail density and human encounter levels in Table 13 of the Revised Plan at 91:

> Semi-primitive non-motorized setting prescription for the desired summer and winter recreation opportunity spectrum (ROS), Social setting: High probability of solitude, closeness to nature, self-reliance. High to moderate challenge and risk. Typically 6-15 encounters with other parties on trails. Six or fewer parties visible from camping sites.

Drone use, which is controlled by people, should be considered, and counted, as human encounters. If drone use is not controlled through forest plan-level restrictions, it is likely that some ROS allocations will exceed the thresholds for human encounter levels. Therefore, drone use should be restricted in all areas with a ROS allocation of semi-primitive non-motorized.

[21] https://www.fs.usda.gov/visit/know-before-you-go/recreational-drone-tips.

3. Conclusion

The Forest Service made a significant change in the approach to drone use from the Draft Plan to the Final Plan. In the Final documents, only a small segment of the GMUG is protected from drone use. The Forest Service did not provide science-based information on how the proposed plan will protect wildlife and people from the impacts of drone use. The Forest Service states they will rely on Colorado Parks and Wildlife guidance, which should mean providing more restrictions on drone use for wildlife protection and visitor use safety and enjoyment. The Forest Service needs to provide more information on how it came to its decision, using science-based details as is required by law.

Suggested Improvements

- All WMAs and Colorado Roadless Areas should be protected by drone restrictions and be listed in FW-STD-REC-09.

- The ROS allocation areas of semi-primitive non-motorized should have drone restrictions because drones should be considered human encounters.

- The Forest Service should clarify procedures for special permits that would allow drone use.

- The Forest Service should provide a Recreation guideline to address monitoring of drone use, human and wildlife impacts from drones, and how the FS will continue to look at this issue.

D. The plan does not sufficiently address invasive vascular plant species.

Colorado Native Plant Society addressed the issues below in various comments, as is detailed at the end of this section. HCCA et al. (2021) also addressed invasives issue at pp. 68-69 of their comments on the Draft Plan.

In the Final GMUG Plan, the Forest did not substantively address concerns previously raised with them by CoNPS regarding their invasive vascular plant program. There are unresolved factual matters with regard to the extent of current noxious weed invasions and the forest fails to commit to any kind of a comprehensive EDRR (Early Detection and Rapid Response) program.

CoNPS' comment on the Draft Plan raised the issue that while total 'inventoried' acres of noxious weed infestations on the GMUG amount to 25,500 acres, the Forest's own range specialists have said that the Uncompahgre Plateau alone contains another 100,000 acres at a minimum that are infested, but are not counted due to them not being in the 'inventory'.

The Final Plan admits as much: “There are at least 25,500 acres of inventoried invasive plant infestations in the GMUG, though this is an underestimate of the total acres affected.” FEIS I at 200.

Five years ago, the GMUG 2018 Invasive Species Assessment had more detail: “Most of the GMUG has not been surveyed (inventoried) for invasive plants due to limited resources (personnel, funding).” (P. 1). “District Range Specialists believe this number to be too low, and estimate infestations of up to 125,000 acres, with the majority on the Uncompahgre Plateau (100,000 acres or more). The actual acres could be higher or lower but without a 100% inventory this estimate is based on their professional expertise and knowledge of on-the-ground conditions.” (P. 2) “The Norwood District Range Specialist’s estimate of up to 50% of the Plateau having infestations of one type or another (Brian Hoefling, personal communication 5-18-17).” (P. 11)

Ten years ago, in August 2013, the USFS Published their National Strategic Framework for Invasive Species Management. Appendix A of that volume lists 4 elements and 18 actions “that all programs and units within the National Forest System (NFS)...should take, as appropriate, in addressing invasive species”. See Appendix A, below:

Appendix A: Invasive Species Systems Approach (ISSA), ISSA Guiding Principles, and ISSA Roles and Responsibilities

The Invasive Species Systems Approach (ISSA) identifies the 4 elements and 18 actions of the *Forest Service National Strategic Framework for Invasive Species Management* (Framework) that all programs and units within the National Forest System (NFS), Research and Development (R&D), and State and Private Forestry (S&PF) should take, as appropriate, in addressing invasive species.

Prevention

- Identify, forecast, and prioritize invasive species threats (P1).
- Identify high-risk pathways of movement and introduction (P2).
- Identify vulnerable ecosystems (P3).
- Improve cooperative efforts (P4).
- Recommend, program, and implement appropriate actions to prevent introductions and establishment (P5).

Detection

- Survey aggressively to detect new invasive species and monitor priority species (D1).
- Evaluate the extent and severity of invasive species infestations and assess their potential impacts (D2).
- Report invasive species detection findings in standardized databases (D3).
- Develop tools and technologies to detect and monitor invasive species (D4).

Control and management

- Coordinate as needed with partners (CM1).
- Prioritize and implement treatments (CM2).
- Implement rapid response for new infestation (CM3).
- Monitor and report accomplishments in standardized databases (CM4).
- Develop the tools, technologies, methods, and budgetary processes necessary to prioritize and implement effective invasive species management or eradication activities (CM5).

Restoration and rehabilitation

- Identify and prioritize restoration and rehabilitation needs (RR1).
- Take actions to restore, monitor, and maintain affected areas (RR2).
- Assess effectiveness of rehabilitation and restoration activities (RR3).
- Develop, synthesize, and evaluate effective rehabilitation and restoration methods, tools, and technologies (RR4).

The GMUG's plan is inconsistent with this National Strategic Framework. For example, FW-OBJ-SPEC-30.a (Revised Plan at 47-48) states:

> Within 5 years of plan approval, identify locations where invasive plants and noxious weeds are a risk factor for known at-risk plant occurrences. Within 10 years of plan approval, implement actions to minimize this risk at all known locations. Such actions include establishing priority treatment areas, training relevant staff on the identification of invasives, noxious weeds, and at-risk plant species, establishing methods to reduce non-target effects from herbicide application.

Ten years is simply too long to wait to protect at-risk species from invasives. As Reaser, et. al, 2019 state: “Lodge et al. (2006) indicates that eradication efforts must proceed within weeks or,

at most, 1–2 years for a rapid response to be successful. Because invasion scenarios are unique, the timeframe to achieve eradication is context-specific."[22]

Likewise, FW-OBJ-IVSP-02 is inadequate to address the invasives problem on GMUG:

> Annually, invasive species management actions are completed on at least 2,000 acres so that new infestations are prevented; densities of existing infestations are reduced; total acres or areas infested are reduced; infested areas are restored/rehabilitated; existing infestations are contained, controlled, suppressed, or eradicated depending on infestation characteristics (such as size, density, species, and location), management opportunities, and resource values at risk; and uninfested areas are maintained and/or protected.

This objective treats less than 10% of the 'inventoried' infested acreage per year (25,500 acres/10 = 2,550 acres) and less than 2% per year of the total acreage of which the Forest is aware (125,500 acres). In fact, since areas must often be re-treated – the seed bank is not exhausted after one season of weeding or of chemical treatment – the actual acreage effectively treated will be even less than the 2,000 new acres per year. See the chart below, which assumes that infestations will need to be treated for three years, with re-treatment areas declining by 50% each year. After year 4, the actual newly treated acreage each year is about 1,125 acres:

Acres Treated Per Year	Site(s) A	Site(s) B	Site(s) C	Site(s) D	Site(s) E	Site(s) F	Total Treated Acres	New Treated Acres
Year 1	2,000						2000	2,000
Year 2	1,000	1,000					2000	1,000
Year 3	500	500	1,000				2000	1,000
Year 4		250	500	1,250			2000	1,250
Year 5			250	625	1,125		2000	1,125
Year 6				312	562	1,126	2000	1,126
Year 7					281	562		
Year 8						281		

The draft GMUG plan was better than the Revised Plan on this point – it at least called for action on 10% of the inventoried acreage per year. ("FW-OBJ-IVSP-02: Annually, invasive species

[22] Reaser, J.K., Burgiel, S.W., Kirkey, J. et al, (2020). The Early Detection Of And Rapid Response (EDRR) To Invasive Species: A Conceptual Framework And Federal Capacities Assessment. *Biol Invasions* **22**, 1–19. https://doi.org/10.1007/s10530-019-02156-w, P. 5).

management actions are employed on at least 10 percent of inventoried acres… ." Draft Plan at 22; emphasis added.)

Compounding the issue, the plan contains no provision to increase the inventoried acreage to account for the other infested acres of which the Forest is aware – meaning that this 2,000 acres is the upper limit that will be treated per year during the life of this plan.

The actions which are cited in the Revised Plan (for example, obtaining weed-free gravel, mandating weed-free forage, washing vehicles) are the *de minimus* actions to contain weed spread, but they in no way meet the expectations of the National Invasive Strategy discussed above.

In the GMUG's 2018 Invasives Assessment (at 1), the Forest Service acknowledges, as well, that many areas of the Forest are susceptible to future invasions.

> Based on the model, the Uncompahgre Plateau GA has the highest vulnerability for future invasive plant species; 65% of its acres in moderate high and high invasibility...It's followed by the Grand Mesa GA with 39%, Gunnison Basin GA with 38%, San Juans GA with 32% and lastly, the North Fork Valley GA with 27%.

Despite the large acreage already infested (but not truly acknowledged) and the vulnerability of the Forest to new infestations, the Final EIS "[r]educed invasive species objective FW-OBJ-IVSP-02 to be more achievable given existing budget and capacity." Plan at 50. The GMUG needs to seek new funding and collaboration to address its invasive weed issues rather than merely throwing up its hands, as the Revised Plan seeks to justify.

The Forest Service also cannot rely on best management practices in standards. *See* e.g. FW-STND-IVSP-03. As discussed as well below in the bighorn sheep section, courts have held that best management practices are not the same as best available science, which is the standard that the Forest Service is required to use in the forest planning process. *See W. Watersheds Project v. BLM,* No. 09-0507-E-BLW, 2009 U.S. Dist. LEXIS 98520, at *18 (D. Idaho Oct. 14, 2009); *see also* 36 C.F.R. § 219.3 (NFMA requires the Forest Service to "use the best available scientific information to inform the planning process" when revising a grassland or forest plan, *Ecology Ctr., Inc. v. U.S. Forest Serv.*, 451 F.3d 1183, 1193 (10th Cir. 2006) ("[T]he 'best available science' is not just whatever the Forest Service finds on the shelf.").

Suggested Improvements

- Within two years, add all known vascular invasive plant infestations into the official GMUG invasives database.

- Modify FW-GDL-IVSP-02 to treat a much higher acreage of invasive-infested land annually and tie that acreage amount to a percentage of infested acres, not capping the acreage as the Final Plan proposes.

- Write a guideline for the invasives section that says the GMUG will actively seek funding and partners to treat land infested with invasives.

- Accelerate the timelines in FW-OBJ-SPEC-30.a to accomplish the tasks much sooner. We recommend 1 year to identify at-risk plant populations due to the spread of invasives, with eradication efforts beginning immediately.

- Ensure standards are informed by the best available science and not BMPs.

Statement Demonstrating Link Between Formal Comments and Objection: Comment by Bayard Ewing for Colorado Native Plant Society on initial GMUG Scoping, June 1, 2018. Issues raised included: 1) Scoping documents lacked a discussion of invasive vascular plants and their threats to native plants and biodiversity (at 2) and 2) Scoping documents failed to resolve the 4-fold difference in acknowledged infested acreage (at 5).

E. The plan does not adequately address management of over-snow vehicles.

A coalition of objecting groups commented on this on pages 205-214 of HCCA et al. (2021) submitted on November 24, 2021.

The Final Revised Plan should provide additional direction to ensure proper compliance with 36 C.F.R. § 212 subpart C. Programmatic forest plan decisions such as winter ROS and suitability determinations must be followed by implementation-level travel planning to designate discrete areas and routes where OSV use is allowed, restricted, or prohibited, based on the executive order/regulatory minimization criteria and site-specific National Environmental Policy Act (NEPA) analysis.

Under 36 C.F.R. § 212 subpart C of the Forest Service's travel management regulations, each national forest with adequate snowfall must designate and display on an "over-snow vehicle use map", a system of routes and areas where over-snow vehicle (OSV) use is permitted based on protection of resources and other recreational uses. OSV use outside the designated system is prohibited. Implemented correctly, the rule presents an important opportunity to enhance quality recreation opportunities for both motorized and non-motorized winter users, protect wildlife during the vulnerable winter season, and prevent avoidable damage to vegetation, air and water quality, wilderness values, and other resources. It is important that the revised forest plan provides a strong framework for management of OSV use and for subsequent winter travel management planning under subpart C.

Proper designation of areas in compliance with subpart C and the minimization criteria will require most national forests to undergo a paradigm shift in OSV management. Subpart C, specifically rejects this default "open unless designated closed" approach, and instead requires the Forest Service to "designate" specific areas and trails for OSV use (consistent with the minimization criteria), and prohibits OSV use outside of the designated system. See 36 C.F.R. § 212.80(a). In other words, subpart C requires forests to make OSV designations under a consistent "closed unless designated open" approach.

To satisfy these legal requirements, the Forest Service must designate as open only those discrete, delineated areas that are appropriate for cross-country OSV use and minimize environmental damage and conflicts with other recreational uses. 36 C.F.R. § 212.55(b). Open areas should have easily enforceable boundaries using topographic or geographic features such as ridgetops, highways, or watershed boundaries. All other areas that are not determined to be appropriate for open designation then must be closed (or limited to designated routes), thus moving the forest into a "closed unless designated open" management regime.

Accordingly, the Forest Service must specifically delineate discrete areas where motorized cross-country travel is permitted. And, as described above, the Forest Service must locate any such areas to minimize resource damage and recreational use conflicts. As the Ninth Circuit has held, the Forest Service must "apply the minimization criteria to each area it designates[s] for snowmobile use" and "provide a . . . granular minimization analysis to fulfill the objectives of Executive Order 11644.[23]" Importantly, the agency "cannot rely upon a forest-wide reduction in the total area open to snowmobiles as a basis for demonstrating compliance with the minimization criteria," which are "concerned with the effects of each particularized area." The agency is "under an affirmative obligation to actually show that it aimed to minimize environmental damage when designating . . . areas.[24]" Proper application and implementation of the minimization criteria almost certainly would not result in designation of OSV-open areas even close to the size of a ranger district, as sensitive resources and other recreational uses adversely affected by OSV use would most likely be present throughout the area.

The Recreation Desired Condition (FW-DC-REC-01) states: "The GMUG provides a variety of high-quality, year-round recreation opportunities across a range of resilient recreation settings—from primitive to rural, and gradients between. Recreation opportunities and facilities (1) meet persisting and evolving needs of diverse user groups…. "

In reference to meeting persisting and evolving needs of diverse user groups, one should expect comprehensive programmatic plan level decisions for current and future suitability determinations for winter recreation opportunity spectrum settings (ROS). However, it seems the necessary plan level analysis was not carried out for many important winter recreation areas on the GMUG. See FEIS III at 207.

[23] WildEarth Guardians, 790 F.3d at 930-31.

[24] Ibid.

The existing inventory of ROS settings are determined by an 11-step process outlined in the national protocols (WinterROSInventoryMappingProtocol-ver12_Aug2019) as required by Forest Service Manual 2300, Chapter 10. The existing ROS inventory was created during the Plan assessments, and the Agency considered and incorporated existing Subpart C Travel Management decisions into the existing ROS inventory. For example, the routes and areas from the Grand Mesa's OSVUM were considered and used in the modeling. Other winter travel decisions and closures were also used in the mapping, including the 1995 Crested Butte Winter Travel EA and the 2005 Washington Gulch CE Wildlife closure areas such as Almont triangle were considered, and conversely, areas open to OSVs such as the area north of Ophir were used in the development of the existing and desired winter ROS settings. Existing travel management decisions are represented in the preferred alternative's desired winter ROS settings unless documented in the project record for other site-specific reasons Desired Winter ROS settings were established as documented in the Assessments, FEIS, project file and ROD in accordance with the 2012 Planning Rule. That process incorporated existing Travel Management Decisions such as the Grand Mesa's OSVUM, Crested Butte's 1995 EA, and the existing decisions around Ophir. Future Travel Management Plans or OSVUMS would be project-level decisions subject to 36 C.F.R. § 212.

As described above to fulfill requirements under subpart C, Forest Service must designate as open to motorized use only those discrete, delineated areas that are appropriate for cross-country OSV use and minimize environmental damage and conflicts with other recreational uses. These recreational uses are noted in a response to comment regarding Ophir Valley (FEIS III at 210) stating:

> The planning team, including local FS staff, gave a hard look at the area [Ophir Valley/Bridal Veil] and weighed multiple resources, including wildlife, existing travel management decisions, and existing and desired recreation opportunities in this area. Though the area is used by backcountry skiers and is not heavily used with motorized OSVs, it does provide some more remote hybrid skiing opportunities that cannot be accessed on foot alone. Furthermore, much of the area is above tree-line, frequently used by an authorized heli-skiing operation, and the existing travel management decision designated this area as open to motorized OSVs. Thus the preferred alternative is to manage the desired Winter ROS setting as Semi-Primitive Motorized.

This decision, however, was made in direct opposition to the Winter ROS settings in the Ouray Ranger District, and south of the Bridal Veil/Ophir Valley area in the Sheep Mountain zone where they are designated as semi-primitive non-motorized. Furthermore, there has been no analysis done to base the existing and desired recreation opportunities in this area. To place half of a heli-skiing operations permitted area in a Winter semi-primitive non-motorized setting (operations still allowed under permit), while designating the other half of the permit zone as semi-primitive motorized is incongruent.

Suggested Improvements

- The Final Revised Plan should provide further analysis on current and future desired conditions in the Bridal Veil Basin and Ophir Valley area for winter recreation.

- The Final Revised Plan should include an objective that implementation-level winter travel planning will be completed within three years of forest plan approval.

F. The analysis of fens is insufficient.

The Final Plan insufficiently addresses groundwater-dependent systems, in a systematic manner. First, per FW-OBJ-RMGD-6.a, the inventory of fens within the GMUG is actively underway. While continuing research is essential in order to better understand these riparian and groundwater-dependent ecosystems, the lack of current information pertaining to fens' locations, sizes, and nearby land use indicates that at the time of this Plan's preparation, there is a current lack of knowledge regarding the presence and functionality of fens throughout the GMUG. This is concerning; FEIS I at 201 states:

> [F]en, wetland, and riparian species are especially vulnerable to increased sedimentation or hydrologic alteration that can be associated with improper grazing or uncharacteristically high use by wild ungulates. Species that occur on highly erodible soils may also be impacted by high levels of ungulate use and associated atypical rates of erosion.

If the location and extent of groundwater-dependent systems are currently well understood, it is difficult to understand where practices such as grazing and timber harvesting, which are both known to cause erosion, can safely be implemented.

As defined by FW-STND-RMGD-07, "fen and Non-fen wetlands, lakes, ponds, seeps/springs and reservoirs," must possess one of the following characteristics: 1) the body of water or wetland to the outer edges of the riparian/wetland vegetation; 2) the extent of the seasonally saturated soil; or 3) 100-foot slope distance from the edge of the wetland/water feature OR, for constructed ponds and reservoirs with shorelines composed of riparian vegetation, the maximum pool elevation. These criteria are sufficiently broad, and must be utilized to correctly identify fens across the GMUG landscape.

FEIS I at 167 states:

> Another critical function of riparian management zones is to provide for wildlife habitat use and connectivity, and particularly with fens, carbon storage. In the context of a changing, drier climate, riparian areas will become more critical to maintain and restore. Management activities in riparian management zones must

> often be planned, designed, implemented, and monitored differently than in upland/terrestrial ecosystems, and are also subject to specific standards and guidelines.

In the Final Plan, FW-MA-RMGD-20 requires the GMUG to, "provide special consideration for large fen wetlands, unusual fen wetlands (e.g., calcareous fen wetlands, iron fen wetlands), fen wetlands in good condition, and fen wetlands known to support at-risk species." Both of these measures will help ensure the health of fens.

However, the Ironton Fen is currently near areas found suitable for timber production. As stated in the HCCA et al. (2021), "There should not be timber harvesting anywhere in this area, especially not on slopes greater than 40%, and absolutely no harvesting above the Ironton Fen". Id. at 38. Given the known implications of these activities to fen health, even a small area of suitable timber could lead to logging that could damage the fen. Additional values in this area are bighorn sheep production; elk summer concentration; potential Canada lynx habitat; moose habitat; raptor nesting and four unique CNHP Potential Conservation Areas with Very High Biodiversity Significance (Imogene Pass, Ironton Park, Mineral Basin & Ouray Canyons.) Ibid.

Suggested Improvements

- Per FW-OBJ-RMGD-6.a, an analysis of Fen locations in the GMUG will be underway for the next three years. As such, provisions from FW-OBJ-RMGD-6.a should be made into a standard prohibiting new logging activity and livestock grazing near groundwater-dependent systems and fen study areas.

- Per FW-MA-RMGD-20 which provides additional protections for large or unusual fens, the timber suitability designations near Ironton Fen should be removed to ensure that the groundwater-dependent system and wildlife values are preserved.

II. AREA SPECIFIC ISSUES

In comments on the Draft Plan and DEIS, objectors asked the GMUG to more fully consider that qualifying areas be recommended for wilderness designation in the preferred alternative. These requests were largely ignored.

A. NORTH FORK area potential wilderness areas.

1. The forest service fails to account for how wilderness quality lands will be protected in the forest plan.

Objectors addressed this issue beginning on p. 16 of the HCCA et al. (2021).

Unlike most landscapes that are dominated by human influence, Wilderness is managed so people can enjoy the natural beauty with minimal impact. Areas which have ample wilderness characteristics offer places for community members and visitors alike to reflect and rewind, where humans are merely visitors and natural forces are allowed to dominate in order to preserve natural conditions.

Throughout the GMUG Forest planning process, the Forest Service has undergone an evaluation of wilderness characteristics throughout the Forest. Our coalition has been advocating for protections of Wilderness characteristics since the beginning of this process. As stated in HCCA et al. (2021) on the Draft Plan at 24.

> Plans must include plan components, including standards and guidelines, "to protect and maintain the ecological and social characteristics that provide the basis for their suitability for wilderness designation." Any area recommended for wilderness or wilderness study designation is not available for any use or activity that may reduce the wilderness potential of an area.

Table 166 of the final Environmental Impact Statement (FEIS at 611-612) outlines the agency's final Wilderness evaluation, which includes specific polygon ID's with evaluation ratings and whether they were included in the preferred alternative. The following polygons are listed with a high evaluation rating but were not included as recommended Wilderness in the preferred alternative:

- G1 East Elk (11,245 acres) – only 1,423 acres in preferred alternative
- G2 Steuben (13,404 acres)
- G4 Pass Creek (3,175) – only 1,775 acres in preferred alternative
- G20-N Sawtooth (28,041 acres)
- G20-E Sylvan Canyon (6,055 acres) – only 2,429 acres in preferred alternative
- G26-W Cataract (10,405 acres)
- GP1 Soap Creek/Mendicant (27,685 acres) – only 10,018 acres in preferred alternative
- P7 Mount Lamborn (8,644 acres)
- GV01 Kelso (44,021 acres)
- N12 East Beaver (3,562 acres)
- O5 Whitehouse Mountain (24,314 acres) – only 12,159 acres in preferred alternative

Total acres with high wilderness characteristics but not included in the final recommended Wilderness management area = 152,747 acres.

Based on an analysis of these areas, only 27,627 acres previously analyzed as having high wilderness characteristics are included as recommended Wilderness areas in the Revised Plan. While 176,797 acres of areas analyzed to have high wilderness characteristics have overlapping boundaries with other management designations, such as Roadless or Wildlife Management

Areas, these designations do not offer sufficient protections for the wilderness characteristics in these areas, as they may allow motor vehicle use, mechanized travel, logging and other activities inconsistent with wilderness. Furthermore, over 40,000 acres of areas with high wilderness characteristics would fall under the General Forest management area, providing no protections for wilderness characteristics.

The Revised Plan and associated FEIS do not address how the wilderness characteristics of the above areas will be managed. Recreation Opportunity Spectrum and Scenic Integrity Objectives do not include standards or guidelines to address these qualities.

The Draft ROD at 18 notes that almost 100,000 acres of citizen-proposed Wilderness would require very little change in management structure.

> Approximately 30% (97,000 acres) of the citizen-proposed wilderness overlap with existing designated Upper-Tier Colorado Roadless Areas. The Colorado Roadless Rule already heavily restricts more impactful development and tree harvest in Upper-Tier Colorado Roadless Areas, and the shift from existing management to management as Recommended Wilderness in these areas would be slight.

While the Roadless Area designation does provide some protection for these areas regarding additional roads, it does not fully protect wilderness character. In fact, the response to comments section of the Colorado Roadless Rule (77 Fed Reg at 39589, July 3, 2012 (preamble))specifically notes that Upper tier Roadless Areas *are not* de-facto wilderness:

> Upper tier acres are not a designation of de facto wilderness. Upper tier only restricts tree cutting, road construction and use of LCZs. Upper tier allows for the use of motorized and mechanized equipment, while official wilderness does not. Upper tier allows for motorized recreation, including future development of off-highway vehicle trails; official wilderness prohibits motorized recreation. Upper tier prohibitions can be modified through rulemaking, while wilderness changes require an act of Congress.

As is discussed below, many areas not recommended for wilderness designation have strong wilderness character. These wilderness characteristics are under threat from current and future management directives, surrounding land use, population increases, and climate change. Our fear is that during the next planning process, areas that currently carry a high wilderness characteristic evaluation will be significantly declined.

Suggested Improvement

- The Forest Service should include significantly more lands as recommended Wilderness in the Final Revised Plan to adequately protect Wilderness resources.

2. The forest plan fails to include the Coal Mountain recommended wilderness proposal in the Revised Plan.

The Coal Mountain Recommended Wilderness, proposed in the *Community Conservation Proposal*, is an incredible landscape which encompasses the backside of Mount Lamborn near Paonia and Crawford, and incorporates the headwaters of several streams into the adjacent 176,412-acre West Elk Wilderness. Collectively, the Roadless areas contiguous with the West Elk Wilderness amount to 125,000 acres and comprise the largest wilderness opportunity on the national forest system in Colorado. The 15,200 acres of Coal Mountain comprise the westernmost of these wilderness-adjacent Roadless areas.

Our coalition has been advocating for the designation of this area as a recommended Wilderness throughout our advocacy efforts during the GMUG Forest planning process:

> The Community Conservation Proposal provided a thorough assessment of the full area's naturalness, outstanding opportunities for solitude and unconfined recreation, its roadless character, and detail on the area's numerous important supplemental values. The Community Conservation Proposal also makes a strong case for the manageability of the full 15,200 acre Recommended Wilderness. The agency must take a hard look at protecting the wilderness values identified in the full citizen proposal, not just the substantially smaller area considered in Alternative D. See also coalition comments at 20.

The Forest Service evaluated this parcel as having high wilderness characteristics in the final Wilderness evaluation and stated in FEIS III at 70,

> The Coal Mountain Recommended wilderness is analyzed as "Lamborn (P7a)" and included as recommended wilderness in alternative D of the EIS. The final, full wilderness analysis process can be found in Chapter 3, Volume I of the EIS, Designated and Special Areas, Recommended Wilderness section", and detailed notes for the evaluation of wilderness characteristics are in the project record. The final inventory, final evaluation, and preliminary analysis are in the 2023 Draft EIS, Volume II, Appendix 6 – together these sections compose the full FSH Chapter 70 Wilderness Process.

The final Wilderness evaluation (2023 DEIS, Volume II, Appendix 6) finds that the Lamborn (P7a) area has high wilderness characteristics, yet neither the evaluation nor the EIS provides reasoning behind why this parcel was left out of recommended Wilderness designation or how the wilderness characteristics will be managed in the future in the absence of a recommendation for wilderness. While mechanized use is allowed on the Interocean Pass Trail and Little Elk Basin trail, which traverse through the recommended Wilderness area, this type of use on this trail is severely limited due to topology and steepness of the trails. However, recent trail improvements by contractors for the US Forest Service including the use of an mini-excavator have likely degraded the wilderness character on this trail system.

Coal Mountain contains extraordinary wildlife values that should be maintained by protecting the area's wilderness character and ensuring minimal conflicts between wildlife species and human users. The area is particularly notable as winter range for elk, and as part of a migration route for elk moving to and from the West Elk Wilderness. Bears concentrate in Little Coal Creek. Second Creek and the South Fork of Minnesota Creek were historically occupied by Colorado River cutthroat trout. Predominant ecosystem types include aspen woodlands and Gambel oak, both characteristic of lower elevations and lacking in representation within the existing Wilderness system.

Suggested Improvement

- The Forest Service should include the full area identified in Alternative D in the Mt. Lamborn area as recommended Wilderness in the final forest plan.

3. The Forest Service fails to take a hard look at the Mendicant Ridge recommended wilderness proposal in the Revised Plan.

Mendicant Ridge and the Roadless area that surrounds this striking and exposed ridgeline is a unique landscape that retains the highest degree of wilderness character. The size, ruggedness, vast opportunities for solitude and critical wildlife values of the area make it a worthy landscape to be managed as Recommended Wilderness in the GMUG Forest Plan. This Recommended Wilderness is contiguous with the West Elk Wilderness. This area is currently managed as an upper-tier Roadless area and Forest Service officials determined that the area had a high degree of wilderness character during the 2018 GMUG Wilderness evaluation. Managing this area as Recommended Wilderness would ensure the protection of the area's wilderness character and preserve the opportunity for it to be included in the National Wilderness Preservation System in the future.

Based on our review, the USFS failed to analyze th*e* Mendicant Ridge Recommended Wilderness in the proposed GMUG land management plan. This area was originally submitted as part of the *Community Conservation Proposal* during the DEIS. On page 74 of FEIS III, the Forest Service responds to comment advocating for inclusion of this area as a recommended Wilderness.

> Electric Mountain (P1-60), Mendicant (GP1a), and Lamborn (P7a) are included as recommended wilderness in alternative D of the EIS. The final wilderness analysis can be found in Chapter 3, Volume I of the final EIS, Designated and Special Areas, Recommended Wilderness section, and detailed notes for the evaluation of wilderness characteristics are in the project record. The final inventory, evaluation, and preliminary analysis in accordance with the FSH Chapter 70 Wilderness direction is located in the draft EIS, Appendix 6.

The Forest Service completes its Wilderness Evaluation in Volume 1, Chapter 3, Part 2, Designated Special Areas, Recommended Wilderness. Within this evaluation, the Forest Service analyzes GP1a, GP1b, and GP1c in the Mendicant Ridge area, and includes several acres in the recommended Wilderness management area designation. However, these analysis areas do not include the proposal area originally included in the *Community Conservation Proposal*, which overlaps with the Mendicant Upper-tier Roadless Area boundary. Originally, this entire 27,685 acre parcel was included as Evaluation Polygon ID GP1, which was found by the Forest Service to have a High rating for wilderness characteristics. The FEIS fails to include a reasoning for why the area encompassed by the Mendicant Upper-tier Roadless Area is left out of inclusion as a recommended Wilderness management area designation.

Suggested Improvement

- The Forest Service should include the full Mendicant Ridge Recommended Wilderness, as proposed by the Community Conservation Proposal, in the final forest plan.

4. Chalk Mountain/Flattop Wildlife Management Area boundaries should be changed.

The Chalk Mountain/Flattop Wildlife Management Area, located north of the towns of Hotchkiss and Paonia, is an incredibly important area for wildlife. The Forest Plan accurately reflects this area as a Wildlife Management Area.

Chalk Mountain offers diverse ecosystems, in large part due to its topographic variety, ranging from below 9,000 feet up to 11,146 feet at Chalk Mountain, the most prominent feature in this unit. On the eastern face of Chalk Mountain, a large slump exposes very well-defined sandstone and shale bedding of the Tertiary Green River Formation. The ecology of this area consists of aspen forests mixing into spruce-fir conifer forests, with large open park meadows that offer wetlands, beaver ponds, and a number of creeks that traverse or begin in this unit, including Buzzard Creek, Willow Creek, Dyke Creek, and West Muddy Creek.

The Forest Plan combines two Roadless areas, the Flattops/Elk Park Roadless Area and the Currant Creek Roadless Area, into one large 86,000 acre WMA, the largest WMA across the entire Forest, and approximately 40,000 acres larger than the second largest WMA. In doing so, we believe that this skews the route density for this area, as most of the roads and trails across this polygon exist in the Flattops/Elk Park Roadless Area. Splitting this Wildlife Management Area into two WMAs would avoid this problem.

Suggested Improvement

- The Forest Service should split this Wildlife Management Area up into two separate WMAs at the Roadless Area boundary.

B. The Bear Creek area should be recommended for wilderness designation.

Due to its large size, this section will be submitted separately.

C. The Hayden Mountain areas should be designated a special interest area or special management area.

This large section will also be submitted separately.

D. The Final Plan must protect citizen proposed Special Management Areas (SMAs) in the North Fork Valley.

1. Background on the Muddy Country and Pilot Knob SMA proposals

We are deeply concerned about how the GMUG plan will be implemented on the ground. The forests and waterways in the North Fork Valley support an abundance of wildlife, quality backcountry recreation experiences, and clean air and water for communities in the North Fork Valley and beyond. These areas have outstanding and unique values that merit special management. Stakeholders have worked to secure meaningful protections in and adjacent to roadless areas in the North Fork Valley for decades, and consistently throughout this plan revision process. The 2012 Planning Rule grants the Forest Service authority to designate and protect these areas as Special Management Areas (SMAs) in forest plans.[25]

In early 2020, citizen groups submitted proposed special management areas (SMAs) to the Forest Service for consideration and analysis in the GMUG plan revision environmental impact statement (EIS).[26] These proposals included the Muddy Country Watershed and Wildlife Conservation Area (WWCA) and the Pilot Knob Backcountry Wildlife Conservation Area (BWCA).[27] The proposals included a general description of each area, as well as details about the naturalness and biological values; the recreational values and outstanding opportunities for solitude or unconfined primitive recreation; and details about any supplemental values found in the areas. Each proposal included substantial roadless overlap, and care was taken to draw

[25] The regulations specifically require that "[e]very plan must have management areas or geographic areas or both. The plan may identify designated or recommended designated areas as management areas or geographic areas." 36 C.F.R. § 219.7(d). The responsible official with delegated authority may designate new areas or modify existing areas, when approving the plan, plan amendment, or plan revision. 36 C.F.R. § 219.7(c)(2)(vii). SMAs are managed to emphasize specific values (e.g., ecological, geological, scenic, recreation, or other specific values). Management activities and uses are permitted in these areas only to the extent that they are in harmony with the purpose for which an area is specially designated. The plan or decision designating each area is supposed to provide specific objectives, standards, and guidelines for management of each area.

[26] These proposals also included several recommended wilderness areas, including the Hubbard Park, Coal Mountain, and Mendicant Ridge. Those proposals are addressed elsewhere in this objection.

[27] *See* letter from Western Slope Conservation Center, et al., to Chad Stewart, Forest Supervisor, GMUG, Re: Special Management Area Proposals for the GMUG Forest Plan Revision (Jan. 7, 2020), attached as Exhibit XX.

manageable boundaries. The proposals also included very clear and detailed management direction.

Throughout the plan revision process, stakeholders continued to meet with agency officials to advocate for and refine these SMA proposals. In May of 2020, after meeting with officials from the U.S. Forest Service about the proposals, it was clear the agency wanted more information on timber management within the Muddy Country WWCA and the Pilot Knob BWCA. So, in a follow-up letter to agency planners at the end of May, stakeholders provided detailed plan components for the agency to incorporate into a new plan. These plan components recommended a management standard prohibiting timber harvest within the proposed SMAs to protect the wildland and wildlife values of those areas from commercial timber harvest (i.e., timber production). The follow-up letter provided that some vegetation management projects may be appropriate to improve wildlife habitat or ecosystem health; however, timber harvest would be prohibited within the SMAs.[28]

Advocates urged that designating these SMAs with the proposed management prescriptions would help the Forest Service achieve its climate-related conservation goals by sequestering carbon in unfragmented roadless forests; protecting clean drinking water that the communities of the North Fork Valley depend upon; stabilizing soil; and protecting the outstanding biodiversity in some of the best remaining wildlife habitat in western Colorado. Additionally, designating these SMAs would further the Forest's distinctive role and contribution to habitat connectivity within the broader landscape—the North Fork Valley. It would maintain and restore habitat connectivity for mule deer, elk, moose, Canada lynx, mountain lions, black bears, and other species consistent with agency guidance. Further, these citizen SMA proposals reflect on the ground knowledge of diverse stakeholders engaged in the process. And protecting these areas as proposed would help maintain backcountry hunting and recreational opportunities that are unique for people who visit the areas.

Protecting high value public lands is also an important priority for the Biden-Harris Administration. President Biden has issued a call to action urging us to work together "to conserve, connect, and restore 30 percent of our lands and waters by 2030 for the sake of our economy, our health, and our well-being."[29] Agriculture Secretary Tom Vilsack also recently directed the Forest Service to protect our National Forests by restoring ecosystems, among other goals.[30] The directive highlights important ecosystem services provided by protecting our national forests, including: "sequestering carbon, providing clean drinking water, stabilizing soil, buffering floods, protecting biodiversity, providing sustainable forest resources, protecting

[28] *See* letter from Peter Hart, Wilderness Workshop, et al., to Samantha Staley, Forest Planner, GMUG, Re: Special Management Area Proposals for the GMUG Forest Plan Revision (May 28, 2020).

[29] *See* U.S. Dept. of Interior, "America the Beautiful" webpage, available at https://www.doi.gov/priorities/america-the-beautiful (last accessed 7/6/22).

[30] U.S. Dept. of Agriculture, "Climate Resilience and Carbon Stewardship of America's National Forests and Grasslands," Secretary's Memorandum 1077-004 (June 23, 2022).

cultural resources and places of tribal importance, and enabling access to the outdoors for hundreds of millions of visitors."[31] Protecting these SMAs on the GMUG would support and further the Administration's conservation goals.

When the DEIS was released, the Forest Service largely ignored these proposals. Stakeholders drafted strong comments pushing back on the agency's omission and providing compelling information about the potential environmental impacts that would occur absent adoption of the citizen proposed SMAs.[32] Public comments filed with the Forest Service during the comment period show broad based public support for the SMA proposals.[33] Thereafter, stakeholders continued to advocate for their inclusion of the SMAs in a Final Revised Plan. Advocates met with agency officials at the local and regional levels to emphasize that the management recommendations in these proposals reflect the desires of engaged community members, and providing detail on the values that these proposals would maintain and protect.[34] Nonetheless, the Forest Service's proposed plan does not include citizen proposed protections for the Muddy Country WWCA or the Pilot Knob BWCA.

2. Designating the Muddy Country and Pilot Knob SMAs would promote watershed protection and wildlife habitat connectivity consistent with the purposes of the 2012 Planning Rule.

Agency regulations make clear that the Forest Plan must "reflect[] the unit's expected distinctive roles and contributions to the local area, region, and Nation, and the roles for which the plan area is best suited…" as well as "the unit's unique capabilities, and the resources and management of other lands in the vicinity." 36 C.F.R. § 219.2(b)(1). A plan must also "[i]dentify watershed(s) that are a priority for maintenance or restoration" and "[d]escribe the plan area's distinctive roles and contributions within the broader landscape" 36 C.F.R. § 219.7(f)(1)(i), (ii). Ultimately, social, economic, and ecological sustainability are driving goals of the Forest Service's planning process, including maintaining and restoring terrestrial and aquatic ecosystems in the plan area. 36 C.F.R. §§ 219.8, 219.9.

Both the Muddy Country WWCA and the Pilot Knob BWCA retain unique capabilities, important watershed characteristics, and potential to contribute to habitat connectivity across the broader landscape. National Forest lands in the North Fork Valley provide a rare combination of natural beauty, primitive and backcountry recreational opportunities, and exceptional wildlife habitat value. Protecting the unique values within these areas is important to maintaining the distinctive contributions they provide to the local area and the broader region.

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[31] *Id*.

[32] *See e.g,*. Wilderness Workshop, et al., Comments on the Grand Mesa, Uncompahgre, and Gunnison National Forest Plan Revision Draft Management Plan (Nov. 26, 2021).

[33] *See e.g.*, more than 200 citizen letters filed in support of citizen proposed North Fork SMAs,.

[34] *See e.g.*, letter from WW to Sam Staley and Levi Broyles, GMUG, Re: meeting follow-up with information on the import of North Fork SMAs (May 2, 2022).

For example, the citizen proposed Pilot Knob BWCA contains important riparian habitats and sensitive fens. Water from the area contributes to municipal water supplies, which are vulnerable, and provide critical water for local irrigation.[35] The area provides phenomenal and increasingly scarce unfragmented, mid-elevation habitat for wildlife including summer range for mule deer, black bear, mountain lion, and elk; calving areas and winter range for elk; priority habitat and summer range for moose; bald eagle winter range; and Lynx habitat. Sensitive species rely on the area's Aspen forests such as the Northern goshawk, purple martin, flammulated owl, and the American marten.[36] Unique habitat values and wildlife populations in this area make it popular with hunters from near and far. It is an area under threat that deserves heightened protection. The area remains pristine while lands around it have undergone a significant transformation from development related to logging, agriculture, mining, and oil and gas exploration, and it deserves heightened protections proposed by citizens to maintain existing values.

The Muddy Country WWCA includes water sources and wildlands that are vital to the health of the North Fork Valley, and important more broadly. Muddy Creek, the area's major tributary, provides agriculture producers downstream with critical irrigation water, as well as domestic water for the town of Somerset.[37] The area includes two inventoried roadless areas and it is adjacent to nearly a dozen more—making it an integral piece of "one of the largest and least fragmented swaths of mid-elevation forest left in Colorado that has not been designated and protected as wilderness."[38] There is broad-based public support for protecting the area's natural values, important wildlife habitat, traditional agriculture and backcountry recreation uses.[39]

State wildlife officials have recommended that the roadless lands in this WWCA be protected to prevent habitat fragmentation and disturbance. Sensitive wildlife species dependent on both aspen and high elevation conifer habitats rely on this area. It provides calving areas, summer range, and winter range for elk; summer range and fall concentration areas for black bear; and important habitat for mountain lion, mule deer, turkey, mountain goat, and moose. Lynx habitat is mapped throughout this area, and the McClure Pass lynx linkage area includes part of this area.

Clear Fork of Muddy Creek contains green lineage Colorado River cutthroat trout, one of only 28 known conservation populations on the GMUG. Colorado River cutthroat trout can be found in Roberts Creek, Clear Fork Muddy Creek, Second Creek, North Twin Creek, and South Twin

[35] *Id*., at 21.

[36] *Id*., at 20.

[37] *Id*.

[38] *Id*., at 25.

[39] *Id.* (describing public support for protecting the area).

Creek. Beavers are also active in the area.[40] Sensitive species dependent on aspen habitats such as the Northern goshawk, flammulated owl, purple martin, and American marten also have important habitat in this area. As mentioned above, the National Audubon Society has designated portions of the proposed WWCA and nearby lands as the Mule Park Important Bird Area due to the presence of purple martin nesting colonies.[41]

Designating these citizen-proposed SMAs is necessary to support important resources of the North Fork watershed, including the area's vibrant agricultural community. The North Fork has the largest concentration of organic and chemical-free farms within the State of Colorado, and is one of two American Viticulture Areas in the State. North Fork Valley farmers, ranchers, orchardists, and winemakers, along with a robust outdoor recreation industry, are building a strong and resilient local economy by using the Valley's resources wisely, conserving its soil, and sustainably using its water and air. The local economy and Valley residents depend on clean air and flowing, clean water from the headwaters of the North Fork of the Gunnison River. Much of this water flows from these proposed SMAs.

Designating these SMAs is also important to maintain and restore habitat for important fish and wildlife species, and to maintain connectivity for migrating wildlife. Protecting these areas with our proposed management prescriptions would further the Forest's distinctive role and contribution to habitat connectivity by protecting and enhancing unfragmented wildlife habitat. The SMAs would also protect backcountry recreation opportunities that are important to people from all over the nation. Protecting these areas as proposed would maintain solitude and scenic integrity, and provide socioeconomic opportunities that emphasize backcountry hunting, primitive recreation, and traditional grazing.

Suggested Improvements

- The Forest Service should designate the citizen proposed SMAs to promote watershed protection and wildlife habitat connectivity consistent with the purposes of the 2012 Planning Rule.

3. Designating the Muddy Country and Pilot Knob SMAs supports the collaborative spirit of the 2012 Planning Rule.

Under the 2012 Planning Rule, the forest and grassland management plan revision is intended to be a collaborative process with the public. A key purpose and need of the Planning Rule is to "[p]rovide for a transparent, collaborative process that allows effective public participation." See 77 Fed. Reg. 21164; see also 21173 and 21176. Enabling effective, meaningful public participation and engagement is integral among Planning Rule requirements in 36 C.F.R. 219.4. Forest Service guidance demands meaningful public engagement, as well as meaningful

[40] *Id*., at 26.

[41] *Id*.

consideration of public comments and proposals. See e.g., FSH 1909.12, ch. 40, 41(1) (encouraging public engagement); FSH 1909.12, ch. 40, 41 (the Forest Service must provide information to the public and seek suggestions as well as feedback on potential issues and concerns); FSH 1909.12, ch. 40, 41.1(5) (the Responsible Official must facilitate problem-solving and identification of creative solutions as well as constructive dialogue, debate, and deliberation); FSH 1909.12, ch. 40, 41.1(8) (public participation opportunities should be designed to allow for input from a broad range of people who are interested in land management planning for a National Forest unit -- local, regional, and national); FSH 1909.12, ch. 40, 42.12(b) (help in the development of plan components). This guidance is intended to ensure the Forest Service will work with stakeholders to develop collaborative, cooperative management direction during the planning process.

The Muddy Country WWCA and the Pilot Knob BWCA proposals reflect on the ground knowledge of diverse stakeholders engaged in the process. Great care was taken to provide manageable boundaries that reflect existing conditions on the ground, and detailed maps were provided to the agency. The management recommendations in these proposals reflect the desires of community members and they aim to protect the most unique capabilities and distinctive resources in each of the SMAs.[42] The management recommendations also reflect feedback from agency officials received by stakeholders during extensive engagement in the multi-year planning process.

Nonetheless, the Forest Service failed to include these-citizen proposed North Fork SMAs in the Revised Plan.[43] This decision is contrary to the collaborative spirit of the 2012 Planning Rule, as well as the Forest Service's conservation goals.

Suggested Improvements

- The Forest Service should reconsider the citizen proposed SMAs in the North Fork Valley and include them in the Final Revised Plan to ensure that this planning process reflects guiding principles from the Forest Service's planning directives.

4. The Forest Service must adopt the proposed SMAs to ensure that clear plan components actually protect outstanding resources and values of the North Fork.

The 2012 Planning Rule divides mandatory plan components into categories: objectives, desired conditions, standards, guidelines, and suitability of lands. 36 C.F.R. § 219.7(e) *et seq*. These components must "maintain or restore the ecological integrity of terrestrial and aquatic ecosystems (36 C.F.R. § 219.8(a)) and watersheds in the plan area," and "maintain or restore their structure, function, composition, and connectivity." 36 C.F.R. § 219.9(a)(1). Plan

[42] *See* 200+ public comment letters in support of the SMA proposals cited above.

[43] *See* Letter from WW to the GMUG, May 2, 2022 cited above.

components must also "maintain or restore the diversity of ecosystems and habitat types throughout the plan area." 36 C.F.R. § 219.9(a)(2). Additionally, plan components must maintain or restore "key characteristics associated with terrestrial and aquatic ecosystem types;" and "rare aquatic and terrestrial plant and animal communities[.]" *Id.*

Forest Service guidance makes clear that plan components shall be written: "clearly and concisely in a way that allows for monitoring to test their effectiveness and verify assumptions on which they are based" and "without ambiguity so that a project's consistency with applicable plan components can be easily determined." FSH 1909.12, ch. 20, sec. 22.1 (2015); FSH 1901.12, ch. 20, 22.1.

The citizen proposed Muddy Country WWCA and the Pilot Knob BWCA proposals include recommended plan components that are specific, researched, and supported by agency guidance. Stakeholders also provided more specific plan components, including desired conditions, guidelines, and standards in follow-up communication with the Forest Service.[44] Incorporating these plan components into the final forest plan would enable the Forest Service to appropriately manage the important wildlife, wildland, and water resources of the North Fork region in compliance with the 2012 Planning Rule and agency guidance. For example, citizen proposed North Fork SMAs clarify allowable uses (e.g., no new routes, no timber production, vegetation treatment only for the benefit of wildlife).

Instead, the Forest Service intends to rely on a combination of the recreation opportunity spectrum (ROS) and scenic integrity objectives (SIOs) to protect these areas. The agency's reliance on a combination of the ROS and SIOs to protect these areas fails to give agency staff and the public a clear direction for what is and what is not allowed in these areas and subverts the intent of NFMA and the 2012 Planning Rule.

The Forest Service should adopt the proposed SMAs with specific plan components to ensure the final forest plan provides clear, concise management direction for the Forest Service and the public. We have attached Carson National Forest revised forest plan, which uses SMAs to communicate allowable uses in certain areas. This plan is consistent with Forest Service guidance for the 2012 Planning Rule, requiring clear and unambiguous forest plan components that help guide project implementation. FSH 1901.12, ch. 20, 22.1. The Carson National Forest plan was highlighted for GMUG planners during the planning process.[45] Since then, the Carson National Forest Draft Plan was finalized and includes the SMAs with specific plan components as described. Nonetheless, the proposed GMUG plan fails to follow a similar path by designating the clear and unambiguous components included in the North Fork SMA proposals.

[44] *See* letter from Peter Hart, Wilderness Workshop, et al., to Samantha Staley, Forest Planner, GMUG, Re: Special Management Area Proposals for the GMUG Forest Plan Revision (May 28, 2020) cited above.

[45] *Id*.

The Carson National Forest's treatment of SMAs should provide the GMUG with an example for why SMAs support the Forest Service in determining allowable uses within an area, and provide a replicable framework for SMA designation.[46] The Carson National Forest explicitly states allowable uses within SMAs. These standards are not solely prohibiting uses like timber management, but rather putting clear sideboards on use.[47] While we understand the GMUG's desire for flexibility, the proposed SMAs and their required plan components would ensure clarity, consistency, and overall strength of a forest plan that is lacking in the proposed plan.

Suggested Improvements

- The Forest Service should adopt our proposed SMAs with specific plan components to improve the alternatives under consideration and provides clear, concise management direction for the Forest Service and the public. These plan components would properly implement the agency's conservation goals and uphold the intent of the 2012 Planning Rule.

5. Roadless area protection alone is insufficient to ensure long-term viability of important wildlife habitat within the Muddy Country and Pilot Knob SMAs.

The Colorado Roadless Rule alone is insufficient to protect wildlife habitat and other public land resources in the upper North Fork region. The Roadless Rule may not protect wildlife habitat from increased motorized and non-motorized trail development at densities that diminish habitat effectiveness and cause fragmentation.[48] The Forest Service acknowledged as much in the DEIS by proposing Wildlife Management Area (WMA) designations on top of existing roadless areas to cap trail densities and protect important habitat values. However, while some other roadless areas would get protective WMA designation in the plan, WMA protections were not considered for the North Fork region. For example, roadless areas overlapping the citizen proposed Muddy Country WWMA and the Pilot Knob BWCA (including the Huntsman, Clear Fork, Turner Creek, and Pilot Knob roadless areas) would not be protected as WMAs despite extraordinary wildlife habitat values in those areas.

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[46] *See* Carson National Forest's Final Land Management Plan, Chapter 3: Plan Components for Designated Areas and Management Areas, at 155-199, on file with the Forest Service and available at https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd1040268.pdf (last accessed Oct. 12, 2023).

[47] *See id*. at 192-3 (providing very detailed Management Area Standards for Valle Vidal).

[48] *See e.g.,* Backcountry Hunters and Anglers "GMUG" website(describing the organization's wildlands and wildlife report, and saying: "Our analysis has determined that the character and integrity of Roadless Areas on the GMUG Forest have been cumulatively altered by the presence of motorized and non-motorized trails. As shown on our interactive map and data table a majority of CO Roadless areas on the GMUG currently contain established mountain bike trails, ATV and motorcycle trails, and snowmobile trail systems, particularly on the Grand Mesa, Gunnison Basin, and northwestern portion of the Uncompahgre Plateau. In many areas, those trail systems approach 1 mile of trail per section of land and have fragmented larger undisturbed landscapes, impacting big game habitats, security areas and migration corridors, and shifted their primitive character to developed recreation."), available at https://www.backcountryhunters.org/grand_mesa_uncompahgre_gunnison_usfs_report.

Importantly, WMAs do not prohibit commercial logging—which is important to protect these SMAs. So, it is possible that WMAs and roadless would provide protections on par with those outlined in the citizen proposed SMA. However, neither roadless nor WMA designation alone would provide comparable protections to those in citizens' Muddy Country WWMA and the Pilot Knob BWCA proposals.

Other activities that are damaging to wildlife and wildlife habitat are also permissible under the Roadless Rule, including mining activities and development associated with exploration for oil and gas development. To better ensure durable protection for these areas, the Forest Service should adopt protections above and beyond those provided by the Roadless Rule. Designating our proposed SMAs and RWAs is necessary to ensure these areas have conservation measures in place that fully protect wildlife habitat and wildland values. Layering WMAs on top of the North Fork roadless areas is also an alternative worth consideration, as well as other special management decisions and designations that would protect wildlife.

Suggested Improvements

- The Forest Service cannot rely on Colorado Roadless Area designations alone to adequately protect wildlife and wildland values in the North Fork Valley. The Forest Service must adopt special management area designations with targeted plan components to conserve those resource. The agency should consider WMA designations for the North Fork roadless areas as well.

E. A fishery outstandingly remarkable value should be found for the Lower Taylor River.

The USFS correctly recognized the outstanding remarkable values (ORV) of recreation and scenery when finding the lower Taylor River eligible for wild and scenic river status. At the same time, they did not recognize a fishery ORV for the lower Taylor. The Response to comments discusses that the USFS staff had analyzed the lower Taylor River to determine whether it had been designated as a Gold Medal Fishery and found that it had not been. The absence of Gold Medal status was used as their rationale for denying the fishery ORV.

The USFS incorrectly failed to note the gold medal fishery on the lower Taylor River.[49] Specifically, in The Response to Comments USFS staff notes that:

> "[W]ith respect to fishing as a recreational value, the FS incorrectly identified Taylor River as a gold medal fishery in the initial phase of the Wild and Scenic River process,

[49] Page 384. https://coloradooutdoorsmag.com/2023/01/18/colorado-gold-medal-waters-gunnison-and-taylor-rivers/

reflected in the 2019 Initial Notes spreadsheet. While popular for fishing, it is not identified by the State of Colorado as gold-medal."[50]

The USFS notes in other review documents that it mistakenly included the Taylor as a Gold Medal fishery.[51]

This finding is inaccurate. In January of 2023 Colorado Parks and Wildlife designated the lower Taylor River as a Gold Medal fishery. Specifically, 20 miles of the Taylor River below the Reservoir were approved as Gold Medal.[52] This standard is that there are 60 pounds of fish per acre and "12 quality trout of 14 inches or greater per acre."[53]

Suggested Improvement

- The USFS recognize an additional fishery ORV for the Gold Medal fishery on the lower Taylor River.

III. THREATENED AND ENDANGERED SPECIES

Section 7(a)(1) of the Endangered Species Act (ESA) states that federal agencies, including the Forest Service, "shall … utilize their authorities in furtherance of the purposes of the [ESA] by carrying out programs for the conservation of endangered species," like the Gunnison sage grouse. 16 U.S.C. § 1536(a)(1). Under the ESA, "conservation" means "to use and the use of all methods and procedures which are necessary to bring any endangered species … to the point at which the measures provided pursuant to [the ESA] are no longer necessary." 16 U.S.C. § 1532(3). Thus, "the ESA was enacted not merely to forestall the extinction of species[], but to allow a species to *recover* to the point where it may be delisted." *Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv.*, 378 F.3d 1059, 1070 (9th Cir.), amended, 387 F.3d 968 (9th Cir. 2004) (emphasis added).[54]

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[50] Final Environmental Impact Statement for the Revised Land Management Plan. Grand Mesa, Uncompahgre and Gunnison National Forests. Volume 3: Response to Comments on the 2021 Draft Environmental Impact Statement and Draft Revised Land Management Plan. Pre-Objections Version. Page 382.

[51] Page 382. Volume 3 of the final EIS, Response to Comments Report; Watersheds and Water Resources. GMUG National Forests Revised Management Plan.

[5252] John Livingston, Southwest Region Public Information Officer. *Gunnison, Taylor Rivers earn Gold Medal trout fishery status; CPW Celebrates a Decades-Long Conservation Success*. CPW News Release. January 18, 2023.Accessible at https://cpw.state.co.us/aboutus/Pages/News-Release-Details.aspx?NewsID=3732.

[53] *Id.*

[54] It is worth noting that legal claims under the Endangered Species Act do not need to be included in an objection, as often times such claims are not foreseeable and do not become clear until the Fish and Wildlife Service issues a final biological opinion. *See* 16 U.S.C. § 1540(g)(2)(A); *Darby v. Cisneros*, 509 U.S. 137, 154 (1993). This is especially true here, where the Forest Service has not completed consultation prior to release of either its draft or final EIS or Plan Revision. That being said, there are some claims that may be foreseeable at this point that we raise here.

Section 7(a)(1) of the ESA imposes a specific affirmative duty upon all federal agencies to carry out programs to conserve endangered and threatened species. *Sierra Club v. Glickman*, 156 F.3d 606, 616 (5th Cir. 1998). Total inaction is not allowed. *Id.* at 617–18; *Nat'l Wildlife Fed'n v. Norton*, 332 F. Supp. 2d 170, 187 (D.D.C. 2004) (Section 7(a)(1) confers discretion, but that "discretion is not so broad as to excuse total inaction[.]"); *Defs. of Wildlife v. Sec'y, U.S. Dep't of the Interior*, 354 F. Supp. 2d 1156, 1174 (D. Or. 2005) ("compliance is not committed to agency discretion by law"); *Fla. Key Deer v. Paulison*, 522 F.3d 1133, 1146 (11th Cir. 2008). And "insignificant" measures that do not, or are not reasonably likely to, conserve endangered or threatened species are equally inadequate to fulfill an agency's affirmative ESA conservation duty. *Paulison*, 522 F.3d at 1147 (citing *Pyramid Lake Paiute Tribe of Indians v. U.S. Dep't of Navy*, 898 F.2d 1410, 1418 n.19 (9th Cir. 1990)).

Further, the Forest Service's own threatened and endangered species policy, derived from this affirmative conservation mandate, directs the agency to "place top priority on conservation and recovery of listed species," "avoid all adverse impacts on listed species and their habitats," and identify and prescribe measures to prevent adverse modification or destruction of "habitats essential for the conservation" of listed species. FSM 2670.31.

Finally, the Forest Service must "provide for diversity of plant and animal communities" on units of the National Forest System. 16 U.S.C. § 1604(g)(3)(B). To implement this requirement, the revised 2012 Rule directs the agency to "provide the ecological conditions necessary" to "contribute to the recovery of federally listed endangered and threatened species." 36 C.F.R. § 219.9(b)(1).

A. Uncompahgre fritillary butterfly.

We raised issues related to the Uncompahgre fritillary butterfly (UFB) in the HCCA et al. (2021) on the Draft Plan and DEIS at 124-147.

The USFWS listed the UFB as endangered in 1991. 56 Fed. Reg. 28712, (June 24, 1991). At that time, the Service believed collection was the top threat to the species; others included trampling of the butterflies and their snow willow habitat by humans and livestock. The 2009 5-year review for UFB set the degree of threat to moderate and recovery potential at high, describing climate change as a "potential" threat and human and deemphasizing livestock and human trampling as threats.[55] The 2018 5-year review described climate changes as the biggest threat to the UFB and listed its recovery potential as low and, at that time, did not consider human recreation and livestock use as population-level threats.[56] The 2023 5-year review, new since the GMUG's Draft

[55] USFWS (United States Fish and Wildlife Service). 2009. Uncompahgre Fritillary Butterfly (*Clossiana improba acrocnema*) 5-Year Review: Summary and Evaluation. October.

[56] USFWS (United States Fish and Wildlife Service). 2018. Uncompahgre Fritillary Butterfly (*Clossiana improba acrocnema*) 5-Year Review: Summary and Evaluation. September 28.

Plan was issued for comments, similarly placed recovery potential for the species as low due to climate change, but also stated that human recreation, including hikers with dogs, on trails near and adjacent to colonized areas has increased and sheep have been degrading habitat by eating and bedding in colonized areas. USFWS 2023.

New information, a paper by Williams and Alexander (2023), indicated there could be management responses to climate change despite its increasing negative impacts on the UFB and habitat.[57] Dr. Keven Alexander is a national expert on the species and has monitored UFB colonies for 20 years. The paper reported that precipitation and temperature changes alter the timing of nectar sources and facilitate the encroachment of lower elevation plants into important alpine plants for the species, including snow willow. Williams and Alexander (2023, citing Monroe et al. (2016)) stated, "colonies might persist through low-level migration and "temporal leakage" at these study sites, suggesting this data could also be used to manage suitable habitat for metapopulations of *B. i. acrocnema*." Williams and Alexander 2023 (unpaginated), citing Monroe et al. (2016).[58] In another paper published between the Draft Plan comment closure and issuance of the Final Revised Plan, Ripple et al. 2022 (supplemental materials) recommended a protective reserve for the UFB.[59] Williams and Alexander (2023) concluded with the following recommendations:

> With formulas of predicted changes in the phenological timing of alpine communities and micro- or macroclimate data, we can further model climate related extirpation or extinction risk of *B. i. acrocnema* to adequately manage for in the short term and prioritize for the long-term conservation of alpine ecosystems. Protecting current habitat from increasing bare ground due to human recreation or livestock grazing are critical management actions to preventing immediate declines in *B. i. acrocnema* abundance.

The paper's findings emphasize the need for strong habitat protections that prohibit humans, dogs, and livestock disturbance in occupied and suitable unoccupied UFB habitat. Unfortunately, the Revised Plan does not provide sufficient protections from these threats.

1. The Revised Plan does not to provide the ecological conditions necessary to contribute to the recovery of the Uncompahgre fritillary butterfly in violation of 36 C.F.R. § 219.9(b)(1) and also fails to comply with 219.9(a)(2)(ii).

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[57] Williams, A. N., & Alexander, K. D. 2023. Microhabitat requirements of the Uncompahgre fritillary butterfly (Boloria improba acrocnema) and climate change implications. Journal of Insect Conservation, 1-16.

[58] Williams, A. N., & Alexander, K. D. 2023. Microhabitat requirements of the Uncompahgre fritillary butterfly (Boloria improba acrocnema) and climate change implications. Journal of Insect Conservation, 1-16; Monroe, E. M., Alexander, K. D., & Britten, H. B. 2016. Still here after all these years: the persistence of the Uncompahgre fritillary butterfly. Journal of Insect Conservation, 20, 305-313.

[59] Ripple, W. J., Wolf, C., Phillips, M. K., Beschta, R. L., Vucetich, J. A., Kauffman, J. B., ... & Ashe, D. M. 2022. Rewilding the American West. BioScience, 72(10), 931-935. (with supplemental materials).

Under 36 C.F.R. § 219.9(b)(1) the Forest Service is required, consistent with the ESA, to "contribute to the recovery of federally listed and endangered species. . .." The Forest Service is also required to ensure that the plan contains components that would maintain or restore rare aquatic and terrestrial plant and animal communities. 36 C.F.R. § 219.9(a)(2)(ii). The plan components do not, however, meet these mandates because they do not sufficiently protect UFB and its habitat from livestock and recreation impacts. These impacts are becoming greater threats to the species and are readily manageable, allowing for their impacts to be avoided and prevent them from becoming even greater threats to the species over the course of the Plan's applicability.

We greatly appreciate that the Forest Service changed guideline FW-GDL-SPEC-27 to a standard, FW- STND -SPEC-27, in the Revised Plan to better protect the Uncompahgre fritillary butterfly (UFB), a rare species, from recreation impacts. However, FW- STND -SPEC-27 does not meet the requirements (36 C.F.R. § 219.7(e)(1)(iii)) for a standard, which mandates standards must be "mandatory constraints," containing the modal verbs "shall" or "must" confirming an obligation. The last sentence of FW- STND -SPEC-27, "[l]ivestock trailing through occupied UFB habitat should conform to the 2008 on-file biological assessment with the U.S. Fish and Wildlife Service, or as superseded in subsequent consultation" (emphasis added) does not comply because the "should" enables departure from the standard. FSH 1909.12 Zero Code at 05.1 - Exhibit 01 ("Standards . . . 2. Are stated in a precise manner, and with mandatory or prohibitive wording, such as "must," "shall," "must not," "may not," "shall not," or XX is not allowed to be authorized."). For reasons stated herein, however, and even if the language is made mandatory, the exception to allow livestock trailing through UFB habitat needs to be stricken.

Domestic sheep movement through UFB snow willow habitat must not be permitted. This is a threat to the species that the Forest Service can prevent. Given the impacts of climate change and the best available science discussed herein, the agency should take all actions possible to protect the UFB and its habitat.

The FEIS I at 288 states,

> The Forest does not permit livestock grazing in occupied Uncompahgre fritillary butterfly habitat. However, sheep trailing overlaps one known colony area. Sheep trailing typically occurs after the Uncompahgre fritillary butterfly flight season, and the sheep trail through the colony over a period of a few days. As grazing leases cycle through permit renewal, revised management direction in all action alternatives would be taken into consideration, addressing any negative impacts associated with grazing. FW-STND-SPEC-27 would prohibit direct impact to this habitat per its requirement to avoid habitat-disturbing activities in occupied Uncompahgre fritillary butterfly snow willow habitat, and directing livestock trailing through occupied habitat to continue to conform to the on-file biological assessment and concurrence with the U.S. Fish and Wildlife Service.

> Minimal impacts from the livestock grazing program to the Uncompahgre fritillary butterfly may, however, occur. (emphasis added)

Enabling sheep trailing after flight season offers no protection at all. UFBs would also be at risk to this threat regardless of the period in their life cycle. Domestic sheep can trample, bed on, and eat butterfly host plants at the egg, larval, and chrysalis stages. Additionally, UFBs are sedentary in nature, have weak flying ability, and tend to fly low to the ground (Uncompahgre Butterfly Recovery Team 1994), making flyers susceptible to sheep impacts.[60] Climate change may be shifting the timing when nectaring plants flower (See Williams and Alexander 2023) and could shift the timing of the UFB live cycle.

The USFWS's 2023 5-year review for the species stated that the threat of domestic sheep in at least one colony—25% of the GMUG's population—is increasing, stating,

> Domestic sheep trailing and especially bedding on UFB habitat could affect the butterfly by degrading its habitat. Sheep were observed on UP in past years since 1990 but appeared to have just trailed through there within a day or two. Nectar sources were eaten by past sheep grazing on UP, which could impact energy levels for UFB flying and mate seeking (Donohue and Alexander 2023). Immediate or lingering population impacts were not detected in subsequent and recent years, but it is hypothesized that annual sheep grazing at UP prior to 1980 could have influenced the small numbers or absence of the UFB there in the 1980s and could have influenced genetics at UP [Uncompahgre Peak] (Monroe et al. 2016). After a few years of no sheep grazing, a large, but currently unknown, number of sheep were also grazed on UP in 2023 (O. Wilmot, personal communication, July 25, 2023). They knocked over population monitoring transect stakes and flags, but the habitat and population abundance impact to the UP sub-colonies is currently unknown. A number of sheep were observed laying down on the colony, so it appears they were not being trailed through rapidly. USFWS 2023 at 4

The Forest Service cannot continue to allow livestock in the habitat of this critically imperiled small-range, very small-population species with a very large degree of instability among colonies. See USFWS 2023 at 2-4.

The new science discussed at the beginning of this section emphasizes the need to for the Forest Service to be proactive in managing recreational impacts on the species. The Plan is also clear that the Forest Service is anticipating recreation to increase over the course of the next decade and continue to place additional stresses on habitat and ecological integrity. An additional standard is needed to address this reasonably foreseeable increasing threat to UFB and its habitat.

In our comments on the Draft Plan and DEIS, we recommended changing guideline FW-GDL-SPEC-19 to a standard, which would provide greater certainty that the UFB would be protected

[60] Uncompahgre Butterfly Recovery Team. 1994. Uncompahgre Fritillary Butterfly Recovery Plan 3. March 17.

from disturbance to its habitat. The Forest Service chose not to develop the guideline into a standard and changed the language to make it even weaker. Below are both the Draft Plan and Revised Plan language.

> Draft Plan version:
> FW-GDL-SPEC-19: To maintain viable populations of at-risk species, particularly in alpine habitats, the Forest Service should limit use (motorized or non-motorized, foot, or pack stock traffic) to designated routes (seasonally or in limited areas, not Forestwide); implement seasonal closures on recreational use over limited areas; limit activities that require special use permits; and/or implement other such temporary or limited-area measures as needed to reduce impacts of recreation and forest use. (emphasis added)
>
> Final Revised Plan version:
> FW-GDL-SPEC-19: To maintain viable populations of species of conservation concern and contribute to recovery of federally listed species that are negatively affected by recreation and forest use, the Forest Service should manage human disturbance in pertinent habitats. Tools for managing use include restricting use (motorized or non-motorized, including foot or pack stock traffic) to designated routes where appropriate; implementing seasonal recreation closures; and/or stipulating reauthorizations and new authorizations of pertinent special use permits. (emphasis added)

The word "limit" in the Draft Plan guideline provides at least some management direction; the word "manage" in the Final Revised Plan is vague and ambiguous. Restricting use might not mean limiting it under the final Plan's guideline, as restriction is only a "tool." In any case, it's unclear how this guideline would be followed by line officers and other Forest Service staff. The word "manage" in the guideline provides no constraint on decisionmaking as required by 36 C.F.R. § 219.7(e)(1)(iv).

Accordingly, the Plan's approach for this species is not only contrary to the Planning Rule, but also fails to comply with the ESA's duty to conserve and recover listed species (16 U.S.C. § 1536(a)(1)).

2. Guideline FW-GDL-SPEC-19 does not provide clear, unambiguous direction and, therefore, violates of 36 C.F.R. § 219.7(e)(1), FSH 1909.12, ch. 20, 22.1(2)(b), and FSH 1909.12, ch. 20, 22.1(2)(d).

The change in language to guideline FW-GDL-SPEC-19 from "limit" to "manage," as described above, decreased management clarity and increased ambiguity. It's not certain how Forest Service staff would apply or conform with the guideline because it lacks clear direction. We recommend this guideline become a re-worded standard below.

3. With regard to the Uncompahgre fritillary butterfly, the Revised Plan does not comply with 36 C.F.R. § 219.8(a)(1) and 219.9(a)(1).

As we've demonstrated above, the GMUG does not have sufficient standards to provide for the ecological conditions to contribute to the recovery of the UFB and is risking the species' extinction. As such, the Forest Service is also violating 36 C.F.R. § 219.8(a)(1) and 219.9(a)(1) by failing to assure the provision of ecological integrity, which is defined at 36 C.F.R. § 219.19 as,

> The quality or condition of an ecosystem when its dominant ecological characteristics (for example, composition, structure, function, connectivity, and species composition and diversity) occur within the natural range of variation and can withstand and recover from most perturbations imposed by natural environmental dynamics or human influence.

The UFB must be considered a compositional and functional characteristic of the GMUG's alpine ecosystem. Not providing sufficient plan components in the preferred alternative to promote their recovery violates NFMA's diversity mandate, 36 C.F.R. § 219.8(a)(1) & 219.9(a)(1), as well as the ESA. They are part of what makes up the biodiversity of the alpine ecosystem in the GMUG, and their near extinction is a symbol of the global and national biodiversity crisis and the deterioration of the integrity of grassland ecosystems.

The planning directives include "species richness," "species diversity," and the "presence and abundance of species at risk" as compositional characteristics of ecosystems. FSH 1909.12, ch. 10, 12.13 – Exhibit 01. UFBs also serve a functional role in the ecosystem as pollinators. FSH 1909.12, ch.10, 12.13 – Exhibit 01. Their presence and persistence within snow willow ecosystem patches is an indicator of ecological integrity. Without the UFB, the alpine willow system would be missing a key member of the ecological community.

4. The Forest Service has failed to uphold its duties under Section 7(a)(1) of the ESA to conserve and recover the species and to take a hard look at impacts and consider reasonable alternatives as NEPA requires.

Section 7(a)(1) of the ESA requires the Forest Service to ensure it carries out its programs for the conservation of endangered and threatened species. The Forest Service's biological assessment determination of "May Affect, Not Likely to Adversely Affect" is unjustifiable and highlights the agency's failure to execute proper impacts and effects analysis under NEPA and the ESA. The fact that livestock trailing will continue in the endangered butterfly's habitat and that grazing occurred this year, 2023, merits a determination of "May Affect, Likely to Adversely Affect." Increasing impacts from recreation and the trend of that these impacts will continue to increase further warrants a likely to adversely affect finding. The agency must adopt meaningful standards that will ensure this species and its critical habitat do not continue to be subjected to impacts and effects that can readily be prevented through sufficient plan requirements.

The additional information about the species that has come to light since the draft comment period makes the broad, vague, and undefined exception to SPEC-27 inappropriate. The language should be excised from the standard. It is not clear what "management actions supported by the U.S. Fish and Wildlife Service as beneficial to habitat" would or could be. The standard requires that trails and habitat disturbing activities must avoid UFB habitat---is it suggesting that these very same activities could be determined "beneficial to habitat?" What are the reasonably foreseeable undefined "management actions" that this be and has there ever been a need for such actions? At a minimum, parameters need to be added to make it clear what these management actions could be.

The Forest Service cannot continue to rely on a biological opinion that is presently 16 years old regarding impacts to this species as it purports to do. See e.g., FW- STND -SPEC-27, FEIS III at 309 (relying on this outdated document to say there are not impacts to the species from livestock and that livestock trailing and grazing can continue). This approach disregards the best available science in violation of both the Planning Rule and ESA. Any conclusions reached in that opinion about impacts on grazing are not representative of what those impacts would be now and going forward in light of the continued declining trend in the species' population since that analysis was conducted and the increasing impacts from increasing recreation, continued livestock use of the habitat, and climate change.[61]

Despite our comments at the draft stage that pointed out the Forest Service's failure to consider a reasonable range of alternatives and conduct proper direct, indirect, and cumulative impacts analysis, this analysis remains outstanding. Pertaining to alternatives, the Final EIS states, "All action alternatives include the same Forestwide direction for the Uncompahgre fritillary butterfly." FEIS I at 286. Accordingly, the Forest Service's own admission is that there is no range of alternatives for this species. This violates NEPA. It also constrains the decisionmaking process by foreclosing alternatives that would better protect the species and its habitat through stronger standards, such as not permitting any livestock grazing and/or trailing within and near the species' habitat. A reasonable alternative analysis that includes a standard that excludes livestock grazing and human intrusion into UFB habitat was requested at the draft stage, yet the Forest Service has not responded to that request, nor has it undertaken that necessary analysis.

Additionally, the Forest Service has still not provided direct, indirect, and cumulative impacts analysis for this species in standard FW-DC-SPEC-01 (identified in the Final Revised Plan as applicable to this species), FW-GDL-SPEC-19, or FW-DC-SPEC-27. While FW-DC-SPEC-01 and FW-GDL-SPEC-19 are stated as being beneficial for the species, neither require avoidance or mitigation of impacts, and instead opt for minimization to some unknown degree or an undefined and undetermined level of management. FW-DEC-SPEC-01 ("Disturbance of species by management activities and recreation is managed to minimize impacts during critical life history periods (e.g., breeding, feeding, rearing young, and migrating)"; FW-GDL-SPEC-19 (" . . . the Forest Service should manage human disturbance in pertinent habitats. Tools for managing

[61] USFWS at 7-11 and 13-24; USFWS at 2-6.

use include restricting use (motorized or non-motorized, including foot or pack stock traffic) to designated routes where appropriate; implementing seasonal recreation closures; and/or stipulating reauthorizations and new authorizations of pertinent special use permits."). Without direct, indirect, and cumulative impacts analysis, the Forest Service has not compiled with NEPA nor has it complied with its requirements under 36 C.F.R. § 219.8(a)(1), 219.9(a),(b), and 219.9(e). This outstanding impact analysis is critical to inform and strengthen plan components so they meet the agency's obligations under 36 C.F.R. § 219.9(a)(1), (b)(1), (e), NEPA, and the ESA.

The 2018 5-year status review concluded that "[a]t most, considering population abundance at quantitatively monitored colonies and presence/absence at qualitatively monitored colonies, there are only 8 colonies that are considered stable."[62] Extirpation has appeared to have occurred at one colony and was an open question at another colony site due to lack of observances in 2018. *Id*. at 6. The most recent 5-Year Review from August 2023 stated that "only a 25 to 50 percent presence of the qualitatively monitored sites in 2021 and 2022 is of concern."[63] One UFB colony is now considered extirpated in the even-year broods while another sub-colony at another one of the qualitatively monitored colonies "has been absent for 10 years and is assuredly extirpated." *Id*. at 3. "The Uncompahgre fritillary has the smallest total range of any North American butterfly species" and the Uncompahgre site where sheep trailing and grazing and recreation occurs is considered one of the major sites for this species. 56 Fed. Reg. 28712, 28713 (June 24, 1991).

The new information that sheep grazed within this species' habitat in the UP population in 2023 underscores the inadequacy of the Forest Service's plan components. Increased threats (recreation, climate change), current climate science and drastic population drop offs, as discussed in the most recent 5-year reviews and is depicted in the graph below, require the forest plan to do much more to protect this species. It also does not support the Forest Service's desired "flexibility." See FEIS III at 309. It is also clear that flexibility under the existing plan has been insufficient for the survival and recovery of the species. There must be fixed standards that protect the species from any additive impacts from sheep trailing and grazing if the Forest Service is going to meet its duties of conservation and recovery (as the ESA and 36 C.F.R. § 219.9(b)(1) require).[64] While we are hopeful the high snow year of 2022-2023 may lead to rise in populations, the continued downward trend cannot be ignored.

[62] USFWS (United States Fish and Wildlife Service). 2018. Uncompahgre Fritillary Butterfly (*Clossiana improba acrocnema*) 5-Year Review: Summary and Evaluation. September 28.

[63] The taxonomic uncertainty remains for UFB, hence the variation of the taxonomic name between the 2018 and 2023 5-Year Reviews. USFWS 2023 at 5-6.

[64] USFWS (United States Fish and Wildlife Service). 2023. Uncompahgre Fritillary Butterfly (*Clossiana improba acrocnema*) 5-Year Review. August.

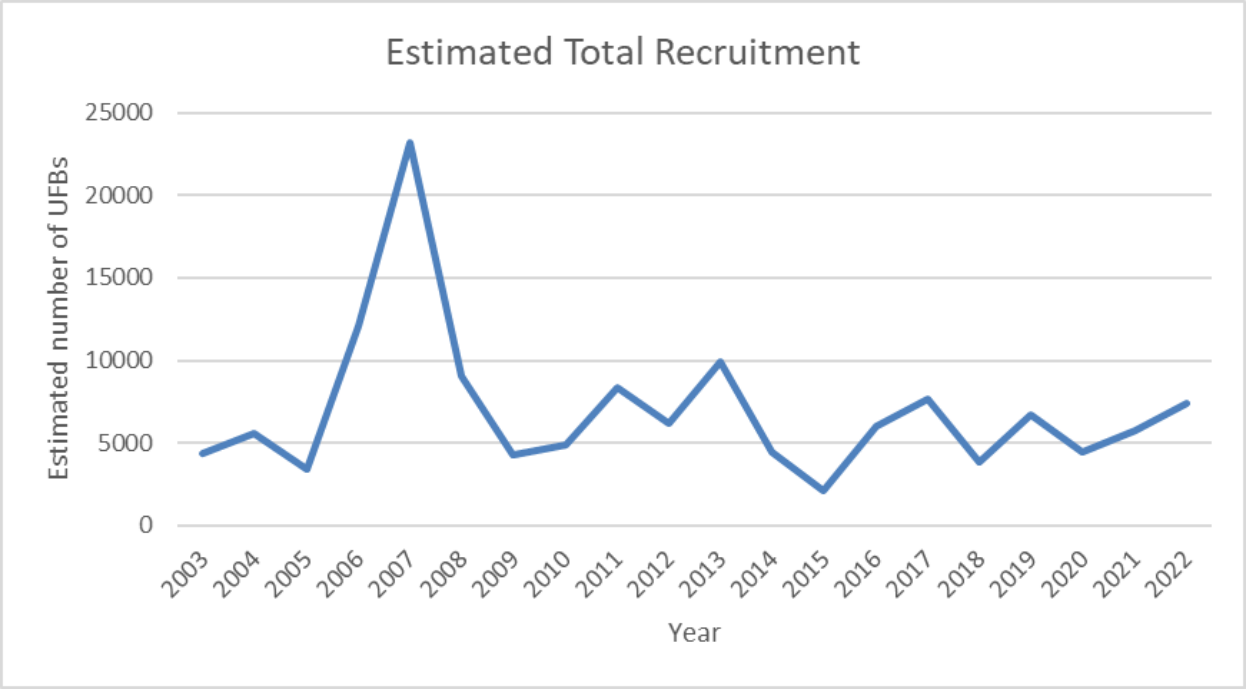

Figure 1. Estimated total UFB recruitment for UP, RC and Colony C (2003-2022). USFWS 2023 at 3.

Suggested Improvements

- Change the standard FW- STND -SPEC-27 to: To assist in species recovery and to avoid species and habitat impacts, new or realigned recreation trails or other habitat-disturbing activities must avoid Uncompahgre fritillary butterfly snow willow habitat and silverspot bog violet habitat. ~~(Exception: management actions supported by the U.S. Fish and Wildlife Service as beneficial to habitat.).~~ Livestock **shall not be permitted in** ~~trailing through occupied~~ Uncompahgre fritillary butterfly habitat**.** ~~should conform to the 2008 on-file biological assessment with the U.S. Fish and Wildlife Service, or as superseded in subsequent consultation~~.

- Adjust any grazing allotment boundaries to make them far from UFB habitat.

- Guideline FW-GDL-SPEC-19 must be made into a standard and replace "should" with "shall" to provide clear, unambiguous direction to prevent humans, their pets, and their livestock from entering UFB snow willow habitat with a specific set of management actions.

- Within two years, designate a UFB reserve special area to protect occupied and unoccupied suitable habitat, as suggested by Ripple et al. (2022). Wilderness and recommended wilderness designations alone do not provide sufficient protections for habitat given that they allow recreation and livestock.

B. Gunnison sage-grouse.

Issues related to Gunnison sage grouse were raised in HCCA et al. (2021) on the Draft Plan and EIS starting at 142. These comments and their references are hereby incorporated in full.

The Gunnison sage-grouse (*Centrocercus minimus*, "GuSG") lives exclusively in the sagebrush steppe ecosystems of southwestern Colorado and southeastern Utah. Gunnison sage-grouse were formerly native to southwestern Colorado, northern New Mexico, southeastern Utah, and possibly northeastern Arizona (Schroeder et al. 2004, p. 370), but due to numerous range-wide threats including habitat conversion by agriculture and residential and commercial development, the species now occupy only an estimated 10 percent of their historical range (Schroeder et al. 2004, p. 370). Ten percent of that remaining range is managed by the Forest Service.

On November 20, 2014, the Fish and Wildlife Service listed GuSG as a threatened species (79 FR 69191) and designated critical habitat for the species (79 FR 69311) under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq). Currently, GuSG are found in eight small populations distributed across eight counties in Colorado and one county in Utah, with seven populations located in Colorado (Gunnison Basin, Poncha Pass, Crawford, Cerro Summit-Cimarron-Sims Mesa (CSCSM), Piñon Mesa, San Miguel Basin, Dove Creek) and one population in Utah (Monticello). The Gunnison Basin population is the largest population of the eight and has the most occupied habitat, covering approximately 239,641 hectares (592,168 acres). The Gunnison Basin population supports approximately 85 percent of breeding GuSG and 65 percent of the occupied habitat and is essential to the recovery of the species as a whole.

Overall, Gunnison sage grouse populations, including the populations on the GMUG Forest, are in decline. Gunnison sage grouse populations are closely associated with sagebrush (Artemisia spp.) ecosystems in North America (Young et al. 2015, p. 1), and the continued loss and degradation of these ecosystems has continued to push this species ever closer to extinction. While we appreciate the changes the Service has made between the Draft and Final versions of this Plan revision, it is vital that the Service do more to protect this species and fulfill its ESA conservation mandate. Without additional measures to protect the Gunnison sage grouse and its habitat, the species will continue to decline, and the Service will have failed in its ESA recovery mandate. *See Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, 524 F.3d 917, 930 (9th Cir. 2008) (observing that a "slow slide into oblivion is one of the very ills the ESA seeks to prevent.").

There remain a number of specific plan components that were either not added, not added in full, or overlooked. We address each of these below as well as NEPA sufficiency of the Service's analysis of Gunnison sage grouse in this Plan revision.

We have grouped the specific plan components recommended in our comments into several outstanding issues including primary constituent elements (PCEs), habitat buffers, fluid mineral

leasing and salable minerals, renewable energy, surface disturbance caps, seasonal restrictions, locatable minerals, grazing, and noise.

1. Primary Constituent Elements

In HCCA et al. (2021) at 103-04, 106, 129-30, we recommended managing GuSG habitat to achieve or maintain PCEs as defined in the critical habitat rule. The PCEs are as follows:

> **PCE 1: Extensive sagebrush landscapes capable of supporting a population of Gunnison sage-grouse**. In general, this includes areas with vegetation composed primarily of sagebrush plant communities (at least 25 percent of the land is dominated by sagebrush cover within a 0.9-mi (1.5-km) radius of any given location), of sufficient size and configuration to encompass all seasonal habitats for a given population of Gunnison sage-grouse, and facilitate movements within and among populations. These areas also occur wholly within the potential historical range of Gunnison sage-grouse (RSC2005, pp. 32–35, as adapted from Schroeder et al. 2004, entire).
>
> **PCE#2: Breeding habitat (lek, nesting, and early brood-rearing habitats typically used March 15 through July 15)** composed of sagebrush plant communities with certain structural characteristics (cover and height) for sagebrush, non-sagebrush, total shrub, grass, and forb, including 15-40% shrub canopy cover, 10-40% grass cover and 5-40% forb cover.
>
> **PCE#3: Summer-late fall habitat** composed of sagebrush plant communities with certain structural characteristics (cover and height) for sagebrush, non-sagebrush, total shrub, grass, and forb. It also includes wet meadow and riparian habitats. Total shrub canopy cover should be 10-35%, grass cover 10-35% and forb cover 5-35%.
>
> **PCE #4: Winter habitat** composed of sagebrush plant communities that, in general, have sagebrush canopy cover between 30 to 40% and sagebrush height of 15.8 to 21.7 inches (40 to 55 centimeters). Winter habitat includes sagebrush areas within currently occupied habitat that are available (i.e., not covered by snow) to Gunnison sage grouse during average winters.
>
> **PCE #5: Alternative, mesic habitats used primarily in the summer-late fall season, such as riparian communities, springs, seeps, and mesic meadows.**

The PCEs are intended to produce the necessary ecological conditions for recovery of GuSG and are, therefore, required by 36 C.F.R. § 219.9(b)(1) and necessary for the Service to fulfill its ESA recovery mandate. While changes between the draft and final Plan incorporate a guideline (FW-GDL-SPEC-52.a), an accompanying management direction (FW-MA-SPEC-52.g), and some additional discussion (Appendix 12) of PCEs, these measures do not include all of the PCEs. Nor do these plan components use mandatory language and none of them are bindings standards.

Suggested Improvements

- The Forest Service needs to modify the language of FW-GDL-SPEC-52.a to replace "should" with "shall." Additionally, this should be a standard. The Service should also include a plan component stating that wherever possible, GuSG habitat will managed to achieve all seasonal habitat objectives and PCEs.

2. Buffers[65]

Sage-grouse are particularly sensitive to disturbance, making adequate buffers to such disturbance an essential component of sage grouse conservation and recovery. The best available science on appropriate buffer distances is Manier et al. 2014, and many of this source's recommendations were adopted in the Greater Sage-grouse Approved Resource Management Plan Amendments (ARMPAs). The Final Plan still does not follow the best available science on buffers and buffer distances. Instead of a four-mile buffer for surface disturbing activities, as recommended by the BLM National Technical Team (NTT) Report and supported by Manier et al. 2014, it retains a one-mile buffer "consistent with Colorado Parks and Wildlife (CPW) recommendations." FEIS III at 287. But the recommendations of CPW do not constitute the best available science. Rather, the best available science includes Manier et al. 2014 and a litany of additional sources,[66] all of which recommend a 4-mile buffer for surface disturbing activities.

Further, the Final Plan contains no buffer requirement for connecting areas, and thus fails to address a leading cause of habitat fragmentation. We recommended the inclusion of a plan component prohibiting new surface disturbance within 1 mile of connectivity corridors and an additional plan component requiring that existing disturbances are reclaimed as soon as the land management activity that caused the disturbance is completed. These recommendations were and are based on the need to prevent new disturbances that have the potential to disrupt sage grouse connectivity corridors and to eliminate existing disturbances that disrupt these corridors.

Connectivity is essential to the recovery of GuSG as demonstrated by the best available science. Most anthropogenic disturbance (roads, power lines, oil/gas wells, tall structures) are "discrete

[65] HCCA et al. (2021) at 107, 119, 136-37.

[66] The NTT (2011) report recommends a 4-mile lek buffer for siting industrial development in sage grouse habitat. (NTT) Sage-grouse National Technical Team. (2011). A Report on National Greater Sage-grouse Conservation Measures. Available at: www.blm.gov/pgdata/etc/medialib/blm/co/programs/wildlife.Par.73607.File.dat/GrSG%20Tech%20Team%20Report.pdf; Aldridge and Boyce (2007) suggested that even larger buffers (10 km) are warranted. Aldridge, C. L., & Boyce, M. S. (2007). Linking occurrence and fitness to persistence: habitat-based approach for endangered greater sage-grouse. *Ecological Applications*, 17(2), 508-526; The bi-state forest plan amendment adopted a 4-mile buffer around leks. USDA Forest Service, 2016. Greater Sage-grouse Bi-state Distinct Population Segment Forest Plan Amendment. Record of Decision. May 2016. Page 5.

disturbances," and "sage grouse are extremely sensitive to discrete disturbance."[67] The NTT Report states that sage-grouse management must "[c]onserve, enhance or restore sage grouse habitat and connectivity to promote movement and genetic diversity[.]"[68] Further, the best available science states that maintaining connectivity is necessary to reverse or at least stabilize sage-grouse long-term population declines and that even minor decreases in connectivity have resulted in dramatically larger probabilities of lek abandonment.[69] Thus, preserving and restoring connectivity is not only in line with the best available science but is vital to recovery of the Gunnison sage grouse.

Finally, the Final Plan fails to include or even address our recommendation to include a No Surface Occupancy stipulation for oil and gas operations within four miles of GuSG habitat, as recommended by Manier et al. 2014. Surface occupancy of oil and gas developments negatively impact sage grouse in a variety of ways including noise, roads, and the operation of the oil and gas developments themselves. And the higher the concentration of oil and gas operations, the greater the effects on sage grouse.

Suggested Improvements

- While we appreciate that the Service changed SPEC-43 to a standard, we reiterate that it must also change the buffer distance to four miles in accordance with the best available science. We reiterate that the Final plan must include an NSO plan component for oil and gas operations within 4 miles of Gunnison sage-grouse leks or that exceed the applicable disturbance cap,[70] in accordance with the best available science. Finally, the plan must also include a plan standard prohibiting new surface disturbance within 1 mile of connectivity corridors.

3. Fluid Mineral Leasing (Oil, Gas, Geothermal), Salable Minerals (Sand, Gravel, etc.), and Renewable Energy[71]

The best available science (NTT 2011) recommends prohibiting fluid mineral leasing in sage-grouse habitat. Additionally, the ARMPAs adopt a density cap for structures associated with energy development.[72] The Revised Plan fails to adopt either of these protections and thus is not consistent with the best available science. We recommended a number of plan components to address these issues, none of which the Service responded to.

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[67] NTT Report (2011) at 8.

[68] *Id.*, at 9 (citing Knick and Hanser, Connecting Pattern and Process in Greater Sage-Grouse Populations and Sagebrush Landscapes, 2011).

[69] Knick and Hanser (2011).

[70] *See infra* section on disturbance caps.

[71] HCCA et al. (2021) at 119.

[72] *Id.*

Suggested Improvements

- We reiterate the need for the following plan components inclusion in the Final Revised Plan:

    - Add Guideline: Prohibit fluid mineral leasing within Gunnison sage-grouse seasonal (including winter) habitat.[73]

    - Add Guideline: Prohibit leasing or sales of non-energy minerals (including mine expansions) within Gunnison sage-grouse seasonal (including winter) habitat.[74]

    - Add Standard: The density of energy development structures shall be no more than an average of one well per 640 acres (2.5km) in all occupied Gunnison sage-grouse habitat.[75]

- We additionally recommended a plan component to address the impacts of renewable energy development, specifically wind. That recommendation was also neither addressed nor incorporated into the Revised Plan. Thus, we reiterate it here:

    - Add Standard: Site wind energy development at least five miles from active sage-grouse leks.[76]

4. Surface Disturbance Cap[77]

The best available science, including the NTT Report, the ARMPAs, and numerous other sources, all indicate that sage-grouse react negatively when the density of human developments on the landscape exceeds a certain percentage. The ARMPAs generally require a 3% disturbance cap. But the Revised Plan contains no disturbance cap and is thus not consistent with the best available science. In comments, we recommend a 3% disturbance cap in the Gunnison basin and a 1.5% disturbance cap for satellite populations, consistent with Braun 2006[78] and the Bi-State Sage-Grouse FEIS. The Service responded that a number of plan components adequately "limit surface disturbance and other activities to the degree necessary to prioritize and protect the species and its habitat." FEIS III at 290. However, none of the components cited by the Forest

[73] Recommended by NTT Report 2011.

[74] *Id.*

[75] Provided in NWCO GrSG ARMPA (2015) at 1-9 & 2-14.

[76] *See* Manville (2002); LeBeau (2017); Manier et al. (2014).

[77] HCCA et al. (2021) at 107-08.

[78] Clait E. Braun, A Blueprint for Sage-grouse Conservation and Recovery (2006).

Service contain anything even resembling a surface disturbance cap. They are also riddled with permissive language.

Suggested Improvements

- We reiterate that, based on the best available science, the Service must include a plan component to cap surface disturbance at 1.5% (counting non-FS lands) in GuSG satellite populations and 3% in the Gunnison Basin habitat. These should be calculated per square-mile section (as in NTT 2011), not watered down over larger areas.

5. Seasonal Restrictions[79]

Sage-grouse are particularly vulnerable to human-caused impacts during the breeding and nesting season. Because of this vulnerability, the best available science recommends seasonal restrictions on development and other human activities in sage-grouse habitat. We appreciate that the Service modified FW-GDL-SPEC-48 and -52 to run through July 15, as recommended by USFWS, but we reiterate that these must be standards, not guidelines. Guidelines "allow[] for departure from [their] terms" whereas standards are "a mandatory constraint on project and activity." Revised Plan at 4, citing 36 C.F.R. § 219.7(3)(1)(iii). Because of the dire consequences of human-caused disturbance during the sage grouse's breeding and nesting season, there should be no opportunity for departure from these dates.

Suggested Improvements

- These guidelines should be standards, and should additionally include mandatory rather than permissive language. FW-GDL-SPEC-51 should also be changed to a standard and the language modified as follows for the same reasons:

> To minimize impact to Gunnison sage-grouse during ~~severe~~ winters, area travel closures ~~should~~ must be implemented to protect ~~identified grouse concentration~~ identified or modeled over-winter Gunnison sage grouse areas from December 1 to March 31. Closure decisions ~~will~~ shall be made in the context of ~~managing for multiple resources, including big-game concentrations, public recreation, and range condition, and could occur anytime . The following criteria should be considered to determine if~~ winter conditions such as: snow depth, temperature, snow condition and consistency, and prior year's forage availability and habitat condition.

[79] HCCA et al. (2021) at 105-07, 109, 111, 115, 119-20, 123, 125, 129-30

6. Locatable Minerals (Hardrock Mining)[80]

The best available science (NTT 2011) recommends withdrawing sage-grouse habitat from mineral location. Put plainly, this means removing areas from operation of the 1872 Mining law. Under FLPMA and the 1872 Mining Law, BLM administers the subsurface estate, even on USFS lands, but while the Forest Service may not have authority to withdraw areas from mineral location on its own initiative, it certainly may recommend to the Secretary of Interior that BLM withdraw certain areas.

Suggested Improvements

- Thus, we reiterate our request that the Forest Service make such a recommendation either within the Final Plan or by a separate process within one year.

7. Livestock Grazing

Livestock grazing has been recognized as a leading threat to sage-grouse species, particularly Gunnison sage-grouse. Virtually all of the lands that contain Gunnison sage-grouse habitat are grazed. Grazing harms sage-grouse by reducing hiding cover, changing vegetation composition, and degrading riparian areas, which sage-grouse rely on during brood-rearing.[81] While we appreciate the changes made by the Forest Service between the Draft and Revised Plan, we

[80] HCCA Comments at 113-14.

[81] Jankowski et al. (2014) documented that sage-grouse exhibited higher levels of corticosteroids in grazed areas—meaning, essentially, that they were stressed. Jankowski et al, Corticosterone Metabolite Concentrations in Greater Sage-Grouse Are Positively Associated With the Presence of Cattle Grazing, *Rangeland Ecology & Management*, 67(3):237-246. 2014. A 2014 study confirmed that maintaining 7-inch grass height, especially during drought—like that occurring in Colorado for the past several years—is positively correlated with successful nests. *See* Doherty et al. Linking conservation actions to demography: grass height explains variation in greater sage-grouse nest survival, *Wildlife Biology*, 20(6), 320-325 (2014). Beschta et al., Adapting to Climate Change on Western Public Lands: Addressing the Ecological Effects of Domestic, Wild, and Feral Ungulates, (2012), and Beschta et al., Reducing Livestock Effects on Public Lands in the Western United States as the Climate Changes: A Reply to Svejcar et al, (2014), explained that the influence of climate change is likely to exacerbate the harmful ecological effects of livestock grazing. Monroe et al. (2017) also concluded that grazing timing and intensity can have profound impacts on sage-grouse populations. Monroe at al., Patterns in Greater Sage-grouse population dynamics correspond with public grazing records at broad scales, Ecological Applications, 0(0), pp. 1–12, (2017). Similarly, Holechek (1999) (as discussed in Braun (2006)) remains the best available science regarding the amount of forage utilization sage-grouse can tolerate—25-30 percent. Holechek et al., Stocking Desert Rangelands: What We've Learned, (1999). Stiver et al. (2015) confirm that sage-grouse need 18 cm (7 inch) grass height in all brood-rearing and nesting habitats and that this number should not be altered unless scientific evidence definitively confirms the threshold is inappropriate. Stiver et al., Sage-Grouse Habitat Assessment Framework: A Multiscale Assessment Tool, Technical Reference 6710-1 (2015). *See also* Williamson et al., Fire, livestock grazing, topography, and precipitation affect occurrence and prevalence of cheatgrass (Bromus tectorum) in the central Great Basin, USA, pp. 1 (2019); Reisner et al., Conditions favouring Bromus tectorum dominance of endangered sagebrush steppe ecosystems, *Journal of Applied Ecology* (2013); Final Listing Determination, 79 Fed. Reg. 69206, 69214; Connelly et al. 2004, pp. 7–31, and references therein.; Young and Allen, Cheatgrass and range science: 1930-l 950, p. 531 (1997); 79 Fed. Reg. 69244; Jeffrey L. Beck and Dean L. Mitchell, Influences of Livestock Grazing on Sage Grouse Habitat, *Wildlife Society Bulletin* (1973-2006), Vol. 28, No. 4 (Winter, 2000), pp. 993-1002.

maintain that these changes are inadequate to address grazing impacts to Gunnison sage-grouse habitat and are thus inconsistent with the best available science.

First, the Forest Service has chronically failed to respond to ongoing habitat degradation caused by livestock grazing because most permits are renewed without analysis or modification under FLPMA 402(C)(2). For this reason, we recommended including a plan component to ensure that the Service would fully process grazing permits pursuant to NEPA and implement recommendations from the best available science.[82] The Service's response on this point—that it will "follow all laws, regulations, policies, and Executive orders" (FEIS III at 258)—does not address this concern as FLPMA 402(C)(2) is a law.

We additionally recommended a number of plan components aimed a modifying grazing permits within Gunnison sage-grouse habitat within one year if monitoring demonstrates that the allotment is not meeting Gunnison sage-grouse habitat requirements and livestock grazing is a cause. Such permit modifications must include actions necessary to meet Gunnison sage-grouse seasonal habitat requirements which could include changes in season, timing, frequency of livestock use, reductions in AUMs, and distribution and intensity of livestock use. In response to these recommendations, the Forest Service added several plan components including a structural habitat guideline which includes monitoring, a standard which broadly commits the agency to "following the Recovery Plan and implementing actions in alignment with the Recovery Implementation Strategy," and an objective which commits the agency to report biennially on Recovery Implementation Strategy progress.

While we generally support these additions, we note that none of them address the issues we previously raised in comments. Specifically, none of these plan components include the temporal element of our recommendations—within one year. As noted above, ongoing habitat degradation caused by livestock grazing severely impacts the Gunnison sage grouse, which is already a critically imperiled species with low population numbers far below recovery objectives. Conservation and recovery of this species demand timely management responses to these harms. Thus, the Service must commit not only to fully processing expiring grazing permits with GuSG habitat but also to affirmatively avoiding, minimizing, or at least mitigating these harms with specific livestock grazing permit changes. Further, on that topic, the new plan components cited by the Service do not modify grazing permits, and therefore are unenforceable. Permit terms are necessary to implement plan components. They also do not direct management to achieve PCEs or seasonal habitat, both of which are necessary to conserve and recover this species.

Second, we recommended the plan include an objective to establish sufficiently large areas free of livestock as reference areas to aid in describing ecological site potential and as a measure of the comparative effects of livestock grazing—and relief from livestock grazing—on sage-grouse populations. HCCA Comments at 114-15. The Service responded that none of the considered alternatives propose establishing such areas, but that certain plan components "do include

[82] HCCA et al. (2021) at 114.

identifying and documenting local reference sites if Ecological Site Descriptions and associated soil mapping do not provide a suitable benchmark reference." Response to Comments, FEIS III at 284. However, monitoring and modeling (ESDs) require verification, and such verification can only come from establishing areas that are free of grazing pressure. Such livestock free areas are a vital reference, particularly because these areas were not subject to this type of intense ungulate grazing pre-settlement. Without verification, the agency cannot ensure that its management actions will actually achieve its goals and objectives.

Third, and relatedly, we also recommended modifying FW-STND-RNG-08 to reduce maximum annual utilization to 30% overall, 25% in the habitats of ESA listed species, and to remove the listed exceptions to this requirement. HCCA Comments at 115-16. The Forest Service elected to leave FW-STND-RNG-08 unaltered, stating that "the U.S. Fish and Wildlife Service Recovery Plan and Recovery Implementation Strategy does not recommend restricting utilization to 30%." FEIS III, at 283. But the Recovery Plan and Recovery Implementation Strategy are silent on utilization as a whole, and this silence should not be interpreted to mean that utilization levels do not also affect this species. In fact, the best available science indicates that utilization levels, particularly utilization levels above 25%, have negative effects on GuSG, and that the 25% utilization cap should not be exceeded.[83] Thus, we reiterate our recommendation that the Forest Service change the language of FW-STND-RNG-08 as we noted in comments to reflect the best available science on this issue.

We also recommended the inclusion of a guideline stating "grazing should not be allowed until after June 20 in Gunnison sage-grouse habitat and all livestock should be removed by August 1 with a goal of leaving at least 70% of the herbaceous production each year to form residual cover to benefit sage-grouse nesting the following spring."[84] This guideline is also reflective of the best available science.[85] The Service did not respond to this recommendation and we reiterate its necessity here.

We additionally recommended a plan standard to "ensure that post drought range management allows for vegetation recovery that meets Gunnison sage grouse needs in critical habitat based on measurable habitat objectives."[86] This standard is also reflective of the best available science.[87] The Service responded by adding FW-GDL-SPEC-52.a which, while instructing the Service to manage livestock so as to achieve the structural habitat guidelines of the PCEs, is a guideline and therefore subject to exception. It also does not address the unique recovery needs of vegetation impacted by drought.

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[83] Holechek et al., Range Management: Principles and Practices, Sixth Edition, Chapter 8: Considerations Concerning Stocking Rate, pp. 156-65 (2010); BLM & USFS 1994; Braun, 2006 based on Holechek et al, 1999.

[84] HCCA et al. (2021) at 117.

[85] Braun, 2006 based on Holecheck et al, 1999:12.

[86] HCCA et al. (2021) at 116.

[87] NTT 2011: 15.

Our final recommendation regarding livestock management specific to utilization was to include a plan standard maintaining at least 7 inches average grass height in nesting and brood-rearing habitat in sage-grouse range.[88] This grass height requirement is vital and supported by a wealth of the best available science.[89] The Revised Plan still fails to include this standard and thus is unsupported by the best available science.

We reiterate our recommendation that FW-STND-RNG-06 should be modified to include "or within 2 miles of nesting, brood-rearing or lekking habitat of the Gunnison sage grouse"[90] in line with the best available science.[91] The Service's response on this point does not address the concern that livestock should not be drawn to congregate near GuSG brood-rearing or lekking habitat due to the risks of displacement and trampling.

Finally, we appreciate the Service's addition of new plan components FW-GDL-RNG-12.a and RNG-13. However, these additions do not address new water developments that divert water from sources in GuSG habitat.[92] Thus, we reiterate our recommendation that the Service include such components to protect and restore water to GuSG habitat.

Suggested Improvements

- We reiterate our request that the Service include a plan standard committing the agency to fully processing expiring grazing permits and revising AMPs for all permits within GuSG

[88] HCCA et al. (2021) at 117.

[89] Gregg, M. A., Crawford, J. A., Drut, M. S., & DeLong, A. K. (1994). Vegetational cover and predation of sage grouse nests in Oregon. *The Journal of Wildlife Management*, 162-166 ("Land management practices that decrease tall grass and medium height shrub cover at potential nest sites may be detrimental to sage grouse populations because of increased nest predation.... Grazing of tall grasses to <18 cm would decrease their value for nest concealment.... Management activities should allow for maintenance of tall, residual grasses or, where necessary, restoration of grass cover within these stands."); Connelly, J. W., Schroeder, M. A., Sands, A. R., & Braun, C. E. (2000). Guidelines to manage sage grouse populations and their habitats. Wildlife Society Bulletin, 967-985 (recommending an 18-cm residual stubble height standard); Hagen, C. A., Connelly, J. W., & Schroeder, M. A. (2007). A meta-analysis of greater sage-grouse Centrocercus urophasianus nesting and brood-rearing habitats. *Wildlife Biology*, 13(sp1), 42-50 (concluding that the 7-inch threshold was the threshold below which significant impacts to sage grouse occurred); Prather, P. R. (2010). Factors affecting Gunnison sage-grouse (Centrocercus minimus) conservation in San Juan County, Utah. *Utah State University* (finding that Gunnison sage grouse occupied habitats averaged more than 7 inches of grass stubble height in Utah, while unoccupied habitats averaged less than the 7-inch threshold); Heath, B.J., R. Straw, S.H. Anderson, and J. Lawson. (1997). Sage grouse productivity, survival, and seasonal habitat use near Farson, Wyoming. Unpublished completion report to the Wyoming Game and Fish Department (finding nests with taller grass heights were more successful than those with shorter heights); *see also* Herman-Brunson, K. M., Jensen, K. C., Kaczor, N. W., Swanson, C. C., Rumble, M. A., & Klaver, R. W. (2009). Nesting ecology of greater sage-grouse Centrocercus urophasianus at the eastern edge of their historic distribution. Wildlife Biology, 15(4), 395-404

[90] HCCA et al. (2021) at 117-18.

[91] Christiansen (2009); Stevens (2011).

[92] HCCA et al. (2021) at 118.

habitat rather than renewing such permits under the same terms and conditions by way of FLPMA 402(C)(2). We also renew the second aspect of our original request—that the Forest Service create objectives to achieve 75-100% of the Historic Climax Plant Community (HCPC)—as managing for the HCPC could be seen as synonymous with avoiding disturbance, which consistent with the best available science.

- The Service must commit via a plan component to fully process expiring grazing permits pursuant to NEPA and to modifying grazing permits to include actions necessary to meet Gunnison sage-grouse seasonal habitat requirements which could include changes in season, timing, frequency of livestock use, reductions in AUMs, and distribution and intensity of livestock use, for any allotments that are not meeting Gunnison sage-grouse habitat requirements and livestock grazing is a cause.

- The plan must include an objective to establish sufficiently large areas free of livestock as reference areas to aid in describing ecological site potential and as a measure of the comparative effects of livestock grazing—and relief from livestock grazing—on sage-grouse populations. The Service also must modify FW-STND-RNG-08 to reduce maximum annual utilization to 30% overall, 25% in the habitats of ESA listed species, and to remove the listed exceptions to this requirement.

- The plan must also include a guideline stating "grazing should not be allowed until after June 20 in Gunnison sage-grouse habitat and all livestock should be removed by August 1 with a goal of leaving at least 70% of the herbaceous production each year to form residual cover to benefit sage-grouse nesting the following spring." The plan should further include a standard to "ensure that post drought range management allows for vegetation recovery that meets Gunnison sage grouse needs in critical habitat based on measurable habitat objectives."

- FW-STND-RNG-06 should be modified to include "or within 2 miles of nesting, brood-rearing or lekking habitat of the Gunnison sage grouse" in line with the best available science. Finally, it is critical that the plan include a standard maintaining at least 7 inches average grass height in nesting and brood-rearing habitat in sage-grouse range.

8. Noise[93]

Sage-grouse are extremely sensitive to noise. The best available science, as implemented through the ARMPA, recommends restricting noise in sage-grouse habitat to no more than 10 dBA above ambient levels. Piquette et al. (2014) examined the ambient noise level at Gunnison sage grouse leks and found an average noise level of 17.2 dBA.[94] It is more appropriate for the Forest Service

[93] HCCA et al. (2021) at 119, 127.

[94] Piquette et al., Acoustic Soundscapes in the Gunnison Basin and Effects Of Anthropogenic Noise on Gunnison Sage-Grouse (*Centrocercus Minimus*) in the Gunnison Basin, Colorado, (2014).

to use this ambient noise level as an approximation for ambient natural noise levels at all leks, instead of measuring noise at individual leks, because (1) sound meters used to measure ambient noise often are not sufficiently sensitive to record sound levels below 30 dBA and therefore give misleading noise levels, and (2) noise levels at leks already affected by human-caused noise will show ambient levels significantly higher than the natural ambient noise level. The Service should restrict noise to no more than 10 dBA above an ambient level of 17 dBA throughout occupied breeding and nesting habitat.

Suggested Improvements

- We recommended a guideline restricting noise to no more than 10 dBA above an ambient level of 17 dBA throughout occupied breeding and nesting habitat, in line with the best available science. The Service did not respond to this recommendation and so we reiterate it here.

9. NEPA Compliance Discussion

NEPA requires agencies to take a "hard look" at the environmental consequences of a proposed action. To ensure a hard look has been taken, NEPA documents must provide the necessary factual specificity to explain and substantiate the agency's conclusions.

Here, the Forest Service has failed to take NEPA's requisite hard look at a number of issues, including the role of livestock grazing in facilitating invasive weeds, the best available science indicating the GuSG require a 7-inch minimum grass height and 4-mile lek buffers for recovery, the effects of climate change on GuSG populations and habitat, and the ongoing impacts of livestock permits which are renewed using FLPMA 402(C)(2) rather than through a rigorous NEPA process. Each of these issues are addressed below.

Just as the Draft EIS, the Final EIS does not acknowledge or analyze the role of livestock grazing in facilitating invasive weeds in ecosystems utilized by the Gunnison sage-grouse. Livestock grazing occurs in almost all the Gunnison sage-grouse critical habitat, yet the Final EIS remains largely silent on the connection between livestock grazing in arid environments and the introduction and spread of invasive annual grasses. We provided ample scientific evidence of the livestock cheatgrass connection with our comments, and we include those references by incorporation here.[95]

The best available science indicates that a minimum 7-inch grass is necessary for sage grouse. Sage grouse inhabit wide-open habitats with abundant avian predators, are clumsy fliers, and rely primarily on hiding and camouflage to escape their predators. In this context, maintaining adequate grass cover in sagebrush habitat provides critical hiding cover. The best available science has established that at least 7 inches of residual stubble height needs to be provided in

[95] *See* HCCA et al. (2021) at 132-134.

nesting and brood-rearing habitats throughout their season of use. The Forest Service failed to take a hard look at the necessity of retaining 7 inches of residual stubble heights.

The Forest Service also failed to take a hard look at incorporating a lek buffer distance supported by the best available science, instead relying on the recommendations of its partners. Protecting sage-grouse leks and associated nesting and brood-rearing habitat are key to conserving the species. The Final EIS does not provide an analysis of nesting and lek buffers or provide scientific justification for the buffers incorporated into plan components.

We noted in our comments that the Draft EIS fails to take a hard look at the direct, indirect, or cumulative effects of climate change on the Gunnison sage-grouse and its habitat. The omissions we specifically noted remain largely unchanged, and the Forest Service repeats this error. The agency has thus failed to take NEPA's required hard look at the effects of climate change on the Gunnison sage grouse and its habitat.

Finally, the Service failed to take a hard look at the impacts of renewing grazing permits pursuant to FLPMA 402(C)(2) which postpones, seemingly inevitably, the agency's obligation to conduct a full NEPA review for permit renewals. By failing to disclose and analyze the effects of continuing grazing practices without modification at infinitum, the agency has failed to take a hard look at the impacts of grazing on the Gunnison sage grouse, its habitat, and the long-term effects this unaltered grazing will have on the potential to recover this species.

Suggested Improvements

- Change FW-GDL-SPEC-52.a to: "To maintain or improve Gunnison sage-grouse habitat, livestock **shall** be managed to meet or exceed the structural habitat guidelines outlined in the U.S. Fish and Wildlife Service Primary Constituent Elements and other best available science, when ecological site potential exists." Also make this a standard.

- Include a plan standard stating that wherever possible, GuSG habitat will managed to achieve all seasonal habitat objectives and PCEs.

- Change FW-STND-SPEC-43 to: "To maintain, improve, or enhance occupied Gunnison sage-grouse habitat, avoid surface-disturbing activities within **4** mile**s** of active and inactive leks ~~unless they would maintain or enhance Gunnison sage-grouse habitat (e.g., low-technology habitat restoration techniques that maintain or restore wet meadow and riparian habitat)~~." While we do not oppose restoration of wet meadows and riparian habitats conceptually, it is unclear why these activities would require surface disturbance and this language is far too broad.

- Inclusion a plan standard prohibiting new surface disturbance within 1 mile of connectivity corridors.

- Include a plan standard requiring that existing disturbances are reclaimed as soon as the land management activity that caused the disturbance is completed.

- Include a plan standard requiring a No Surface Occupancy stipulation for oil and gas operations within 4 miles of Gunnison sage-grouse leks or that exceed the applicable disturbance cap.

- Add Guideline: Prohibit fluid mineral leasing within Gunnison sage-grouse seasonal (including winter) habitat.

- Add Guideline: Prohibit leasing or sales of non-energy minerals (including mine expansions) within Gunnison sage-grouse seasonal (including winter) habitat.

- Add Standard: The density of energy development structures shall be no more than an average of one well per 640 acres (2.5km) in all occupied Gunnison sage-grouse habitat.

- Add Standard: Site wind energy development at least five miles from active sage-grouse leks.

- Include a plan standard to cap surface disturbance at 1.5% (counting non-FS lands) in GuSG satellite populations and 3% in the Gunnison Basin habitat.

- Change FW-GDL-SPEC-48 to: "To minimize disturbance during the breeding season (lek, nesting, and peak brood-rearing) in occupied Gunnison sage-grouse habitat, seasonal timing restrictions on construction, maintenance, and access (except emergency maintenance), including public access, **shall** be applied from March 1 through July 15 or as otherwise identified in best available science. Roads should be closed to motorized and mechanized travel during this time period, with the following exceptions: permittees, access to private property, emergency maintenance, law enforcement, and administrative use. Travel associated with excepted uses should occur after 9 a.m." Additionally prohibit camping and restrict non-motorized recreation to designated routes within 4 miles of active sage-grouse leks from Feb. 15 through July 15. Also make this a standard.

- Modify the language of FW-GDL-SPEC-51 to: "To minimize impact to Gunnison sage-grouse during ~~severe~~ winters, area travel closures ~~should~~ **must** be implemented to protect ~~identified grouse concentration~~ identified or modeled over-winter Gunnison sage grouse areas from December 1 to March 31. Closure decisions ~~will~~ **shall** be made in the context of ~~managing for multiple resources, including big-game concentrations, public recreation, and range condition, and could occur anytime. The following criteria should be considered to determine if~~ winter conditions **such as**: snow depth, temperature, snow condition and consistency, and prior year's forage availability and habitat condition.

- Change FW-GDL-SPEC-52 to: "To avoid disturbance to Gunnison sage-grouse during the winter and breeding periods, approximately December 1 to July 15, new authorizations and reauthorizations for recreation events, outfitting, and guiding permits **shall** not be issued during this timeframe within occupied habitat." Make this a standard.

- Within one year, recommend to the Secretary of the Interior that Gunnison sage-grouse habitat be withdrawn from mineral location and entry.

- Include a plan standard to: "Complete NEPA and revise AMP's for all permits within GuSG habitat prior to expiration. To create conditions in which the species evolved actions will be taken and objectives will be implemented to achieve 75-100% of the Historic Climax Plant Community (HCPC)."

- Include a plan standard to: "For grazing permits within GuSG habitat, modify permits within one year if monitoring demonstrates that the allotment is not meeting Gunnison sage-grouse habitat requirements and livestock grazing is a cause. Permit modifications shall include actions necessary to meet Gunnison sage-grouse habitat requirements. Consider changes in season, timing, and/or frequency of livestock use, AUMs, and distribution and intensity of livestock use."

- Include a plan objective to: "Objective: Within three years, establish sufficiently large areas free of livestock as reference areas to aid in describing ecological site potential and as a measure of the comparative effects of livestock grazing—and relief from livestock grazing—on sage-grouse populations."

- Modify FW-STND-RNG-08 to say: Livestock grazing shall not **exceed 30% utilization annually** ~~exceed moderate utilization (40 to 60 percent of the current above-ground biomass)~~ or have a negative Grazing Response Index value in key areas. **In habitat for species recognized under the Endangered Species Act, utilization shall not exceed 25% annually.**" Adjust forage allocations and permits to reflect 30% maximum combined utilization, based on current forage production before reissuing permits.

- Include a plan guideline: "Grazing should not be allowed until after June 20 and all livestock should be removed by August 1 with a goal of leaving at least 70% of the herbaceous production each year to form residual cover to benefit sage-grouse nesting the following spring."

- Include a plan standard: "Ensure that post-drought range management allows for vegetation recovery that meets Gunnison sage-grouse needs in critical habitat based on measurable habitat objectives." Suggested management approach: "Reduce grazing in advance of predicted drought so that, to the degree possible, sagebrush habitat continues to meet sage-grouse habitat objectives. During drought periods, evaluate drought effects on grazed and ungrazed reference areas as one basis for modifying grazing instructions."

- Include a plan standard: "Maintain at least 7 inches average grass height in nesting and brood-rearing habitat in sage-grouse range."

- Modify FW-STND-RNG-06 to say: No salting or mineral supplementation shall occur on or adjacent to known populations and/or habitat of at-risk plant species, highly erosive soils, biological soil crusts, roads, and recreation trails within 0.25 mile of a water body or riparian management zone, or in known archeological sites and other historic properties, **or within 2 miles of nesting, brood-rearing or lekking habitat of the Gunnison sage grouse**."

- Include a plan guideline: "Prohibit new water developments for diversion from spring or seep sources within Gunnison sage-grouse habitat."

- Objective: Within five years, analyze springs, seeps and associated water developments to determine if modifications are necessary to maintain the continuity of the predevelopment riparian area within sage-grouse habitats. Make modifications where necessary, including dismantling water developments.

- Include a plan standard: "Restrict noise to no more than 10 dBA above an ambient level of 17 dBA throughout occupied breeding and nesting habitat."

- Take a hard look at the environmental impacts of renewing livestock grazing permits without conducting NEPA review of the impacts of grazing. *See also* recommendation for plan standard in re grazing permit renewals with full NEPA review above.

- Take a hard look at the necessary minimum 7-inch grass height. *See also* recommendation for plan standard in re 7-inch grass heights above.

- Take a hard look at incorporating a lek buffer distance supported by the best available science. *See also* recommendation for plan standard in re lek buffer and connectivity corridor buffer above.

- Take a hard look at the effects of climate change on GuSG and their habitat.

C. Canada lynx.

The Canada lynx (lynx) occurs on the GMUG and is listed under the ESA as a threatened species in the Distinct Population Segment (DPS) of the lower 48 states. 65 Fed. Reg. 16052, March 24, 2000. The Southern Rockies' lynx population makes up one of six lynx "geographic units" in the DPS and is the southern-most unit. USFWS 2017. Lynx inhabiting the Southern Rocky Mountain Geographic Unit largely depend on national forests within the Rocky Mountain Region (Region 2) of the Forest Service. Each Region 2 national forest in the Southern Rockies adopted a plan

amendment, the Southern Rockies Lynx Amendment (SRLA). Since 2008, the SRLA has served as the regulatory mechanism to conserve and manage lynx habitat in Forest Service Region 2, including for the GMUG.[96] The SRLA plan components placed some restrictions on forest uses such as logging, recreation, and fragmentation that can negatively impact habitat.

In its 2017 Species Status Assessment for the DPS, the USFWS predicted this geographic unit's population may be extirpated by the end of the century and possibly by 2050, based on climate change scenarios. USFWS 2017. Given this dire prediction, the GMUG's revised forest plan must contain strong direction to eliminate the anthropogenic threats to the lynx and lynx habitat.

The forest plan must contribute to the recovery of the species as mandated by 36 C.F.R. § 219.9(b)(1) and help fulfill the Forest Service's obligation to promote the species' recovery under the ESA. Plan provisions, including plan standards and other components, must be informed by the best available scientific information (BASI) under the Forest Service's Planning Rule at 36 C.F.R. § 219.3. Additionally, plan components must be written clearly and specifically to allow line officers the ability to implement projects that achieve desired conditions as required by the Planning Rule at 36 C.F.R. § 219.7(e)(1)(i-v) and the FSH directives FSH 219.12, ch. 20, 22.1(2)(b) and FSH 219.12, ch. 20, 22.1(2)(d).

Since the Southern Rockies DPS was listed in 2000, lynx habitat conditions have changed significantly due to a large-scale spruce bark beetle epidemic[97] that has caused substantial Engelmann spruce tree mortality. Lynx prefer Engelmann spruce – subalpine fir (spruce-fir) forests in the Southern Rockies.

GMUG planners developed a specific plan standard intended to protect the best existing habitat. We raised concerns about this standard and other plan components being insufficiently protective in our comments on the Draft Plan and DEIS.[98] The Forest Service modified these plan components for the Revised Plan, as the FEIS explains below,

> In response to public comments and additional staff review, the plan revision team made changes to the plan standard VEG S8 between the draft and final plan alternatives to better clarify the intent, applicable vegetation management activities, exceptions, and the

[96] USDA Forest Service, Rocky Mountain Region. 2008. Southern Rockies Lynx Amendment Record of Decision. October.

[97] The spruce bark beetle is a native species to the Southern Rockies. Though climate change is likely affecting natural disturbance regimes, large-scale insect disturbance, as with high-severity wildfire, are characteristic of the spruce-fir forest type.

[98] HCCA et al. 2021 at 75-99. These comments were signed by several organizations, including Defenders of Wildlife, and individuals and can be found in the Forest Service Public Reading Room for the GMUG revised forest plan in the file named HCCA_etal_GMUG_DraftPlan_Cmts_11-24-2-21.pdf on this page: https://cara.fs2c.usda.gov/Public/Letter/2800447?project=51806. The Reading Room lists the author as Matt Reed, organization as High Country Conservation Advocates (HCCA), date submitted as 11/24/2021. Defenders contributed significantly to these comments, particularly wildlife sections, and we refer to them as "our comments" and cite them as "HCCA et al. 2021" in this objection.

> scale of the standard's application. … Although the total percent allowance [of vegetation management] has been reduced from 7% in the draft alternative B to 1%, the number of acres available for timber harvest – in VEG S8-qualifying stands — has increased from approximately four hundred acres to approximately 12,600 acres. FEIS I at 40.

The current Revised Plan suffers from the following problems:

- Standard FW-STND-SPEC-35 (SRLA VEG S8) would not provide the ecological conditions necessary to contribute to the recovery of the lynx in compliance with 36 C.F.R. § 219.9(b)(1). And changes made to other direction in the Southern Rockies Lynx Amendment (SRLA) would not ameliorate the new standard's weaknesses. The standard is not reflective of essential BASI about lynx habitat requirements in the Southern Rocky Mountains, including what the Forest Service has defined as lynx habitat that the standard is intended to protect. The standard does not sufficiently protect habitat from negative impacts of vegetation management activities permitted by the standard, such as salvage logging. The standard allows too much and inappropriate types of timber harvesting and vegetation treatments.

- Standard FW-STND-SPEC-35 (SRLA VEG S8) does not provide sufficient direction to guide its implementation. The standard is not consistent with the Planning Rule's description of plan components and agency directives that requires plan components to be written clearly and that requires components be informed by BASI. Some language in the standard is unclear, vague, and/or ambiguous. 36 C.F.R. § 219.7(e)(1)(i-v); FSH 219.12, ch. 20, 22.1(2)(b); FSH 219.12, ch. 20, 22.1(2)(d).

- The impacts analysis in the FEIS of standard FW-STND-SPEC-35 (SRLA VEG S8) does not support the 1% allowance (or 1% cap) of salvage harvest, sanitation, or hazardous fuels treatments standard; the exemption of other fuel treatments to the 1% cap; and the exceptions to the standard. The FEIS lacks clarity, especially regarding the calculation of the high-quality habitat estimate. Overall, the FEIS analysis of direct, indirect, and cumulative impacts of the forest plan is flawed; it does not present a reasonable range of alternatives, and it fails to establish an appropriate baseline from available data and information.

We appreciate that the significant structural and compositional changes to lynx habitat due to the spruce bark beetle epidemic has presented a complex situation for forest planners. We thank the Forest Service for seriously considering our comments on the Draft Plan and DEIS and making some important modifications to the Revised Plan in the preferred alternative. However, based on our review of the BASI, additional changes are necessary to adequately address the concerns detailed in our previous comments and new concerns about the new standard FW-STND-SPEC-35 (SRLA VEG S8). Given the precarious state of the Southern Rockies' lynx population and the massive changes in spruce-fir forest conditions, it is imperative that the national forests of

Region 2 do everything they can to recover this fragile population by conserving the cats' habitat—especially by restricting vegetation management in essential and recoverable habitat.

1. The GMUG's revised land management plan does not provide the ecological conditions necessary to contribute to lynx recovery in violation of 36 C.F.R. § 219.9(b)(1).

In the Southern Rockies, lynx primarily utilize high-elevation areas dominated by moist spruce-fir forest; though they use aspen and lodgepole, they do so a lesser extent.[99] Lynx depend on snowshoe hares for food. Snowshoe hares prefer the woody understory (dense horizontal cover) spruce-fir forests provide because this habitat offers hiding cover and because hares eat conifer needles, twigs, and tree bark. Lynx also prey on red squirrels when snowshoe hares are less abundant. Threats to lynx and lynx habitat include climate change, vegetation management, habitat fragmentation, incidental trapping, recreation, minerals and energy exploration and development, illegal shooting, forest and backcountry roads and trails, and livestock grazing. ILBT 2013.

The SRLA included standard VEG S6, which significantly restricted logging in what was at the time considered the best lynx habitat on the Region 2 forests, defined as: multi-story mature or late successional forest,[100] old multistory structural stage,[101] and winter snowshoe hare habitat.[102] The "VEG S6 stands" receive the highest level of protection with exceptions for cutting only around human infrastructure, for research, for incidental removal during salvage operations, or when tree harvest is specifically employed for uneven-aged management to result in multi-story attributes. Standard VEG S6 caps cutting VEG S6 stands to not more than 0.5% per forest.[103] However, the widespread tree mortality substantially diminished the standard VEG S6 stands, the best of the best "pre-beetle" habitat.

On the Rio Grande National Forest (RGNF), adjacent to the GMUG, biologists and timber staff recognized identifying and protecting lynx habitat when developing salvaging logging projects

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[99] Ivan, J., M. Rice, T. Shenk, D. Theobald, and E. Odell. (2012). Predictive Map of Canada Lynx Habitat Use in Colorado.

[100] This stage is similar to the old multistory structural stage (see below). However, trees are generally not as old, and decaying trees may be somewhat less abundant. (SRLA definition 29).

[101] Many age classes and vegetation layers mark the old forest, multistoried stage. It usually contains large old trees. Decaying fallen trees may be present that leave a discontinuous overstory canopy. On cold or moist sites without frequent fires or other disturbance, multi-layer stands with large trees in the uppermost layer develop. (SRLA definition 31)

[102] Winter snowshoe hare habitat consists of places where young trees or shrubs grow densely – thousands of woody stems per acre – and tall enough to protrude above the snow during winter, so snowshoe hare can browse on the bark and small twigs (LCAS). Winter snowshoe hare habitat develops primarily in the stand initiation, understory reinitiation and old forest multistoried structural stages. (Definition 52)

[103] Southern Rockies Lynx Amendment, SRLA Implementation Guide: Vegetation Management. 2008; US Fish and Wildlife Service. Biological Opinion for the Southern Rocky Lynx Amendment. July 25, 2009.

and offering timber sales was no longer possible under the existing set of SRLA VEG standards and guidelines. The RGNF finalized its revised land management plan in 2020 and commenced a study as the planning process began to assess the impacts of the large-scale bark beetle-induced tree mortality on lynx. RGNF staff enlisted Dr. John Squires, the foremost lynx expert in the country with the Forest Service's Rocky Mountain Research Station, to lead the study (the Squires study). The Squires study goals were to,

> both advance our ecological understandings of how Canada lynx respond to insect-related disturbance as well as provide land managers the necessary information to develop on-the-ground silviculture/forest management that addresses timber salvage and lynx conservation at multiple spatial scales (landscape- and stand-level). Squires et al. 2018a.

Researchers found that lynx within the RGNF were still largely using the same pre-beetle high quality habitat area (i.e., VEG S6 stands) more than other areas in the forest.[104] Though the structural forest habitat conditions had changed, these areas contained structural elements that now make these areas the "best of the best" habitat in the "post-beetle" forest. Biotic features[105] that lynx selected for included:

- Landscape scale:
  - Large, dead trees in both winter and summer
  - Lack of Douglas-fir, which lynx avoided in winter and summer
  - Relatively higher levels of Engelmann spruce in the canopy and subalpine fir in the subcanopy in winter
  - Presence of aspen in winter
  - Lower levels of Engelmann spruce in the canopy and higher in the subcanopy in the summer
- Home range scale:
  - High levels of horizontal cover
  - High snowshoe hare density
  - High live Engelmann spruce in the canopy
  - Large, live subalpine fir trees at high densities
  - Large, dead trees
  - High densities of Engelmann spruce trees
  - Large, dead Engelmann spruce and subalpine fir both strongly selected in summer
- Fine-scale movement paths with more dead canopy cover than expected

These are the key ecological characteristics that comprise the best available habitat for lynx in Southern Rocky Mountain forests with high Engelmann spruce tree mortality. Appendix 12 in the

[104] Squires, J. R., Holbrook, J. D., Olson, L. E., Ivan, J. S., Ghormley, R. W., & Lawrence, R. L. (2020). A specialized forest carnivore navigates landscape-level disturbance: Canada lynx in spruce-beetle impacted forests. *Forest Ecology and Management*, *475*, 118400.

[105] Specific values can be found in Squires et al. (2018). Habitat Relationships of Canada Lynx.

GMUG Revised Plan cites Squires et al. (2020) as the science supporting the high-quality habitat definition in standard FW-STND-SPEC-35 (SRLA VEG S8). The FEIS I explains the Squires study and findings starting on page 228.

a) Standard FW-STND-SPEC-35 (SRLA VEG S8) will not protect the best habitat in spruce bark beetle-impacted forests.

Standard FW-STND-SPEC-35 (SRLA VEG S8) leaves substantial holes in what should be a safety net that securely protects the best post-beetle lynx habitat on the GMUG when VEG S6 stands are absent or significantly diminished. The standard reads,

> Salvage harvest, sanitation, or hazardous fuels treatments may occur in high-quality lynx habitat that does not qualify for the Southern Rockies Lynx Amendment VegS6 criteria due to overstory mortality in up to 1 percent of mapped lynx habitat. This applies to all mapped lynx habitat on the GMUG and is not calculated at a Lynx Analysis Unit scale. Other treatment types are not subject to VEG S8 but must adhere to all other applicable Southern Rockies Lynx Amendment direction.

We provide details about the problems with the standard below.

(1) The Revised Plan must protect large, dead trees at high densities and connectivity habitat.

The set of criteria defining "high-quality" habitat in standard FW-STND-SPEC-35 (SRLA VEG S8) leaves out key habitat characteristics identified by Squires et al. (2020) as the best lynx habitat in the absence or scarcity of VEG S6 stands.

VEG S8 states that high-quality habitat criteria in the Revised Plan (at 49) include:

> 1) Overstories predominantly of dead Engelmann spruce and subalpine fir, or either species, with a sub-canopy layer dominated by subalpine fir, or a combination of either Engelmann spruce or aspen, or both (*see plan appendix 12, Footnotes Regarding Best Available Scientific Information.)*
>
> 2) Total live overstory canopy cover less than or equal to 40 percent*, and
>
> 3) Understory horizontal cover [as defined by the SRLA] density from ground level to 3 meters above ground level is greater than or equal to 45 percent during winter foraging conditions for snowshoe hares.
> **When total live overstory canopy exceeds 40 percent, but criteria 1 and 3 are still met, refer instead to existing Southern Rockies Lynx Amendment VEG S6 direction, plan appendix 4.*

The standard includes a reference for the intended scientific rationale for the standard, "*for more supporting science and background on this standard, as well as plan appendix 12, Footnotes Regarding Best Available Scientific Information.*" Plan at Appendix 12, 12-3. Appendix 12 cites Squires et al (2020) as the science.

Squires et al. (2020) also emphasized the importance of protecting dead canopy cover and conifer subcanopy for connectivity habitat.

> Canada lynx exhibited clear patterns of selection at our finest scale of selection along movement paths (fourth-order selection). Male and female lynx, regardless of season, tended to move toward areas with more dead canopy cover than expected given random availability along movement paths (Figs. 3 and 4). This movement pattern was consistent with selection at the broader landscape- and home-range scales, and reinforced the importance of beetle-impacted areas for Canada lynx use. Similarly, most females and males exhibited selection along movement paths for areas with abundant subalpine fir in the subcanopy during the winter.

The set of high-quality habitat criteria in the standard is missing the importance of *large* dead trees at *high densities* underlined in the passages above. These habitat attributes must also be protected with strong direction in the Revised Plan via incorporation into a standard. We appreciate the Forest Service strengthening snag direction in the Revised Plan. Additionally, the management approaches in FW-MA-SPEC-35.c also include important habitat characteristics the plan must protect. These characteristics of the best lynx habitat that don't yet meet the definition of the VEG S6 stand need to be protected with inclusion in a standard, not with management approaches, which is optional plan content. These necessary components for a standard include:

- Horizontal cover: Areas with greater than 45 percent are considered the highest quality snowshoe hare and lynx habitat.
- Understory conifers: Preserve understory, particularly subalpine fir and Engelmann spruce, in the sub-canopy.
- Size and basal area of dead trees: Sub-canopy development is reduced by salvage; thus, snag retention is most important in areas with high amounts of live understory.
- Shade retention: Dead trees and remaining live trees should be retained strategically to provide shade protection for developing understory trees.
- Retain and protect live subalpine fir from incidental damage.
- Plant subalpine fir post-harvest.
- Canopy cover.

See Squires et al. (2018a and b) for the specific values associated with these attributes and these are incorporated in full herein. The failure to require these lynx habitat characteristics in a standard significantly weakens the habitat protections provided in standard FW-STND-SPEC-35 (SRLA VEG S8), failing to meet the requirements of the 36 C.F.R. § 219.9(b)(1) and the agency's duties under the ESA.

(2) The BASI demonstrates that salvage harvest should not be conducted in high-quality habitat.

Text at the bottom of the standard refers to Appendix 12 in the Revised Plan for the BASI. The best available science referenced in the GMUG Revised Plan warns against salvage logging in lynx habitat, and by extension snowshoe hare habitat. The plan's Appendix 12 at 12-3 states,

> Based on snowshoe hare pellet count data collected in 2018, 2019, and 2020 in spruce stands affected by the spruce beetle epidemic, mean snowshoe hare density was highest in unmanaged sites followed by previously managed sites, and lowest in salvage sites. Unmanaged and previously managed stands both contained dead overstory and live advanced regeneration, while the dead overstory had been removed from the salvage areas. Comparisons between treatments were not statistically different in 2018 and 2019**.** In 2020, mean hare density in salvage sites was significantly different (lower) compared to unmanaged and previously managed sites. The Science Team interpretation states, "Based on these variable results, exploration of options to mitigate impacts to dense horizontal cover during salvage should be considered**.** It is critical to continue to steer salvage away from high-quality Canada lynx habitat." (The Spruce Beetle Epidemic-Aspen Decline Management Response Project (SBEADMR) Science Team Monitoring Questions, Results, and Interpretation from January 2022). (emphasis added)

Squires et al. (2020)[106] cited a range of scientific papers that reported negative impacts of the practice to imperiled species and their own findings. Below are excerpts from Squires et al. (2020):

- [S]alvage logging can reduce animal species richness, leading to substantial changes within ecological communities (Thorn et al., 2018), including reductions in populations of some small mammals (e.g., red-backed vole (Myodes gapperi); Sullivan et al., 2010).

- With respect to key predator and prey species in the boreal forest, Thomas et al. (2019) demonstrated that salvage logging can alter food webs over the short term (< 25 yr) by reducing snowshoe hare (Lepus americanus) abundance, which in turn directly influenced the presence of Canada lynx (Lynx canadensis) and coyotes (Canis latrans).

- Salvage logging in disturbed landscapes can reduce biodiversity and therefore may be viewed as inappropriate in protected areas (Thorn et al., 2018). However, complex socio-economic interactions between natural disturbance processes and the desire to promote timber salvage often result in a cascade of ecological and environmental consequences that are poorly understood in actively managed landscapes (Leverkus et al., 2018).

[106] Squires et al. (2020), literature cited.

- The fact that Canada lynx selected higher levels of beetle-killed trees at the landscape and home range scales and exhibited a positive functional response for beetle-killed trees, creates a management challenge relative to tree salvage. Canada lynx also selected home ranges with abundant live spruce-fir trees within beetle-impacted landscapes; areas selected by lynx within home ranges supported approximately 2.5 times the number of live subalpine fir trees from 3 to 8.9 in. DBH (7.6–22.6 cm) compared to areas randomly available.

- Across spatial scales, we also demonstrated that Canada lynx select forest conditions, such as large-diameter beetle-killed trees in areas of abundant spruce-fir understory and live subalpine fir trees, that potentially conflict with tree salvage depending on implementation strategies and prescriptions. Both lynx and hare depend on the high horizontal cover provided by spruce-fir regeneration, which increase in areas of high tree mortality.

- Ecologically, [] interventions are outside the range of natural variation in boreal forests of the Southern Rockies and are only practical in areas of particularly high resource or infrastructure value, or to promote human safety (Pelz et al., 2015).

This information strongly indicates that salvage logging should not be allowed in high-quality habitat at all. Given the precarious state of the Southern Rockies lynx population, it is evident that anything less, especially as weak as the proposed standard for protecting high quality habitat is, would not maintain or restore the ecological integrity in lynx habitat. It also fails to comply with the ESA's requirements of conserving and recovering the species and falls far short of aligning with the best available science's identification of habitat requirements that are needed to advance lynx recovery and conserve the species.

(3) The exemption of treatment types that are not salvage harvest, sanitation, or hazardous fuels treatments undermines high-quality habitat protection.

The limit imposed by standard FW-STND-SPEC-35 (SRLA Veg S8) applies only to salvage, sanitation, and fuel reduction projects, "Other treatment types are not subject to VEG S8…". Plan at 49. This means that other types of treatment, such as commercial sales of live trees or pre-commercial thinning, would not be subject to the cap in this standard, and additional adverse impact to lynx habitat could result. We can't be confident the standard will provide meaningful protection to the highest-quality habitat if other treatment types are allowed to occur unrestricted. The exemption undermines standard FW-STND-SPEC-35 (SRLA Veg S8).

(4) The exceptions to FW-STND-SPEC-35 (SRLA VEG S8) undermine protecting high-quality habitat.

With the exception of a set of vegetation treatment types from the standard such as pre-commercial thinning or commercial sales of live trees, a significant amount of high-quality habitat could be destroyed or degraded under FW-STND-SPEC-35 (SRLA VEG S8), despite other SRLA vegetation standards in place.

These exceptions in full for which the VEG S8 cap would not apply are:

> 1) Vegetation management designed with the primary objective to maintain or restore lynx habitat,
> 2) the removal of hazard trees immediately proximal to system roads and other infrastructure, and
> 3) sanitation treatment of blowdown to prevent or minimize epidemic levels of insect infestations.
> 4) *For fuel treatment projects within the wildland-urban interface, see the existing Southern Rockies Lynx Amendment guideline VEG G10 and definition of wildland-urban interface as applied in the Southern Rockies Lynx Amendment (plan appendix 4).*

Exceptions 1 and 3 negate the purpose of the standard (to provide protection to high quality lynx habitat where SLRA VEG 6 no longer applies due to changed conditions) and do not result in a standard that would maintain or restore ecological integrity of lynx habitat. Relatedly, the standard falls short of the ESA's requirements of conserving and recovering the species and does not align with the best available science's identification of habitat requirements that are needed to advance lynx recovery and conserve the species.

(a) Exception #1 is overly broad, and the Forest Service has documented no science to support its inclusion in standard FW-STND-SPEC-35 (SRLA VEG S8).

This exception is a loophole where a range of vegetation management projects could be justified as maintaining or restoring lynx habitat even though the best available science calls for no vegetation activities in habitat that has been affected by the bark beetle when it would fall under VEG S8 because it was no longer covered by VEG S6. The language of the exception is too vague to provide sufficient management direction.

The last section of the standard states that appendix 12 in the plan includes BASI to support the elements of the standard. There is no science referenced in appendix 12. The only plan document that cites some science relating to the exception is in Volume 3 of the FEIS, Response to Comments. FEIS III states on page 296,

> Based on public input including supporting science cited by the public for the Draft EIS and other best available scientific information (e.g., Squires et al. 2020) – provides

> recommendations for managing lynx habitat in beetle-killed forests; Interagency Lynx Biology Team 2013 – provides a scientific basis supporting the Southern Rockies Lynx Amendment direction; Maletzke et al. 2008 – encourages maintaining or creating sufficient understory cover to support high densities of snowshoe hares as foraging habitat for lynx; Vanbianchi et al. 2017 – highlights importance of forest structure that allows lynx to use burned areas and other fire management recommendations to ensure heterogeneity is retained within the footprint of large fires), all original Southern Rockies Lynx Amendment standards are now applied to all action alternatives in the Final EIS.

None of the articles cited above studied vegetation management impacts on lynx habitat restoration and maintenance or support that any such activities should take place.

Maletzke et al. (2008)'s paper found higher snowshoe hare densities in areas of higher understory cover in their study on lynx preferred hunting grounds.[107] They did not study how vegetation management could maintain or create understory cover, as suggested by the paragraph above. Rather, they merely included management recommendations based on their findings, which do not align with what the Forest Service is proposing, stating,

> To maximize the habitat value of forest stands as foraging habitat for lynx, we encourage forest managers to maintain or create sufficient understory cover to support high densities of snowshoe hares, which can be accomplished in a variety of ways, including deferring or avoiding precommercial thinning, precommercial thinning with reserves (Griffen and Mills 2007), curtailing brush and other understory removal, and planting regeneration stock at high densities.[108]

This list highlights deferring or avoiding precommercial thinning (PCT), an activity that is not addressed or otherwise covered by VEG S8. The Griffin and Mills (2007) study, cited by Maletzke et al. (2008) tested a PCT alternative.[109]

For the next part of the list, if the Griffin and Mills (2007) study is reviewed, the purpose of this cite by Maletzke et al. (2008) was to develop an alternative to precommercial thinning, PCT-R or "precommercial thinning with reserves,"—where "20% of the total stand was retained in uncut quarter-hectare patches."[110] PCT is known to reduce snowshoe hare occupancy, and the alternative may maintain a higher abundance of snowshoe hares in areas than standard PCT

[107] Maletzke, B. T., Koehler, G. M., Wielgus, R. B., Aubry, K. B., & Evans, M. A. (2008). Habitat conditions associated with lynx hunting behavior during winter in northern Washington. *The journal of wildlife management*, *72*(7), 1473-1478.

[108] Planting is not relevant to the standard and not discussed further.

[109] Griffin, P. C., & Mills, L. S. (2007). Precommercial thinning reduces snowshoe hare abundance in the short term. *The Journal of wildlife management*, *71*(2), 559-564.

[110] Griffin and Mills (2007) at 559.

treatments, thus reducing negative impacts of the practice on lynx habitat. Griffin and Mills (2007) concluded,

> Where high snowshoe hare abundance is a goal, standard PCT should be avoided. The PCT-R retains some natural variation in young stand structure, and may maintain snowshoe hare abundance at levels comparable to unthinned stands, at least in the short term. It is possible to use PCT-R treatments other than the one we used; we suggest that PCT-R should retain a spatially well-distributed selection of the very densest patches of saplings.[111]

Their findings do not indicate that PCT or PCT-R maintains or restores lynx habitat, rather that PCT-R is *less* deleterious to snowshoe hares than PCT without providing untreated reserve areas.

Vanbianchi et al. (2017 at 2382) studied lynx use of post-fire burn areas, and they found that,

> Lynx used burned areas as early as 1 year postfire, which is much earlier than the 2–4 decades postfire previously thought for this predator. These findings are encouraging for predator persistence in the face of fires, but increasingly severe fires or management that reduces postfire residual trees or slow regeneration will likely jeopardize lynx and other predators. Fire management should change to ensure heterogeneity is retained within the footprint of large fires to enable viable predator populations as fire regimes worsen with climate change.[112]

In the discussion section, Vanbianachi et al. (2017) speculated about vegetation management to protect lynx habitat from uncharacteristic wildfires. This was not the subject of their research and thus this study is not best available science.

(b) Exception #2 does not provide sufficient management direction.

Exception #2 does not limit the distance from the road or other infrastructure within which hazardous tree removal is allowed. There must be sideboards for the standard to meet the requirements for standards under the 2012 Planning Rules and to provide clear direction for implementation in a way that would be limited if the standard is to have any value in protecting high quality lynx habitat that is no longer protected under SLRA VEG S6.

[111] Griffin and Mills (2007) at 562.

[112] Vanbianchi, C. M., Murphy, M. A., & Hodges, K. E. (2017). Canada lynx use of burned areas: Conservation implications of changing fire regimes. *Ecology and Evolution*, *7*(7), 2382-2394.

(c) The Forest Service has documented no science to support the inclusion of Exception #3 in FW-STND-SPEC-35 (SRLA VEG S8).

The BASI demonstrates that sanitation treatments for blowdowns would do more harm than good.[113]

2. Standard FW-STND-SPEC-35 (SRLA VEG S8) does not provide clear direction to assure that the standard's provisions will be properly applied in project design and execution and that the standard, ultimately, protects the best lynx habitat in high spruce mortality areas that don't meet the definition of VEG S6 stands. This lack of clarity in plan direction does not, FSH 1909.12, ch. 20, 22.1(2)(b), and FSH 1909.12, ch. 20, 22.1(2)(d).

We anticipate the Forest Service will not be able to accurately calculate the cumulative total extent of vegetation treatments in high-quality habitat areas and will not be able to adhere to the 1% cap on salvage harvest, sanitation, and fuels management. The application of the standard at the forest scale; the exemption of vegetation management types beyond salvage harvest, sanitation, and fuels; vague and ambiguous language in the exceptions; and a confusing impacts analysis do not provide confidence that the standard and the aggregate plan components will indeed protect: high-quality habitat, or the best habitat that includes home range attributes described by Squires et al. (2020), or the ecosystem characteristics that provide the best lynx habitat. It appears that the sum of these factors could lead to a net loss of the highest quality habitat for lynx.

The plan indicates that the intent of standard FW-STND-SPEC-35 (SRLA VEG S8) is "to retain existing high-quality habitat while encouraging vegetation management in areas where habitat quality for lynx and snowshoe hare can be improved in the long-term." Plan at Appendix 4-11. The Forest Service acknowledges this, stating in FEIS I at 40. (See also BA at 94, 96 for confirmation),

> The FEIS analysis concludes that the 1% allowance cap currently exceeds total modeled high-quality habitat in areas suitable for timber production in stands where VEG S8 would be applied, given forest conditions at the time of this decision. Therefore, per current forest conditions, active management could be conducted on the entirety of this area without restriction per this alternative[114]…

[113] Leverkus, A. B., Buma, B., Wagenbrenner, J., Burton, P. J., Lingua, E., Marzano, R., & Thorn, S. (2021). Tamm review: Does salvage logging mitigate subsequent forest disturbances?. *Forest Ecology and Management*, *481*, 118721. (and literature cited within).

[114] It is not clear what alternative is referred to here. In this paragraph from which this quote is taken, only alternative D is mentioned, but it would not allow any treatment in high-quality lynx habitat. FEIS at 41.

This raises significant questions. Why did the Forest Service develop the standard if it is not going assure any high-quality lynx habitat will be protected? Have we misinterpreted the direction provided by the standard and misunderstood the FEIS? If so, the Forest Service needs to modify and clarify the language in the standard and the explanations of the standard's impacts in the FEIS and BA to illustrate how the Revised Plan would actually protect high-quality habitat. The specific direction in plan components must be operational for Forest Service staff charged with executing vegetation management projects. As it stands, this is confusing and concerning.

3. The FEIS is not fully compliant with the National Environmental Policy Act with respect to the Canada lynx.

The FEIS did not provide a range of reasonable alternatives. It did not consider and analyze an alternative that included the management approaches in FW-MA-SPEC-35.c (bullets 2-6) as plan standards.

The FEIS failed to examine and explain how the Revised Plan will provide the necessary ecological conditions to contribute to lynx recovery as required by 36 C.F.R. § 219.9(b)(1). The SRLA was designed to help limit threats to lynx in the Southern Rockies, not eliminate them. The FEIS didn't analyze the full effects of standard VEG S8. The FEIS failed to examine the impacts of calculating the 1% harvest/treatment allowance of high-quality habitat in mapped habitat at the entire forest scale versus the lynx analysis unit scale. The FEIS failed to examine the impacts of VEG S8's harvest/treatment allowance, exemptions, and exceptions to lynx and lynx habitat (e.g., high-quality habitat). In fact, it stated that the impact may be that standard VEG S8 won't protect any high-quality habitat at all, as stated in FEIS I at 40,

> Comments on the draft plan from timber industry representatives and a portion of the public were concerned that restricting salvage harvest in lynx habitat would have a large impact on timber production. Public comments also advocated for no salvage or other harvest in lynx habitat, so a "no salvage" option was analyzed in the draft and final plan alternative D. In light of these public comments, the preferred alternative VEG S8 now reflects more flexibility for both the total amount of allowable active vegetation management and more exceptions, while also restricting a broader range of vegetation management activities than just salvage harvest. The FEIS analysis concludes that the 1% allowance cap currently exceeds total modeled high-quality habitat in areas suitable for timber production in stands where VEG S8 would be applied, given forest conditions at the time of this decision. Therefore, per current forest conditions, active management could be conducted on the entirety of this area without restriction per this alternative, with additional acres under the cap that could be harvested outside of areas suitable for timber production. Nonetheless, the preferred alternative VEG S8, in combination with existing area designations and Revised Plan management area allocations, would protect approximately 68 percent (26,000 acres) of all currently estimated VEG S8-qualifying high-quality habitat (38,000 acres). (emphasis added)

How the estimate of high-quality habitat was calculated was not at all clear from the explanation in the FEIS. This matters because without a figure of high-quality habitat within a ballpark of reliability, the Forest Service and the public cannot determine when the 1% cap in FW-STND-SPEC-35 (SRLA VEG S8) is met or keep track of activities in order to determine when that threshold is being approached. Page 214 of the FEIS states that "[a]ctual extent of applicability will depend upon field validation at a project-level." It was confusing as to whether the estimate was based on dense horizontal cover, as Figure 10, FEIS at 215 implies, or dense overstory, as Figure 11 implies, FEIS at 237, or these inputs and live overstory as Figure 13 implies, FEIS at 238. We understand field identification of high-quality stands is essential, but the Forest Service needs have an estimate of the high-quality habitat baseline to calculate the cumulative area of vegetation management projects (salvage, sanitation, and fuels treatment projects) and for this standard to have value. The standard does not provide clear guidance to direct the GMUG's line officers on how to avoid breaching the 1% cap when planning and executing salvage and sanitation harvest or hazardous fuels treatment projects over time. It also fails to provide a baseline for where in this 1% cap threshold the GMUG currently stands as a result of ongoing activities that are occurring in lynx habitat.

The cumulative effects analysis is inadequate. The FEIS states at 248,

> The lynx analysis units within the GMUG National Forests plan area were considered as the cumulative effects area for this analysis. This includes accounting for reasonably foreseeable actions and effects on adjacent non-Federal lands and considering other adjacent land management plan influences on the GMUG National Forests.

Yet, VEG S8 is intended to be applied at the forest-wide scale.

The Southern Rockies lynx population may not be doing well. The Forest Service BA for the GMUG Revised Plan states, "an estimated 150-250 Canada lynx are in Colorado."[115] Sufficient scientific information does not currently exist to estimate Colorado's lynx population to our knowledge. The BA cites no scientific source for the estimate. We are not certain, but the estimate may have come from flawed conjecture by Colorado Parks and Wildlife (CPW) based on results of its "Canada lynx monitoring in Colorado" study, reported in CPW's annual research reports for mammals.[116] CPW provided the following estimate to USFWS for the Service's 2017 SSA, which stated, "[t]he current size of the resident lynx population in Colorado is unknown but thought to number between 100 and 250."[117] CPW repeated that figure in a 2019 press statement that says, "the lynx population is stable in the core area of the San Juan Mountains at

[115] Biological Assessment (2023) at 19.

[116] Colorado Parks and Wildlife. 2020, 2021, and 2023. Wildlife Research Reports: Mammals. 2020 at 2-6, 2021 at 2-7, and 2023 at 2-7.

[117] U.S. Fish and Wildlife Service. (2017). SSA at 45.

about 150-250."[118] We appreciate CPW's efforts to conduct long-term monitoring of lynx. However, the study's sample size is too small to provide reliable state-wide population and population trend estimates.[119] CPW's lynx monitoring offers essential information about the presence and distribution of lynx in the state and can be conducted with limited resources. We note that the state agency's monitoring reports in the wildlife research project summary reports have not included a state lynx population estimate.

Importantly, the lynx population in the Southern Rockies may be worse off than the 100-250 individuals provided in CPW communications. Squires et al. (2020)[120] studied the impacts on lynx of the spruce bark epidemic, which began sweeping through the Engelmann spruce – subalpine fir (spruce-fir) forests in the Southern Rockies, the forest type most preferred by lynx in the region, at about the time the species was listed under the ESA. The key paper reporting the Squires et al. (2020)[121] results, stated,

> From 2015 to 2017, we captured 10 adult (> 3 years old) Canada lynx (6 males and 4 females) in box traps (Kolbe et al., 2003) that were set on travel paths identified by snow tracks during winter months (December to March); traps were checked every 24 h. Our sample of Canada lynx included most individuals present on the study area, based on our field observations.[122] (emphasis added)

In a presentation for an RGNF meeting that provided an update on the study in 2018, one of the "take-home" messages was that "… the species in Colorado is currently in the "emergency room'."[123]

Suggested improvements

- Delete FW-STND-SPEC-35 (SRLA VEG S8).
- Designate all high-quality lynx habitat as unsuitable for timber production.

[118] Colorado Parks and Wildlife. 2019. Lynx reintroduced 20 years ago in Colorado; CPW monitoring shows stable population. October 22.

[119] See Karl, J. W., Svancara, L. K., Heglund, P. J., Wright, N. M., & Scott, J. M. (2002). Species commonness and the accuracy of habitat-relationship models. *Predicting species occurrences: issues of accuracy and scale*, 573-580.

[120] Squires et al. (2020).

[121] Squires et al. (2020).

[122] Squires, J. R., Holbrook, J. D., Olson, L. E., Ivan, J. S., Ghormley, R. W., & Lawrence, R. L. (2020). A specialized forest carnivore navigates landscape-level disturbance: Canada lynx in spruce-beetle impacted forests. *Forest Ecology and Management*, *475*, 118400 at 3.

[123] Squires, J., J. Holbrook, J. Ivan, R. Lawrence, and R. Ghormley. (2018). Lynx Habitat in Beetle-Impacted Forests. Presentation. May 17 at 42.

- Develop a standard to prohibit vegetation treatment in the high-quality lynx habitat except for the situations stated at Plan Appendix 4 at 5 (i.e., the current exceptions for the cap on treatment under FW-STND-SPEC-35 (SRLA VEG S8)).

- Add a standard that requires protection of understory trees in all treatments in lynx habitat.

- Also convert bullet points 2-5 (listed below) in the current FW-MA-SPEC-35.c to standards and reword to comply with the requirements:
    - Understory conifers: Preserve understory, particularly subalpine fir and Engelmann spruce, in the sub-canopy.
    - Size and basal area of dead trees: Sub-canopy development is reduced by salvage; thus, snag.
    - Retention is most important in areas with high amounts of live understory.
    - Shade retention: Dead trees and remaining live trees should be retained strategically to provide
    - Shade protection for developing understory trees.
    - Retain and protect live subalpine fir from incidental damage.
    - Plant subalpine fir post-harvest.

- Ensure that plan components for protection of lynx habitat apply to all treatment types.

- Designate the snowshoe hare as a focal species for monitoring.

CONCLUSION

We appreciate the time and effort the GMUG Planning Team has put into developing the Revised Plan. In the climate and extinction crisis era, it is essential that wildlife and habitat, water, and other natural values of GMUG be protected to the fullest extent possible.